Government of the Netherlands

To the chair of the House of Representatives of the Netherlands

The Hague, 30 October 2020

Also on behalf of the minister of Economic Affairs and Climate Policy, I am pleased to present the government's vision on industry policy to you.[1]

The Netherlands has every reason to be proud of its industrial sector with prominent, globally operating companies engaged in the development, production and export of their products. The Netherlands is a leader in various clusters such as the agrofood, maritime and mechanical engineering clusters. Industry directly generates over 12% of our national income. More than 800,000 people in the Netherlands earn their income in industry, working in a wide range of occupations, from laboratory researcher, process operator in a factory to assembly line worker. All interesting occupations for people who enjoy manufacturing things. Industry also contributes to solving societal challenges, including those laid out in the Sustainable Development Goals. Without industry, there would be no sustainable energy, no new medical applications, nor would there be sufficient food.

The Netherlands strongly needs industry, now and in the future.
Industry and those employed in industry are currently suffering from the impact of the coronavirus crisis and it is essential to invest in recovery.
The task that lies ahead in the long term, as stated in *Groeistrategie voor Nederland op de lange termijn* ('Long-term Growth Strategy for the Netherlands', Parliamentary Paper 29 696, no. 7*)*, is to increase economic growth potential. Otherwise structural economic growth will stall at 1–1.5% annually, leaving inadequate scope for achieving greater prosperity and well-being.

Given the level and growth of labour productivity, industry can contribute to boosting growth potential. The government therefore attaches great importance to the position of industry in the Netherlands. In view of the National Climate Agreement and the government-wide Circular Economy programme, this will have to be accompanied by a considerable reduction in CO_2 emissions, the reduced use of raw materials and fewer emissions of hazardous substances.

[1] Parliamentary Papers, 29 826 Industrial policy, 29 696 Structural sustainable economic growth, No. 124

However, a larger contribution from industry to economic growth is not self-evident. If industry is to continue play a role in the world market, it must be innovative and highly productive, and respond to the current two dominant trends: digitalisation and sustainability. Industry has to be able to compete on the global market. This requires an internationally competitive investment climate to make the Netherlands an attractive innovation and production location for small and medium-sized as well as large enterprises.

The world in which industry operates is constantly changing. The number of countries with advanced industry continues to grow. The geopolitical environment is undergoing profound change, with the decades of gradual development towards greater economic freedom and fewer trade barriers grinding to a halt. A fierce battle for technology, knowledge and protectionism is increasingly unfolding across the globe. State threats are increasing, from industrial espionage to heightened geopolitical tension.

Apart from the major shock to the economy, the coronavirus (COVID-19) crisis has also uncovered a number of economic risks. Factories across the globe were temporarily brought to a standstill, products were unable to be delivered and production in the Netherlands has also been disrupted. We have found that the Netherlands is particularly reliant on other countries for the supply of essential medical goods such as medicines and personal protective equipment.

In this letter, the government has outlined its vision for the future of industry in light of the above developments and the contribution industry can make to boosting economic growth potential, a sustainable society and a resilient and strong Europe. This calls for an offensive industrial strategy, in which one thing is certain: The Netherlands cannot go it alone. More collaboration within Europe is a condition for a strong Dutch industrial sector and a stronger position for Europe in the world. Dutch industry should obviously have sufficient expertise to participate in international alliances as a partner of choice.

This letter focuses primarily on the long-term perspective for the wider Dutch manufacturing industry, from food, high-tech to the maritime sector and the defence industry. This vision implements the motion put forward by members of parliament Amhaouch and Wiersma (Parliamentary Paper 35 300 XIII, no. 42), calling for research on the Dutch manufacturing industry and the Amhaouch et al. motion requesting support for the manufacturing industry in the recovery phase following the coronavirus crisis (Parliamentary Paper 35 438, no. 9).

You previously received a letter setting out the government’s vision for the future of basic industry in the Netherlands (Parliamentary Papers 29 696 and 25 295, no. 15). The government's acquisition strategy, with a focus on attracting international companies that contribute to innovation, digitalisation and sustainability, also forms

part of the Government's Vision for Industry in the Netherlands (Parliamentary Paper 32 637, no. 415).

Two studies were conducted to obtain input for this vision, one by the Netherlands Organisation for Applied Scientific Research (TNO) and the other by KPMG. These studies, *Groeisectoren in Nederland in internationaal perspectief* ('Growth sectors in the Netherlands in an international perspective') and *SWOT-analyse Nederlandse Waardeketens* ('SWOT Analysis of Dutch Value Chains') are enclosed with this letter[2].

This industry vision also briefly discusses the strategy drawn up for strengthening research and innovation ecosystems and their importance to industry. You will receive this strategy in a separate letter.

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

[2] Can be consulted on www.tweedekamer.nl.

VISION ON THE FUTURE OF INDUSTRY IN THE NETHERLANDS

In this industry vision, the government describes the importance of industry for the Netherlands and how industry can contribute to strengthening sustainable economic growth potential and to a strong and resilient Europe.
Section 1 describes the current position of industry. Section 2 discusses the trends facing industry. The government's vision and ambition for the future of industry in the Netherlands are described in Section 3. The sections 4, 5, and 6 describe what is needed to achieve this ambition.

1. Analysis of the current position of industry

The Netherlands has a solid industrial base. Some 12% of GDP is directly earned in industry.[3] Of all sectors, industry is the sector with the greatest knock-on effects on other sectors. Business services and logistics, for instance, benefit from industry by supplying services. Depending on the method used to calculate the indirect effect, the total share of industry in the economy ranges between 16% and 20%.[4] Formally, the ICT and agricultural sectors largely fall outside the scope of industry and have therefore not been included in the figures. However, these sectors are extremely relevant to and are interconnected with industry.

The share of industry in the economy is slightly below the OECD average of 13%. Similar to many developed countries, the share of industry in the economy has also declined in the Netherlands due to the increasing servitisation of the economy and the transfer of production to low-wage countries. However, that decline has ended. The share of industry in the economy has risen slightly since 2013, from 11.4% to 12.3% in 2019.

Labour productivity in industry is high. In 2019, it was 28% higher than in the entire economy, and that difference has increased in recent years. Labour productivity increased by 2.9% per year between 1996 and 2011. Although growth has declined to 1.3% per year in recent years, it is still far higher than the increase in labour productivity in the total economy, which has amounted to a mere 0.3% per year in the last few years. Due to productivity increases and the trend of offshoring production, employment in industry has traditionally been under pressure, but it has risen again in recent years. In 2019, industry provided 740,000 jobs (expressed in FTE).

Dutch industry is innovative and competitive. Labour productivity is above the OECD average and this applies to almost all sectors of industry. The Netherlands scores high in the international rankings. It currently ranks fourth in both the World Economic Forum Global Competitiveness Index (GCI) and the European Innovation

[3] This relates to industry as specified in the Dutch Standard Industrial Classification (SBI) of Statistics Netherlands (CBS). This is group C of the SBI classification, SBI codes 10–33.
[4] Statistics Netherlands (CBS), 2017, *Belang, ontwikkeling en structuur van de Nederlandse industrie (*'The importance, development and structure of Dutch industry'*)*.

Scoreboard, and occupies the highest position of all European countries in the GCI ranking. The Dutch position is supported by an excellent knowledge base in the Netherlands, although the amount of scientific and technical (fundamental) research in particular is under pressure. The challenge is to increase private-sector investment in R&D, primarily by investing in new R&D-intensive growth markets. It is striking that the expenditure of Dutch companies lags behind primarily in the final phase of the innovation process.[5] The explanation behind this requires further research.

Table 1: Key industry figures for the Netherlands and OECD countries (Source: TNO, 2020)

	The Netherlands		**OECD**	
	Industry	Total	Industry	Total
Share of the economy (in %, 2017)				
Employment	9.6	100	12.4	100
Value added	12.3	100	14.7	100
Development of value added (Average annual growth in %)				
1996–2011	2.0	2.3	2.2	2.2
2012–2017	1.5	1.3	1.7	1.9
Development of employment (Average annual growth in %)				
1998–2011	-1.4	0.7	-1.9	0.2
2012–2017	-0.3	0.8	0.2	0.9
Labour productivity growth (Average annual growth in %)				
1998–2011	3.1	1.4	4.1	1.7
2012–2017	1.7	0.5	1.5	1.1
Labour productivity level (€ value added per hour worked, 2017)	63.9	49.5	44.5	39.8

The Netherlands has a strong presence in various international markets. The Netherlands has traditionally had a strong food industry, and a world-class petrochemical complex has evolved after World War II. A strong mechanical engineering and semi-conductor cluster has been established around Eindhoven, featuring world players such as Philips, ASML, VDL, Vanderlande and NXP.

[5] Based on OECD figures adapted by the Ministry of Economic Affairs and Climate Policy.

Compared to the OECD countries, the Netherlands is highly specialised in these three sectors and they form the largest industry subsectors in the Netherlands. Market leaders such as Lely and Moba operate on the interface of the industrial and the agricultural sectors. And the Netherlands' history as a seafaring nation continues to be reflected in its prominent position in the maritime manufacturing sector today.

Diverse industries are spread across the entire country. Industry has a higher share in the regional economy, primarily in the northern, southern and eastern parts of the country.[6] The share of industry in various regions exceeds 30%, rising to around 45% in Zeelandic Flanders.[7] There are various clusters within this spread of industry, such as the high-tech cluster around Eindhoven, the five energy-intensive basic industry clusters in Rotterdam/Moerdijk, Zeeland, the North Sea Canal Area, Northern Netherlands and Chemelot, the medical cluster around Leiden and the manufacturing industry in Twente and De Achterhoek (Eastern Netherlands).

The Netherlands has traditionally been home to many multinational enterprises. The advantage of large enterprises is that not only is their productivity level above-average, they also have access to international markets, from which other companies in turn can benefit. Moreover, these companies can bolster the Netherlands' position on the world stage.
Besides the well-known large companies, the Netherlands has a broad and robust small and medium-sized industrial enterprise sector, often comprising family-owned businesses. Many of these companies are strongly export-oriented and they often occupy a leading position in their global niche market. At the same time, there also is a group of small and medium-sized enterprises (SMEs) that have difficulty in responding to new technological developments. The interaction between large enterprises and SMEs is intensive, many SMEs in Dutch industry are suppliers to Dutch and foreign multinationals. The coronavirus crisis has once again clearly demonstrated how important such interaction is (see text box 1).

Box 1: Collaboration between SMEs and large enterprises during the coronavirus crisis
The production of surgical face masks is an example of close collaboration between SMEs and the multinational corporations. SMEs Afpro and Duflex took the initiative together with Auping to set up production lines for surgical face masks in the Netherlands. Through the National Consortium for Medical Devices *(Landelijk Consortium Hulpmiddelen, LCH*) they obtained support from Shell and DSM who used their international networks to provide the SMEs with the necessary raw materials. This included filter material that was not available in the Netherlands at that time.

[6] Statistics Netherlands (CBS), 2018, *Het industriële landschap van Nederland* ('The Industrial Landscape of the Netherlands').
[7] Statistics Netherlands (CBS) StatLine

Another example is the production of sleeping medication for coronavirus patients in intensive care. Additional chemical raw materials were urgently needed when the manufacturer Aspen Oss had to scale up production. The chemical sector quickly dispatched a lorry from the refinery in Pernis so as to ensure that Aspen could continue production without interruption.

The survey conducted by TNO on behalf of the Ministry of Economic Affairs and Climate Policy shows that the Netherlands performs particularly well in mature OECD markets, achieving high labour productivity and often above-average growth.[8] The Dutch mechanical engineering industry has managed to increase its market share considerably in a world market where growth is limited. Dutch industry has therefore been able to capitalise on its strong position in these sectors. In view of the limited growth in these sectors in the OECD as a whole, it remains to be seen whether the Netherlands will be able to continue to generate sufficient growth in these areas in the future. Dutch industry is unable to keep pace with the rate of growth in the fastest-growing OECD sectors, such the electronics industry. After enjoying strong growth until 2011, the growth pathway of the ICT sector has now dipped below that of the OECD and its share of the economy is also trailing behind that of the OECD. The pharmaceutical industry occupies a unique position. This sector grew sharply in the OECD until year-end 2010, and despite achieving considerable growth, the Netherlands was unable to keep up that pace. That picture reversed after 2010. Growth has increased in the Netherlands but has fallen considerably in the OECD. The Netherlands is now growing more rapidly in this market.

This picture is consistent with other findings, which indicate that the Netherlands exports a relatively large volume of goods to Europe, a market that is not growing as fast as the Asian market.[9] Products with a high technological complexity, such as complex machines, account for the fastest growth in value-added Dutch exports. These innovative sectors are important strengths underpinning our country's future exports and our earning capacity.

The Netherlands has a strong knowledge base. Although the Netherlands' performance in the area of start-ups is improving, the number of start-ups and spin-offs from universities is lagging behind that of countries, such as the United Kingdom, Belgium, Switzerland, Israel and Canada.[10] In addition, start-ups are still unable to grow sufficiently, partly due to a lack of growth capital. This prevents them from capturing market share in new markets, especially in markets with a strong technological component (deep tech) because large and long-term investments are required. In more general terms, the Netherlands continues to face

[8] TNO, 2020, *Groeisectoren in Nederland in internationaal perspectief* ('Growth sectors in the Netherlands in an international perspective')
[9] Hausmann and Hidalgo (2013), How will the Netherlands earn its income 20 years from now (study commissioned by the Scientific Council for Government Policy, WRR).
[10] See https://2019.stateofeuropeantech.com

the challenge of sufficiently utilising the knowledge from knowledge institutions in the business community and in society.[11]

A strong industry hinges on the availability of sufficient smart and skilled workers, which has a particularly large demand for technicians. The primary concern of industry currently is the availability of sufficient qualified staff. More training is therefore required, and the challenge is to retain talent for the Netherlands, particularly in emerging technology areas, such as artificial intelligence. The SWOT analysis drawn up by KPMG highlights the brain drain in this area.

2. What lies ahead for industry?

We are living in a turbulent world, even aside from the current coronavirus crisis. Technological advancements are occurring rapidly, the geopolitical playing field is changing profoundly and climate change is having a major impact. This section discusses these three developments in greater detail and what they mean for industry.

Digitalisation and robotisation
The digitalisation of the economy is an extremely dominant development, particularly in combination with the development of new production technologies such as robots and 3D printers. This has consequences for both the production *process* and the *products* produced by industry. This constitutes the new industrial revolution known as Smart Industry or Industry 4.0. This development affects the core of industry, and comes on top of developments in nanotechnology, new materials and genetics, among other fields.

Following the initial waves of automation in the previous century, it has become evident in the past ten to twenty years that more and more intelligence is being used in the production process and everything is being connected through the internet. Not only are production processes becoming more efficient, more error-free and more predictable, more opportunities are also being created for customised production rather than in large series (mass customisation). The innovation process is likewise changing. Development is occurring at greater speed and is increasingly being integrated into the production process, while virtual design and testing are becoming more commonplace.
This has been made possible by the emergence of ‘digital twins’, a process in which a virtual twin is created of every product.

Products are becoming more intelligent, featuring increasingly larger software components. More and more products remain connected to the supplier through the internet. This also enables companies to connect more and more services to

[11] See also the report *Innovatieve Samenleving* (‘The Innovative Society’) in the context of the Broad Societal Reconsiderations (Parliamentary Paper 32 359, no. 4)

products, which is also referred to as servitisation.[12] An example is remote maintenance. This development has been further accelerated by the coronavirus crisis. Manufacturers from the Netherlands have managed to carry out maintenance remotely on machines supplied all over the world. Earnings models are also changing, with companies increasingly being paid for services delivered rather than for selling a product. The boundary between industry and service provision is blurring as a result, creating a different relationship between companies and their customers.

An important effect of digitalisation is the development of a platform economy, in which the value of data takes centre stage. This is the most visible in consumer-focused internet companies, with large American and, increasingly, Chinese companies predominating appropriating considerable value for themselves. This development has not gone unnoticed by industry. There are opportunities for companies to grow through data-driven models. However, there also are risks, because if companies are not at the forefront of this development, they will be bypassed by other companies. This may be irreversible in markets in which a winner takes all effect occurs with scarce room for competitive platforms.

Sustainability, circularity and access to raw materials
The trend towards sustainability is unmistakeable. Society is making ever more demands on industry. The Paris Climate Agreement, the OECD guidelines for multinational enterprises and the European Green Deal are manifestations of these societal demands. Agreements have been made by the United Nations on sustainable development in the Sustainable Development Goals (SDGs). They include sustainable energy (SDG 7), sustainable production (SDG 12), food (SDG 2) and medical applications (SDG 3).

The letter on sustainable basic industries explains the government's view on the position of basic industries in the Netherlands.[13] On account of the contribution of basic industry to the economy and employment, the government wants to keep it in the Netherlands but only if more sustainable production methods are employed. Precisely because of its location, existing industry and knowledge, the Netherlands has a solid basis for transitioning to a sustainable basic industry and for keeping it in the Netherlands.

It is equally important for industry as a whole to employ more sustainable practices. The government presented the national environmental framework on 24 September 2020. One of the primary principles underlying the framework is the importance of good environmental quality and the sustainable use of natural resources. Making industry more sustainable not only poses a challenge, but also an opportunity for our economy to be an international frontrunner and to market promising sustainable business models internationally. Cleaner products and

[12] See for more information on the significance: https://op.europa.eu/en/publication-detail/-/publication/0d1ed8aa-8649-11e8-ac6a-01aa75ed71a1/language-en
[13] Parliamentary Papers 29 696 and 25 295, no. 15

production processes, with fewer harmful substances and fewer primary raw materials, in which secondary raw materials are used as much as possible, are essential. This also requires new production processes that can ideally be combined with digitalisation as described above.

Apart from the fact that the use of fewer raw materials goes hand in hand with sustainability, political risks are also attached to the raw materials issue. This mainly applies to critical raw materials, which often are essential for the production of high-value, high-tech products. The mining of these raw materials or a crucial step in the further production process is concentrated among actors who sometimes exploit their dominant position in the value chain for geopolitical political gain. Disruptions occurring in the delivery of critical raw materials, which were regularly politically motivated in the past, can cause long-term disruption to production chains.

Geopolitical changes

In recent decades, we have become accustomed to the ever-increasing liberalisation and integration of the global economy, with fewer trade barriers and lower import duties. Countries such as China, India, South Korea and Taiwan have been able to achieve significant growth as a result and prosperity has risen worldwide. This has brought considerable advantages to industry in the form of expanding markets, lower prices for raw materials and semi-finished products, and attractive locations where goods can be produced at lower costs. Although the advantages for industry still apply, the competitive pressure is increasingly being felt. Competition poses a challenge, particularly if it is based on an unequal playing field. Unequal market access and the unequal treatment of companies, unbridled state aid focusing on buying up or outcompeting market players, inadequate competition, espionage, intellectual property malpractice or theft, and forced technology transfers create the unequal playing field.

This has brought about a change in views in recent years, particularly on the rise of China. Not only has this led to a trade war between the United States and China, but also to a fierce battle for technology and knowledge. These countries invest vast amounts in technology and the United States is increasingly deterring technology exports. This directly affects Dutch companies. In more general terms, a worldwide call can be heard for greater economic protectionism. Political tensions too are rising. The government is not in favour of more protectionism. The hardening of the position between both countries has considerable negative consequences. On top of that, the departure of the United Kingdom from the EU is having a negative impact and the EU's power is diminishing. In the current situation Europe must staunchly defend its interests. All in all, the global playing field is changing profoundly and the EU needs to respond to it.

The consequences of the coronavirus crisis

The coronavirus pandemic has caused considerable damage to the Dutch economy. And even though the economy is expected to recover in the years ahead, CPB

Netherlands Bureau for Economic Policy Analysis assumes in the baseline scenario that the size of the economy will be 4% lower in 2025 than expected before the coronavirus outbreak.[14] Moreover, productivity growth has been affected, due to reduced investments and innovation activities.

Aside from the direct economic consequences, the coronavirus crisis has also brought more systemic issues to light. The complexity of global value chains, although economically advantageous, has also proven to be vulnerable, and the pace of recovery is slow. This vulnerability has been brought to light more often in recent years as a result of geopolitical tensions, the impact of climate change and cyberattacks, among other factors. A second coronavirus wave abroad will mainly affect industry and logistics.[15] Industry will initially have to assess whether the degree of vulnerability and reliance on third countries, or even a few manufacturers, is acceptable. However, in some cases this vulnerability will have repercussions for the possibility of protecting public interests. This factor clearly comes into play in the area of public health, where we strongly depend on markets abroad for crucial goods, such as veterinary and human medicinal products, personal protective equipment and medical technology. Therefore, this also affects the role of the government.

Consequences for global production patterns: a visible change?
For a long time, the globalising world has been characterised by ever more complex global value chains and the transfer of production to low-wage countries, mainly to Asia. More and more signs are emerging that this is changing.[16] Globalisation is no longer increasing as a result of economic, technological and geopolitical trends, as outlined above, but seems to have stabilised since around 2010. International trade is still growing, but is more in line with economic growth, whereas in the past trade growth was far higher than economic growth. The share of value added in exports produced in other countries has been declining for some ten years and foreign investments in production capacity have stabilised. The coronavirus crisis comes on top of these developments. This has caused disruption to supply chains and it is still difficult to assess what the permanent impact will be. To obtain a clearer picture of the situation, at the Initiative of the Logistics Top Sector (TKI Dinalog, Dutch Institute for Advanced Logistics), three surveys were conducted for the Agro and Food, Life Sciences and Health, and High-Tech Systems and Materials sectors.

It is uncertain what course these developments will take in the years ahead. However, there is a real possibility that this trend in changing trade and production patterns will continue. The effect may be that certain value chains will become shorter, markets will become regional rather than global, and that companies will

[14] CPB Netherlands Bureau for Economic Policy Analysis, 2020, *Actualisatie verkenning middellange termijn 2022-2025* ('Update of the medium-term outlook 2022-2025').
[15] CPB Netherlands Bureau for Economic Policy Analysis, 2020, *Nederlandse bedrijven kwetsbaar voor nieuwe coronagolf in het buitenland* ('Dutch companies vulnerable to new coronavirus wave abroad').
[16] Global value chain transformation to 2030: Overall direction and policy implications. James Zhan, Richard Bolwijn, Bruno Casella, Amelia U. Santos-Paulino 13 August 2020

decide to organise previously outsourced production tasks in their own country of establishment (reshoring) or elsewhere in the EU (nearshoring). This picture is expected to differ by sector. Looking at reshoring, it appears that its effect is only marginally visible in the Netherlands. A Statistics Netherlands (CBS) survey shows that in the 2014-2016 period, 1% of companies moved their international activities back to the Netherlands.[17] This percentage is fairly stable compared to the previous years and no upward trend is evident for the time being.

3. The future of Dutch industry

The government attaches great importance to a strong industrial sector in the Netherlands and wants it to grow further in a sustainable manner. This is required in order to achieve a higher growth pathway for the economy, to make Europe stronger and more resilient in the world, and to continue to contribute to the societal challenges we are facing. It is valuable and desirable if this results in industry achieving a higher share of GDP, but this is not a concrete objective because this ratio partly depends on the development of the remainder of the economy (the denominator effect).

Is Dutch industry prepared for this growth task? The answer to this question is twofold. Yes, because we want to have an innovative industrial sector and a well-trained workforce. We view growth in terms of labour productivity and value added, again resulting in an increasing share of national income and more jobs. This is no reason to become complacent. Competition on the global market is constantly increasing, while the rules of the game in the geopolitical climate are subject to change. This also brings us to the other part of the answer: no, not yet sufficiently. We have identified the following challenges in this regard.

Dutch industry will need to become even more innovative than it already is. More and more countries have the same technological level as the Netherlands, and if the costs are lower there, we are running a risk. This means that companies must continue to invest in new high value-added products, as it is becoming more difficult to maintain a position in commodity markets. Using the opportunities offered by the new digital technologies, Dutch industry will increasingly need to rely on more complex products and a stronger position in global growth markets. In this context, the societal challenges also offer interesting opportunities. As stated in Section 1, fortunately, Dutch industry is showing that exports in more complex products are rising. Industry will need to respond to the servitisation trend and to the development towards a platform economy because those are ways of adding more value to products.

However, a good product still offers no guarantee that industry will be able to develop and produce it cost-effectively in the Netherlands. This requires the

[17] https://longreads.cbs.nl/im2018-2/uitbesteden-van-werk-aan-het-buitenland-door-bedrijven-in-nederland/

production process to be organised in a smart and efficient manner, in which the use of new production technology and digital technologies is essential.
The decrease in the costs of these technologies moreover offers sectors that custom-produce goods or produce goods in small series the opportunity to reduce production costs. It is evident that the deployment of robots in Dutch industry has risen in recent years, but there is certainly still potential for their wider application. All in all, the opportunities seem to lie mainly on the interface of physical products and production and the digital world, and on the interface of industry and service provision. This makes considerable demands on the adaptability of companies and their employees, and the need for various disciplines to work together. Social innovation is an equally important technological innovation.[18]

The various trends described offer the Netherlands the opportunity to attract more production activities. This may be attractive not only from an economic perspective, but also offers opportunities to create jobs for skilled workers or for people with poor job prospects. Moreover, in light of the required availability of essential goods such as medicines and personal protective equipment, we also need to take a closer look at the production capacity the Netherlands itself will need and what other solutions exist. The European perspective should also be taken into consideration, it is inefficient if each country starts expanding its own capacity.

The coronavirus crisis has uncovered several vulnerabilities for certain goods while the next crisis may reveal other vulnerabilities. For this reason, it is difficult to determine for which goods greater independence or domestic production capacity is required. It is therefore essential to respond swiftly and flexibly to shortages of certain goods. Experience in this area was gained during the coronavirus crisis. The Smart Industry programme is also working on flexible production systems. The programme has therefore formulated a vision for ways of reducing vulnerabilities through more flexible and more robust supply chains.[19] The Ministry of Economic Affairs and Climate Policy will explore to what extent more knowledge and expertise in this area can be acquired and then utilised through the Smart Industry programme.

More production activities might even be moved back to the Netherlands by Dutch industry. Although developments in the last decade show that high expectations in this area are misplaced, and forced reshoring has disadvantages, the government does not want to forego potential opportunities for industry, employment and safeguarding public interests in the Netherlands. In line with the motion put forward by member of parliament Pieter Heerma et al., the Social and Economic Council (SER) has been requested to issue an advisory report on reshoring.[20] The SER aims to complete the advisory report by the end of the year. The government

[18] Rabobank (2020)argues that the quality of management practices is important for the future resilience of industrial enterprises, see https://economie.rabobank.com/publicaties/2020/maart/naar-een-toekomstbestendige-maakindustrie/
[19] https://smartindustry.nl/whitepapers/whitepaper-flexibeler-robuuster-en-slimmer-werken
[20] Parliamentary Paper 35 420, 57.

will then assess whether any additional action should be taken and will also discuss this with the regional authorities.

The question is whether the government has its own affairs in order to achieve the ambitions described. The government has the generic innovation policy, the Mission-driven Top Sector and Innovation Policy, the Dutch Digitalisation Strategy, the Technology Pact, the government-wide Circular Economy programme, the National Climate Agreement and other programmes of action in place that provide a solid basis for supporting industry. The trade instruments for international enterprises are also aimed at maintaining and strengthening the international earning capacity of industry, to contribute to sustainable recovery after the COVID-19 pandemic.
However, considering the ambition to increase the structural economic growth potential and in the context of fast-changing geopolitical reality, we will constantly need to work on renewing the agenda. This requires an offensive approach, in which the following matters are essential, according to the government.

Firstly, we will need to work together more than ever in Europe. The scale that we can achieve in the Netherlands is usually inadequate to be able to compete globally. We will achieve far more by adopting a joint approach. That collaboration will in many cases be more intensive than at present. Together we will have to find out, in the period ahead, what the best form of collaboration is per sector and technology. However, strengthened European collaboration does not mean that we should no longer engage in collaboration outside Europe. Transatlantic partners such as the United States remain important for the defence industry, for example.

Secondly, the government understands the need to make further investments in future growth markets. Investments are required to enable industry to grow in the long term as well, and it is important to create a position from the perspective of public interests or from the perspective of key technologies for national security. The use of key technologies can lead to higher labour productivity and to the creation of new growth markets. This, therefore, requires more investments in key technologies and in start-ups and scale-ups to market them. The establishment of the National Growth Fund, comprising 20 billion euros, offers opportunities in this area.

And lastly, besides an offensive industrial strategy, the Netherlands and Europe should not shy away from protecting economic and public interests against improper influence or unfair competition from outside Europe. This may require a more active and assertive role from the Dutch Government than we have been accustomed to in recent decades. This aspect is discussed further on in this letter.

For these three matters, it is important to identify more clearly which technologies and sectors are of strategic importance to the Netherlands, so that the appropriate approach can then be determined. In the mission-driven Top Sector and Innovation Policy, particularly in the key technologies action plan, and in the Defence Industry

Strategy, a direction has already been set based on various perspectives. A technology survey is currently being carried out as part of the national security action plan.[21] Similar questions have now also arisen in the area of digital sovereignty. These different perspectives will then be combined to develop a coherent approach to investment, regulation and protection and to determine in which cases it would be appropriate for this to take place at European level and where the Netherlands should pursue an autonomous policy.

4. Collaboration in Europe

European industrial policy should comprise an intelligent mix of open markets, promoting fair competition, European collaboration in developing technology and protecting public interests.[22] As concluded during the European Council meeting, held on 1 and 2 October 2020, the European ambition is to achieve more strategic autonomy from the rest of the world, while retaining an open economy. For the Dutch government, strategic autonomy is not an end in itself, but rather a means toward shaping a resilient EU that is able to safeguard its public interests.[23] Autonomy in sub-areas is one of the means that can be used to safeguard those interests. This should therefore be thoroughly analysed and assessed.

The Netherlands earns one third of its prosperity abroad. The government will therefore continue its efforts to promote open markets, in which the advantages of international trade, access to worldwide value chains and international competition are retained. To protect consumers' interests and to facilitate fair competition, stringent competition rules and politically independent supervision of the internal market are required.

With a view to the transition to a sustainable and digital economy, and to prevent Europe from becoming unilaterally reliant on third countries, Europe needs to invest more in the development of key enabling technologies, and European collaboration is required around value chains that are of strategic economic importance or crucial to our safety and security. From a national security perspective, it is particularly important to prevent strategic dependencies that could impair the democratic legal order. This calls for an approach in which public and private-sector parties work closely together on developing technology, coordinating investments and in creating the appropriate preconditions for regulations, financial incentives and suchlike, which fall within the domain of the public authorities, to create markets in which European companies acquire strong positions. More collaboration does not imply that we should create artificial

[21] As also requested in the amended motion put forward by member of parliament Van den Berg (Parliamentary Paper 30 821, no. 110).
[22] See the letter containing the government's position on European competitiveness (Parliamentary Papers 30 821 and 21 501-20, no. 73).
[23] See the explanation of strategic autonomy in the letter on the government's commitment to the EU Trade Policy Review, Parliamentary Paper 21 501-02, no. 2197 and the Report of the European Council meeting on 1 and 2 October 2020, Parliamentary Paper 21 501-20, no. 1610.

European champions. Less competition within Europe is not conducive to the innovative capacity of industry.

The European Commission and Member States need to make strategic choices here. In the government's view, the EU will have to indicate more specifically in which areas it wants to invest in order to increase our competitiveness and how to avoid undesired dependencies. This applies in particular to new key technologies where a competitive advantage can still be derived. It is essential to accrue intellectual property rights in key technologies. The world is not waiting on Europe, so an expeditious approach is required.

There is no blueprint for the strengthened European collaboration and the Dutch approach within it. The most appropriate form of collaboration will have to be identified by sector and technology. The European Commission encourages the formation of 'industrial alliances'. The entire spectrum of interested parties in the public and private sectors work together in these alliances and, depending on the theme, develop integrated advice and investment plans. The expectation is that the European Commission will increasingly encourage the formation of these alliances. The Netherlands welcomes this development. Nevertheless, the Netherlands will determine the level of commitment per alliance based on the national and European interests served. A hydrogen alliance is currently being formed, which the government considers essential for the transition to cleaner sources of energy. The same applies to a raw materials alliance.

The work of the Industrial Alliances can lead Member States to submit an Important Project of Common European Interest (IPCEI). The scope for providing state aid and the competition frameworks will be widened to make it easier for Member States to make larger investments in important projects and to facilitate knowledge-sharing among companies. This tool offers the opportunity to boost large-scale, joint investment plans. Since IPCEI projects form an exception to the state aid rule and make considerable financial demands on Member States, the Netherlands would like the tool to be used selectively as part of a clear strategy for a certain value chain or industry. It should be ensured that IPCEI does not become a tool to protect industries with a strong lobby.

Based on the strategic importance for the Netherlands and on private-sector commitment from the Dutch business community, the government will consider in which IPCEI initiatives the Netherlands will participate. The government is now actively exploring participation in the hydrogen IPCEI that is due to be launched. Together with the business community we will also explore participation in a potential new micro-electronics IPCEI. Furthermore, new IPCEI initiatives in various other areas are being undertaken in Europe. The government is following these with interest.

There are additional opportunities for collaboration, and sectors obviously already work together with other parties, for example, through European companies such

as Airbus or in the European Space Agency (ESA). There are tools, such as Horizon Europe, Eureka and the European Defence Fund (EDF), in which Dutch companies and knowledge institutions are well represented. Within this broad European collaboration, the government is also committed to increasing bilateral collaboration.

Collaboration with countries such as France and Germany has been strengthened in recent years. To further support this collaboration, among others, the Advisory Council for Science, Technology and Innovation (AWTI) and the Dutch employers' organisation for the technology industry (FME) are calling for more resources, taking the form of a bilateral partnership instrument.

The circular economy is another area in which European collaboration is required. The Circular Economy Action Plan was drawn up for this purpose. The government is undertaking efforts to achieve optimally facilitative legislation in Europe that will also be adopted outside Europe, given the need to achieve the circular economy globally.

Together with the top sectors, knowledge institutions, branches of industry and other parties, the government will explore where and in what way this intensified collaboration on key technologies and strategic value chains in Europe can be shaped. In view of the economic and public interests, the government will pay particular attention to utilising opportunities for this purpose in three broad domains: Life Sciences and Health (including Medical Technology), High-Tech/ICT (semi-conductors, photonics, quantum technology, artificial intelligence) and defence and space-related technology and industry. Appendix 1 contains a number of examples of collaboration in these domains. The SWOT analysis drawn up by KPMG, which is appended to this letter, provides useful reference points for this purpose. Beginning with these domains by no means excludes collaboration in other sectors in the future.
To enable a larger contribution to be made to European collaboration, the government has made 255 million euros available for co-financing European programmes, including the European Defence Fund (EDF), Digital Europe and Horizon Europe.[24]

Example: The Defence Industry Strategy
A tailored approach may in some cases be needed in European markets where there is no level playing field or for sectors that are important for maintaining strategic autonomy at the level of the sovereign Member State. One of the sectors that requires a tailored approach is the Defence sector. In this sector, strategic autonomy is defined as guaranteed access to and the availability of international and national knowledge, rights, people and the necessary resources to maintain military capacities and to carry out operations, irrespective of the coalition in which deployment takes place. This centres on maintaining operational relevance and

[24] Parliamentary Paper 35 420, no. 105

guaranteeing the deployability of the armed forces without being overly reliant on allies or other nations.
Because the Netherlands carries out defence duties not only in association with its allies, but also independently, both in the Kingdom of the Netherlands and beyond, the preservation of knowledge of defence and security technology, and of logistics independent of other countries contributes directly to Dutch security interests. For this reason, the Netherlands wants to continue to have its own technological and industrial base to safeguard national security and to ensure that a definite autonomous action perspective remains intact. This means that, if dictated by national security interests, investments can also be made in non-competitive, but essential knowledge, rights, people and resources.
An ambition has been formulated in the Defence Industry Strategy for knowledge and technology areas, and industrial capacities that must be laid down at national level to protect the essential national security interests. In addition, the strategy includes a range of tools aimed at strengthening, protecting and positioning the Dutch Defence Technological and Industrial Base internationally.

The European Union should not be naive when it comes to unfair competition from third countries. The EU should use its market power effectively by applying new and existing tools to enforce a level playing field for trading with third countries so as to leverage the advantages of an open market and to continue to offer Dutch industry fair opportunities. In this context the government has published a proposal for a level playing field instrument (LPFI).[25] On 17 June 2020 the European Commission presented a white paper on levelling the playing field on the internal market in relation to government subsidies from third countries. The white paper builds on the LPFI proposal. In the government's response to the white paper, the government stated that it welcomes the white paper and is looking forward to legislative proposals in this area.[26] The government considers it important to ensure a global level playing field and to prevent leakage effects to preclude the shifting of emissions. In line with the motion put forward by member of parliament Van der Lee, the government welcomes the principle of a carbon levy at the border and is positively intrigued by the Commission's proposal for a Carbon Border Adjustment Mechanism (CBAM), which will be published in June 2021.[27] Taking the lead in sustainability can actually give industry the competitive edge.

Lastly, from a national security point of view, the European Commission is wary of undesired investments from so-called third countries. Member States must share the available information on direct investments from third countries at the request of another Member State if the investment affects the public order and safety of that particular Member State. For this reason, the Foreign Direct Investment (FDI) Screening Regulation[28] requires a contact point to be established to collect, aggregate and share confidential information between the Member States and with

[25] Parliamentary Paper 21 501-30, no. 470.
[26] Letter from the government dated 21 August 2020, Government's response to the White Paper on foreign subsidies in the Single Market (Parliamentary Paper 22 112, no. 2902).
[27] Parliamentary Paper 35 377, no 13.
[28] Regulation (EU) 2019/452 establishing a framework for the screening of foreign direct investments into the Union.

the European Commission.[29] The Netherlands has taken this one step further by introducing an investment assessment based on national security risks (see the final section of this letter).

5. The Dutch industrial policy: strengthen and innovate

The government's existing enterprise policy ties in with many aspects that are essential for industry's potential to generate innovation, revenue, growth and social prosperity. Within this broad approach, the government constantly looks at where adjustments need be made, or efforts stepped up. In terms of major industrial policy objectives, the present government focuses on the following five lines of policy:
1) investing in growth markets 2) digitalisation 3) human capital 4) sustainability and raw materials and 5) conditions for establishing a business. Lastly, collaboration with the region is also discussed.

5.1 Investing in growth markets: key technologies, start-ups and scale-ups

As stated in the growth strategy, the government firmly believes that well-functioning ecosystems, in which businesses, financiers and educational and knowledge institutions work closely together, are conducive to innovation. The government has developed a strategy for research and innovation ecosystems aimed at strengthening the existing ecosystems and at creating new leading clusters for promising technologies. An important element of this strategy is a more coherent approach between R&D, innovation and scaling up, training and supporting start-ups and scale-ups. This strategy will be presented to the House of Representatives shortly. This approach does not focus exclusively on key technologies, but it is extremely important for the development of key technologies.

In the Mission-driven Top Sector and Innovation Policy, the government aims to utilise economic opportunities for societal challenges and for investing in key technologies. Aside from the aforementioned policy, a broad and agile knowledge base in fundamental and applied research is required. In order to be successful in the field of key technologies, the government will not only need to monitor the market and technology, they should also have the courage to provide direction in this area and support businesses to enable them to continue to grow. The following actions have been initiated for this purpose.
The government will invest in key enabling technologies. A Knowledge and Innovation Agenda for key enabling technologies has been jointly drawn up by the top sectors, in which knowledge institutions, businesses and the government work together. On top of the funds earmarked for innovation released in the coalition agreement, the government has made available an additional 23.5 million euros for both quantum technology and artificial intelligence (AI). The National Growth Fund,

[29] Parliamentary Paper 30 821, no 97.

amounting to 20 billion euros, also offers opportunities for considerable investments in R&D and innovation.
The growth fund follows from the growth strategy published at the end of last year. The government states in the growth strategy that there is reason to make additional investments, of a one-off and non-regular nature, to strengthen earning capacity, particularly for knowledge development, research and development (R&D) and innovation, and infrastructure. The advantage of establishing a specific earmarked fund over additional investments based on the regular policy budgets is that this will enable a leap in scale to be made in knowledge development, R&D and innovation (R&DI) and physical infrastructure in the long term.

New technology will not be applied automatically, particularly if there is scarcely a market for it. This means that investments need to be made in scaling up and applying new technology. However, the Dutch innovation policy is relatively focused on earlier phases of R&D and still provides few tools to stimulate private investments in pilots, demonstration projects and field labs. This constrains the scaling up and wider distribution of technology, as already indicated in the letter on basic industry. The National Growth Fund offers opportunities for making such investments.
Start-ups and scale-ups are crucial for scaling up and converting technology to business and consequently capturing new markets. Capital is required to enable companies to grow faster, particularly technology companies.

As part of the support and recovery package, together with Invest-NL, the government is looking at a package of measures aimed at further supporting start-ups and scale-ups. It is envisaged that these measures will focus on 1) supporting knowledge-intensive start-ups and scale-ups, 2) the need for ‘big tickets’ for Dutch scale-ups generically, and 3) a survey on how support for alternative financiers can be shaped to expand the existing range of funding options in the Netherlands. Aspects such as market demand, risks and governance will be included in this survey and in the elaboration. The government has reserved 250 million euros for the total package for 2021. The House of Representatives will receive further information on this later.
Furthermore, 150 million euros will be allocated to the Regional Development Agencies to enable them to support innovative SMEs. Start-ups will also benefit from the additional funds allocated to the WBSO scheme.

In markets in which the government itself is a customer or otherwise plays an important role, the government's role as launching customer can be further strengthened. Demand-driven living labs are an example, such the Counter Drone living lab and the Robotics and Autonomous Systems unit, in which the Ministry of Defence is examining ways of scaling up and applying new technology together with knowledge institutions and businesses.
In addition, the government is considering participating in the recapitalisation fund that is being established by business associations together with institutional investors to recapitalise perfectly healthy unlisted Dutch medium-sized enterprises.

The government is also committed to supporting industry to seize opportunities in foreign growth markets.[30] This is aimed at maintaining the strong position of the Netherlands in existing markets and to expand its position in emerging markets. Support for internationalisation will be coordinated by ISO NL, the public-private strategic consultative body on international enterprise and international economic issues.[31] This includes NL Works that develops large public-private partnership programmes and supports and advises consortia of Dutch businesses and knowledge institutions.

5.2 Digitalisation of industry

The government's approach to digitalisation has been set out in the Dutch Digitalisation Strategy. In addition, the government is working with the professional field specifically for industry on implementing the Smart Industry programme.

The House of Representatives received a second update on the Dutch Digitalisation Strategy before the summer.[32] In line with the six priorities set out in the strategy (AI, data, connectivity, digital skills and inclusion, digital government and digital resilience), the government has set out as concretely as possible how digitalisation contributes to solving societal challenges and utilising economic opportunities, including industry. The European Commission published the European digitalisation strategy in March of this year. Parliament received the government's position on this on 14 April 2020.[33]

The coronavirus crisis has only further underlined the importance of digitalisation in industry and, at the same time, has highlighted our reliance on digital technology. It is of paramount importance therefore to strengthen the preconditions for digitalisation, such as good digital skills and investments in digital resilience and cybersecurity. The Digital Trust Center that was launched in 2018 encourages and facilitates businesses in improving online security independently or in a collaborative cyber resilience network. Many of the collaborative networks have representatives who work in industry.

In the area of cloud infrastructure, in 2019 the GAIA-X plan was launched as a German-French initiative with European ambitions. The initiative is currently being developed. GAIA-X aims to connect the European cloud infrastructure and to promote data use according to European standards. GAIA-X aims to strengthen European digital sovereignty for data storage and data processing by becoming less reliant on non-EU tech companies. Various Dutch companies have already joined and the initiative remains open to new participants. This is facilitated by the

[30] Progress report on the Trade Agenda, *Investeren in Perspectief – Goed voor de Wereld, Goed voor Nederlan*d ('Investing in Perspective – Good for the World, Good for the Netherlands'), Parliamentary Paper 34 952, no. 86.
[31] Parliamentary Paper ISO NL 2018, Parliamentary Paper 34 952, no. 40.
[32] Parliamentary Paper 26 643, no. 709
[33] Parliamentary Paper 22 112, no 2859

Minister of Economic Affairs and Climate Policy. Together with TNO and the Brainport Industries Campus (BIC), the Dutch Smart Industry platform is working on establishing a partnership with the initiators in view of setting up a potential Dutch GAIA-X-hub.

Artificial Intelligence (AI) is a key policy objective and has been set out in the *Strategic Action Plan for AI* (SAPAI, October 2019) with the aim of utilising economic and social opportunities for AI in a responsible, human-centric manner. The SAPAI includes strengthening the national knowledge and innovation base and human capital through public-private partnerships based on the approach of the Dutch AI Coalition. The AI Coalition now has 400 participants: large and small enterprises, ten ministries, all provinces, a number of large municipalities, all universities, TNO, many educational institutions, civil society organisations and larger regional AI collaborative networks. The Dutch AI Coalition has developed an *ambitious long-term integrated agenda* (*AiNed programme*)
The participants in the Dutch AI Coalition are currently working on AI training activities and broad awareness, developing data sub-solutions for AI applications, international collaboration (France, Germany, Benelux, US) and on innovative AI applications together with and for parties in healthcare, mobility/logistics, agriculture, energy, construction, defence, government services and not least industry, including the manufacturing industry.

Various parties have worked closely together in the past few years on strengthening the manufacturing industry by implementing the Smart Industry Agenda. It is a collaboration between public and private sector parties to encourage companies to start working with smart technology. There are still considerable unutilised opportunities, particularly for SMEs in the Smart Industry programme. This is a task not all businesses can take on independently. Collaboration between the government, the business community and knowledge institutions is indispensable to them. This is where the Smart Industry programme can help.

Under the programme collaborations have been established at regional scale, such as the Smart Industry field labs. Companies and knowledge institutions work together in the field labs, with support from the government, on developing, testing and implementing a Smart Industry solution. The government can also offer opportunities by submitting social issues. More than forty field labs have been set up in the last few years, as well as five smart industry hubs: SMITZH, BOOST, Zuid (South), Noordwest (North West) and most recently Hub Noord (North Hub). The purpose of these hubs is to galvanise multiple companies to start working with relevant technology. These hubs have made vouchers available to the SME sector for feasibility studies to test innovations.
The Smart Industry programme is currently being evaluated. Following the evaluation, the government together with the regional authorities and the other partners will consider how to continue the programme.

5.3 Human capital

In recent years, various efforts have been undertaken to ensure a sufficient supply of employees with the required skills in industry. The Technology Pact is helping to improve alignment of the education system with labour market needs in the technical sector, thereby reducing the shortage of technical staff. Much has been achieved and intake has risen considerably particularly at university and higher professional education level. The biggest challenge that lies ahead in the coming period is to train sufficient skilled workers at MBO (VET) level.

The core of the road map for the Human Capital Agendas of the Top Sectors 2020–2023 is the joint commitment on further collaboration between learning, working and innovating (learning communities). In the Smart Industry Field Labs employees and students learn how to work with existing and new technologies. There is a shortage, for instance, of robot programmers and operators, who are needed in the new industry. Robot programmers are therefore being trained in various Smart Industry Field Labs.
Given that processes are continuously changing, a one-off training programme at the start of one's career is inadequate. The world around us is changing and the urgency of lifelong learning is increasing. Dutch industry will only be able to remain competitive in the period ahead if there are sufficient people who have the right skill sets. Both the research universities, universities of applied sciences and MBO (VET) colleges have a role to play in taking action on the digital training overview and the flexibilisation of the official range of training programmes offered.

Attention will continuously need to be paid to the re-education, retraining and further training of the current workforce. This is initially the responsibility of employers and workers. The government facilitates this with the aim of achieving a learning culture. The government has already taken action in this area by implementing the SLIM scheme for employers to promote the learning culture in the SME sector, implementing an individual learning and development budget in the form of the STAP budget amounting to 218 million euros with effect from 2022, and the MKB-!Dee for SMEs ('SME !dea').[34] Under the 'NL Leert door' ('Continuing education in the Netherlands') scheme people can obtain development advice and training free of charge. From 2021, the government will launch a social supporting policy to boost this policy. Around 23 million euros will be made available for training and development, including practical training and the retraining scheme focusing on shortage occupations in the SME sector.[35]
These tools will support lifelong learning. This is particularly important at this point in time because some sectors have ground to halt while other sectors are flourishing as a result of the coronavirus crisis. This offers opportunities, but requires people and organisations to adapt to the new reality.

[34] Parliamentary Paper 30 012, no. 123
[35] Parliamentary Paper 35 420, no. 105

Further efforts focusing on the combination between working, learning and innovating is crucial, for instance in Skills Labs linked to Field Labs. Breeding grounds such the Brainport Industries Campus, where the school is located on the industrial estate, are indispensable. They make a positive contribution to the image of the technical industry and help to reduce the shortage of technical talent.

Brainport Industries Campus (BIC)
Brainport Industries Campus is also called the 'Factory of the Future' and is the face of the future high-tech manufacturing industry. It is a paragon of a successful industrial ecosystem, where high-tech suppliers, producers and knowledge institutions jointly work on innovating, producing and training under one roof. Because companies share high-quality facilities such as machines, laboratories and clean rooms and train the talent of future together with educational institutions in a hybrid learning environment, it is the ideal environment for stimulating digitalisation and cyber resilience in the SME sector.

5.4 Sustainability, circular economy and raw materials

In the letter on sustainable basic industries referred to earlier, I discussed the sustainability tasks for basic industry. In addition to this, it is important for industry as a whole to produce energy and raw materials more efficiently and to pursue circularity by handling raw materials, components and products in a different manner. An example is scaling up bio-based chemicals/plastics.

Supply chains can become more adaptive and more sustainable by using various solutions, including sustainable energy and value retention based on circular strategies, such as circular design and high-quality re-use, substituting critical materials for generally available materials, and a different method of production and consumption based on digitalisation (smart industry). Alongside material, process and production innovation, this will also require an active market demand that will factor in positive environmental and social performance to promote socially desirable innovative and sustainable technologies. Moreover, this ties in with the government's broader aim to work with industry on making supply chains more sustainable with awareness and control focusing on risks in long supply chains, including those to people and the environment.[36]

To achieve the above ambition, the government will make additional resources available for the raw materials ambitions in the Mission-driven Top Sector and Innovation Policy. For the Circular Economy mission with the accompanying Knowledge and Innovation Agenda, funds have been released from the budget of the Ministry of Infrastructure and Water Management for the government-wide circular economy implementation programme. Under this programme businesses,

[36] The government's policy on International Corporate Social Responsibility (ICSR) pursues broad compliance with the UN Guiding Principles on Business and Human Rights (UN Guiding Principles) and the OECD Guidelines for Multinational Enterprises (OECD Guidelines). The current ICSR policy is currently being evaluated. The results and conclusions will be sent to the House of Representatives this autumn.

knowledge partners, public authorities and social parties are jointly working on the transition to a circular economy based on five transition agendas.[37]

The road map to be drawn up jointly by these parties will form the basis for translating the already deployed and desired technologies into a portfolio approach under the Circular Economy mission. A broad analysis is also being carried out of the digitalisation opportunities and barriers relating to circular material passports under the five transition agendas. The Transition Agenda for the Manufacturing Industry consists of various projects within the circular manufacturing industry (in conjunction with the Accelerator and others). Whether further acceleration is feasible on the themes of wind farms, solar photovoltaic systems, high-tech equipment, batteries and heat as a service will be jointly explored with parties from the manufacturing industry. Further efforts will also be directed to the broad application of digitalisation under the circular manufacturing industry implementation programme ('Circular Economy & Smart Industry'). The current transition approach under the Transition Agenda for the Manufacturing Industry will be continued and strengthened through the Circular Economy Knowledge and Innovation Agenda. All players in and around the manufacturing industry supply chain, with a particular focus on the metallurgical industry, are invited to link their circular ambitions to the objectives of the circular manufacturing industry implementation programme.

In line with the European Commission's announcement on raw materials, the government will also commit efforts to innovation in the area of critical raw materials relating to waste processing, advanced materials and substitution.[38] Particular attention will be paid to the diversification of supply through partnerships with relevant third countries. These activities will contribute to a sustainable industrial sector, in which economic opportunities offered by the transition will also be utilised, in line with the European approach aimed at a green recovery.

5.5 The business climate for industry

The business climate for industry consists of multiple elements, such as the availability of labour, the knowledge infrastructure, accessibility, an attractive living environment and the tax regime. Although the burden on companies increased by 5.1 billion euros during the government's current term of office, overall the Dutch business climate is competitive, as endorsed by its fourth place ranking in the GCI Index. Maintaining an attractive business climate demands constant policy attention. Special areas of concern are the occasionally burdensome regulations and the digital infrastructure. Furthermore, the availability of production locations is under pressure in a number of regions. A needs assessment for spatial economic activity - including industry - was therefore drawn up for the National Strategy on

[37] Manufacturing industry, plastics, consumer goods, construction, and biomass and food.
[38] For the government's response to this, see the BNC file submitted by the minister of Foreign Affairs to the House of Representatives on 9 October 2020 (Parliamentary Paper 22 112, no. 2936)

Spatial Planning and the Environment (NOVI) to bring to the attention of the local and regional authorities that sufficient space should also be reserved for working.

The regulatory framework is essential for the competitive position of industry. One of the industries where this plays a role is life sciences/biotechnology. This relates to the development of new substances and the regulations on their actual production. The way in which new medicines are being developed is changing considerably. New and future products are often complex. In some cases, regulatory bottlenecks unnecessarily slow down the development of new Advanced Therapy Medicinal Products (ATMPs), for example.[39] The current COVID-19 crisis has shown that the swift development of a new innovative vaccine and therapy is required to deal with future pandemics at an early stage.

For a competitive business climate, it is important that companies can develop and produce products cost-effectively in the Netherlands. However, we must be mindful of whether the Netherlands is sufficiently competitive internationally, also for large enterprises. A considerable part of our economic activity is generated by large enterprises. In 2016, multinational enterprises generated 30% of Dutch value added.
By definition, multinationals have foreign connections, as they have subsidiaries or a parent company beyond Dutch borders. Their international network is one of the main contributors to their strong import and export position. The SME sector is more domestically focused, yet they often indirectly have a global reach serving as suppliers to multinationals. Over half of the export revenues of non-multinationals can be attributed to exports via other businesses, and multinationals in particular.[40]

The Dutch investment climate, focus areas and the approach to be adopted were discussed in detail in the letter on acquisition policy of April this year.[41] As announced in this letter, a comprehensive study is currently being conducted on the investment climate, the results of which are expected to be available in the first half of 2021.

5.6 Regional collaboration

The regional government plays an important role in creating a good business climate for industry and collaboration between the national government and the regions is therefore essential. As stated above, the various parties have worked closely together in recent years under the Smart Industry agenda. The regions are working on accelerating and broadening the smart industry approach in various ways. For example, in East Netherlands, where the approach is linked to the circular economy, and in South Holland, where an action agenda for the technological

[39] The licensing regulations for medical GMO products have been improved and optimised in the recent period. Regulatory bottlenecks have been removed and the processing times for licence applications for clinical trials have also been shortened (see Parliamentary Papers 27 428 and 25, no. 371, and Parliamentary Paper 27 428, no. 364).
[40] https://www.cbs.nl/nl-nl/achtergrond/2018/42/multinationals-en-niet-multinationals-2010-2016
[41] Parliamentary Paper 32 637, no. 415

industry is currently being developed. The European Digital Innovation Hubs are already paying particular attention to broadening the approach and consistency with the digitalisation of other sectors. Based partly on the current evaluation of the Smart Industry programme and the IPO recovery agenda, the national government is discussing with the regions how to strengthen industry by adopting a joint approach that builds on the current approach. We are looking at the possibilities offered by the European funds together with the provinces.[42]

6. Protection of the public interests in industry

As the final element of the industrial policy, the Dutch government will in some cases have to be more proactive than in the past to protect the economic, social and national security interests of the Netherlands.

With regard to economic security, in addition to the FDI Screening Regulation Implementation Act, the government is therefore working on an investment assessment system.[43] Under this system a national security risk assessment will be carried out for acquisitions and investments in the critical processes of companies engaged in developing high-quality sensitive technology. The assessment is based on the principle that the investment can proceed and the risks can be mitigated. An investment may be prohibited only in extreme cases. This will put the brakes on undesired changes in control. Investment assessments already apply to a number of critical processes in the telecommunications and electricity and gas sectors, for instance. The legislative proposal was submitted for internet consultation on 8 September 2020 and the intention is to present the law to the House of Representatives in the first quarter of 2021. Furthermore, the government is working on the introduction of a new sectoral investment assessment for the defence industry that will enable specific measures to be taken in the event of unwanted takeovers and investments.[44]

Outside the security domain, urgent strategic economic or public interests may also be at stake that require more active government involvement. Various options are possible. In extreme cases, this may lead to financial support for a business. In view of the public and economic interests, this year the government has therefore decided to support Smart Photonics[45] and Royal IHC[46]under strict conditions. However, the government has assumed a cautious role in this regard, and the risk is always that if a company falls into difficulties or is at risk of being taken over, the government will be called upon to invest in the company. The government believes that direct foreign investments contribute to our innovative capacity, our employment and our competitiveness. This equally applies to acquisitions and

[42] This is also in the spirit of the motion put forward by member of parliament Amhaouch et al. (Parliamentary Paper 35 438, no. 9), which also refers to the importance of regional investments in the manufacturing industry.
[43] Parliamentary Paper 30 821, nos 97 and 113.
[44] Parliamentary Paper 31 125, no. 113
[45] Parliamentary Paper 33 009, no. 92
[46] Parliamentary Paper 35 300 XIII, no. 102

investments in the Dutch manufacturing industry and in times of economic downturn. Even in these times, it is desirable that capital should in the first instance be provided by market parties, which will also reduce the need for financial support from the government. However, the government believes that there are specific situations and circumstances in which a more proactive role is required.

Investment in Smart Photonics
Photonics is an emerging key technology with opportunities for the Netherlands. Photonics will enable Dutch businesses to develop chips for new-generation applications in various areas, including communications, medical equipment, health care and industry. This will create an interesting global growth market in which the evolving photonics cluster in the Netherlands can capture market share. The government is supporting the development of photonics in the Netherlands as implemented in the National Photonics Agenda and has signed the partner covenant for the 'Photondelta' public-private partnership. The Smart Photonics production facility plays a key role in this emerging ecosystem. The company was looking for new investors to expand its production capacity. Third countries showed interest in making this investment. To ensure that the company and the ecosystem are retained for integrated photonics, the Ministry of Economic Affairs and Climate Policy made available 20 million euros in the form of a loan as part of a wider investment package for private investors. The House of Representatives received information on this on 29 June 2020 (see footnote 42). This is also in line with the European Commission's call to Member States to be wary of and to take action, where possible, against undesired market developments, such as the prevention of strategic dependencies or the interruption of critical processes.

The medicine shortages and the reliance on a small number of third country were already being addressed by the Ministry of Health, Welfare and Sport before the coronavirus crisis. This year, the coronavirus has shone a brighter spotlight on the vulnerabilities relating to the availability of medicines.[47] To ensure the supply of certain medicines the government intends to provide a state loan, subject to certain conditions, to InnoGenerics B.V., a Dutch initiative to take over the pharmaceutical company Apotex from its Indian parent company Aurobindo.[48] The factory in Leiden has an annual production capacity of 2.5 billion pills and is the largest production facility for generic medicines in the Netherlands.

The economic impact of the coronavirus crisis has increased the risk of businesses falling into difficulties. This also increases the pressure on the government to provide financial support to businesses. The government has therefore drawn up an assessment framework to enable it to assess whether, how and under what conditions government support is needed by struggling businesses.[49] On that basis

[47] This also applies to veterinary medicines.
[48] Parliamentary Paper 29 477, no. 661
[49] Parliamentary Paper 35 420, no. 36

the government will decide how and under what conditions support will be provided to individual businesses.

The assessment framework was drawn up on account of the coronavirus crisis. However, as stated above, there may be more economic or social reasons for providing financial support to business, which the government has also granted a number of times this year. In order to be properly prepared for this in the future, the government will examine in what way the coronavirus crisis assessment framework can be used for this purpose and whether any additions are needed.

Appendix 1: Concrete examples of Dutch participation in Europe

Quantum technology

The development of Quantum Technology is still in its infancy. International collaboration is essential for tackling technological challenges – no country or party can do so alone. The Netherlands works closely at European level, including in the Quantum Technologies Flagship that was launched under the chair of the Netherlands. The Netherlands also has strong ties with US, Japanese and Canadian academic groups and businesses. In view of the strategic and potential dual-use nature of the technology, the Netherlands is engaged in forming trusted communities with like-minded countries. On top of the €1 billion Quantum Flagship initiative, the European Commission intends to make major infrastructural investments in quantum computing and quantum communication. EuroQCI, the European Quantum Communication Infrastructure initiative, comprises an investment of €3 billion by the European Commission, the European Space Agency (ESA) and the Member States to build a pan-European Quantum Secure Communication Network that may ultimately culminate in a future quantum internet. Furthermore, during the State of the Union it was announced that the EU will invest up to €8 billion in new-generation supercomputers including quantum processors, which will be carried out by the EuroHPC Joint Undertaking, with a budget from the Digital Europe Programme (DEP), CEP2, Horizon Europe and co-financing from the EuroHPC members. The Netherlands' prominent position in the field of quantum technology is recognised and acclaimed worldwide. The Netherlands ranks third in terms of EU funding per researcher in the field of quantum technology, directly after Switzerland and Austria, and well above countries such as the United Kingdom, France and Germany.

Photonics

For the emerging integrated photonics industry in the Netherlands, European collaboration in both research and industrialisation is logical and necessary to safeguard its position as a production cluster and developer of innovative products. With various technology platforms, the Netherlands is a recognised leader in Europe and in that capacity has an important role to play in implementing the European agenda for key enabling technologies (KETs). For this reason, the Netherlands actively participates in the European Vanguard and in the strategic collaboration in product development, which includes France, Germany and Belgium, through the S3 platform, with the aim of maintaining and bolstering that position. For the same reason, the Netherlands has also jointly led various initiatives aimed at accelerating the development of integrated photonics, for example, in PhotonHub Europe, but also in the Dutch-Flemish collaboration and various Interreg programmes with Northwestern Europe.

All of the above is clearly aimed at maintaining a specialised manufacturing industry in the field of photonics in Europe and will specifically enable the Netherlands to distinguish itself on a global scale in integrated photonics on two powerful

production platforms and the associated value chain, from knowledge centres, development through to final assembly.

Semi-conductors (semicon)
The semi-conductor industry in the Netherlands consists of (1) companies that develop and produce machines for the worldwide production of advanced integrated circuits (ICs) and (2) companies engaged in the development and production of chip technology, electronic components, ICs and electronic systems, products that are widely applied in a range of sectors such as energy, mobility and transport, logistics, telecommunications, security, medical technology, aviation and space. The Netherlands has a very strong position, particularly in the production of advanced lithography machines (ASML). NXP is a key player in semi-conductor production, particularly automotive and security applications. The semi-conductor industry is highly knowledge-intensive and works closely with other national and international high-tech companies and knowledge institutions in the area of research and development. Various public-private innovation programmes are being undertaken in the sector, which works closely with various national and international players in the ecosystem. The possibility for further collaboration within Europe and joining the IPCEI micro-electronics initiative will be examined in close consultation with businesses in this sector.

Artificial Intelligence (AI)
AI is a basic innovation impacting all sectors, and the Netherlands aims to be among the AI leaders in Europe. European collaboration is essential for pooling investments and for achieving sufficient scale, also in view of the investments made by the US and China. The Strategic Action Plan for AI and the Dutch AI Coalition are seeking national and European collaboration for investments in research, potential shared test facilities and a shared legislative framework for human-centric AI. The latter is based on European standards and values, which enable European AI to stand out from the crowd globally. Dutch researchers and businesses know how to navigate their way to European programmes in the area of AI. Dutch partners are participating in all projects of the recent ICT-48 AI call and the Netherlands plays an active role in the European research networks CLAIRE (headquartered in the Netherlands) and ELLIS (with public-private research labs in the ICAI network in the Netherlands). The Netherlands is committed to strategic European collaboration, particularly with France, Germany and the Benelux. The European Commission has identified topics such as AI and Health, AI and Agrofood, AI and Mobility, and AI and Energy/Climate Change for the long term. The Netherlands is also keeping the door open for transatlantic collaboration with the US.

Life Sciences and Health (LSH)
The LSH sector is vitally important for society. It also is one of the fast-growing sectors worldwide. The Netherlands has a sizeable LSH sector, which has been enjoying strong growth in recent years. The Netherlands has gained an extra asset with the arrival of the European Medicines Agency (EMA). However, the

Netherlands cannot go it alone, European collaboration is essential, as evidenced by the coronavirus crisis.
In the field of medicines, we are looking at the production of end products, active substances and excipients in medicinal products. To boost production in the European Union, and in the Netherlands where possible, Europe can make a difference compared to third countries by committing efforts to innovative, efficient, sustainable and cleaner production processes, with a central focus on climate change and digitalisation, including robotisation. Furthermore, at European level, the Netherlands is working on a strong and concrete pharmaceutical strategy, which is scheduled to be available by the end of this year.

Defence industry
The Netherlands is committed to creating a level playing field by actively promoting European partnerships. The industrial participation policy contributes not only to strengthening but also to positioning the Dutch Defence technological and industrial base, and to creating a more level playing field by opening up closed supply chains. The Netherlands is also closely involved in structuring the European Defence Fund (EDF) so that Dutch SMEs can contribute to European collaboration. Based on the market and knowledge position of the Dutch defence industry on the international defence market, the Netherlands aims to rank among the top ten European countries in terms of funds awarded from the EDF. This requires structured and coordinated efforts and a strategy for European development programmes for defence capacities. The Ministry of Economic Affairs and Climate Policy and the Ministry of Defence have therefore established a high-level Interministerial Coordination Group (ICG) for the above and related European defence programmes. A Special Representative who effectively looks after the interests of the Dutch defence-related business community within such programmes forms part of strengthening coordination.

Space industry
Collaboration in the space industry has been firmly anchored in the European Space Agency from the outset. The ESA Member States continue to work together on autonomy and affordable access to and use of space for Europe. The EU has, meanwhile, developed autonomous European capacities in space with Galileo (satellite navigation) and Copernicus (earth observation) and from 2021 Space Situational Awareness and Govsatcom, essentially aimed at reducing reliance on the US and Russia. With the establishment of the European Space Research and Technology Centre (ESTEC) in Noordwijk and a growing competitive space industry, the Netherlands has benefited from European collaboration. The years ahead will offer considerable growth opportunities for this global growth sector, which can be regarded as enabling technology for a modern government and a competitive market sector.
The Netherlands will continue to focus on niche markets where Dutch businesses and knowledge institutions have developed a competitive edge, such as scientific instrumentation, earth observation and laser satellite communication.