Ministry of Economic Affairs,
Innovation, Digitalization and Energy of the
State of North Rhine-Westphalia

Foreign trade strategy

Global – digital – innovative – sustainable

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Table of contents

1	**Preliminary remarks by Minister Pinkwart**	**3**
2	**Framework conditions / status analysis / principles**	**5**
2.1	Foreign trade in times of the COVID-19 crisis	5
2.2	Europe – for open and fair world trade	6
2.2.1	Initial situation	6
2.2.2	Mandate for action	7
2.3	North Rhine-Westphalia as a location	8
2.3.1	The location	8
2.3.2	The potential	10
2.4	North Rhine-Westphalia as an exporter	11
2.4.1	Initial situation	11
2.4.2	The potential	13
3	**A foreign trade strategy for North Rhine-Westphalia**	**14**
3.1	Starting point: Goal of the foreign trade strategy	14
3.2	Megatrends	15
3.2.1	Globalisation	16
3.2.2	Digitalisation	18
3.2.3	Neo-ecology	21
3.2.4	Complexity	23
3.2.5	Natural disasters and pandemics	24
3.3	Areas of activity in foreign trade for North Rhine-Westphalia	25
3.3.1	Area of activity “Commitment to open markets”	26
3.3.2	Area of activity “Focus on innovation, technology and talents”	27
3.3.3	Area of activity “Sustainability as an opportunity”	29
3.3.4	Area of activity “Strategic adaption and faster response by leveraging agile structures”	31
	Reorganisation of foreign trade promotion	31
3.3.5	Performance criteria	33
3.4	Instruments	35
4	**Annex: COVID-19 pandemic review**	**37**

1 Preliminary remarks by Minister Pinkwart

In these challenging times, it is of particular importance to set clear priorities and act with an eye to the future. The continued goal of foreign trade promotion must be to offer a funding structure adapted to the needs of companies and corresponding measures to stimulate growth in the domestic economy.

In doing so, we want to focus even more on the megatrends of our time – digitalisation, globalisation, neo-ecology and, not least, the increasing complexity of global economic interdependencies.

Together with our companies, associations, chambers of commerce, universities, research institutions, clusters, our newly established foreign trade association and all other players in foreign trade promotion, we want to resolutely meet the enormous challenges of our time in order to put our state's economy in the best possible position on the international stage.

Given the impact and magnitude of the coronavirus crisis and the challenges it poses to our economy, how quickly and how strongly we emerge from the economic crisis is critical. For us as an export-oriented and investment-friendly state, this also depends to a large extent on the wise and determined use of the instruments of foreign trade.

The mobilisation of the internal market, which began after the lockdown, is also giving our companies better business opportunities again in what is still not only the closest, but above all the most integrated and therefore also the highest-volume export market.

In this context, we should in particular be thankful that the borders with our most important trading partner, the Netherlands, were not closed at any time. We have continued to work closely with our Dutch partners at all levels, both the central government and the neighbouring provinces, throughout the hard lockdown and have therefore been able to help maintain trade relations between North Rhine-Westphalia and the Netherlands as far as possible. The import of goods to North Rhine-Westphalia has also benefited from this, as it meant that goods destined for North Rhine-Westphalia could reach their destination without any major difficulties via the Port of Rotterdam. For the phase of economic recovery, but also to prevent future events of this kind, the good cooperative relationship with the Netherlands and the strong position of our international airports are examples of North Rhine-Westphalia's locational advantages from which we can certainly benefit in international competition.

The economic recovery measures launched by the EU on the initiative of Germany and France also provide the basis for enabling the member states hit particularly hard by the pandemic to recover economically as fast as possible, thereby stabilising the internal market and our closest sales markets. Only with a strong Europe will the export-oriented economy in North Rhine-Westphalia also gain strength.

But we now need new initiatives to strengthen free and fair world trade also in international trade relations.

For this reason, the State Government will work with the Federal Government and the European Commission to promote a comprehensive network of free trade agreements.

This also applies to the future relationship with the United Kingdom, of course. Without jeopardising the homogeneity of the internal market, it must be possible to bind the UK as closely as possible to the EU without depriving the country of any scope for independent development. We will continue to work for a constructive dialogue in the interests of the good and important economic and trade relations with the United Kingdom.

The pandemic and the manifold economic consequences associated with it also give us cause to reflect on many aspects of how our foreign trade is structured.

This applies, for example, to our supply chains, which we should diversify as appropriate for the various sectors.

Digital infrastructures and digital modernisation have received increased attention in the wake of the restrictions and limitations to everyday life imposed by the coronavirus pandemic. The restrictions on interpersonal contact reveal that the government needs to invest even more in the digitalisation of public administration at all levels. The crisis has also made it unmistakeably clear that the degree of digitalisation of a company is a key factor for its success.

In addition to digitalisation, the economy is also facing a profound transformation due to climate change. Companies must fundamentally change production processes and products with high greenhouse gas intensity. The President of the European Commission Ursula von der Leyen recently called for the European Union's greenhouse gases to be reduced by at least 55 percent below 1990 levels by 2030. North Rhine-Westphalia, with its large number of electricity generators and energy-intensive companies, faces a particular challenge in mastering decarbonisation. It is therefore important to push investment in climate protection with the help of appropriate measures to stabilise the economy.

These fields are central elements of a comprehensive innovation strategy that keeps our economy competitive, making investments in them of paramount importance. The European Union, the Federal Government, the states and local authorities must all continue to provide all the support they can for public investment in the modernisation of the economy and, by improving the regulatory framework, provide greater encouragement for the necessary private investment.

This includes, among other things, public investment in qualitative, innovative public services and sustainable infrastructures and overall manageable cost burdens for businesses and companies.

Particularly in this economic phase, we need to focus on investment, digitalisation, innovation, modernisation and removal of obstacles to prepare for the next upturn. Because the more we invest in the opportunities of tomorrow, the faster and better we can master the challenges of today.

However, we will only be really successful in injecting renewed vigour and innovation into our economy if we strengthen the international exchange between companies, research institutions, start-ups, political decision-makers and administration. This is why the promotion of international innovation partnerships is not only one of the central elements of our foreign trade strategy, but is also indispensable if we are to emerge from this crisis stronger and more effective.

In view of the rapid pace of new developments, the foreign trade strategy provides us with the flexible framework we need to be able to respond to the many challenges we face in an agile and timely manner. In doing so, we want to take the megatrends and corresponding fields of action as guiding maxims, while always keeping an eye on the volatile development of the world markets and the international challenges and interdependencies when designing specific measures, projects and instruments, in order to always offer our economy the necessary support where it is needed.

Prof. Dr. Andreas Pinkwart
Minister of Economic Affairs, Innovation, Digitalization and Energy of the State of North Rhine-Westphalia

2 Framework conditions / status analysis / principles

2.1 Foreign trade in times of the COVID-19 crisis

The COVID-19 pandemic poses major challenges to our state's position in foreign trade.

The economy is facing the greatest crisis since the end of World War II. Like all of Germany, North Rhine-Westphalia is massively affected by the pandemic. At the beginning of the crisis, this was mainly felt in supply-side restrictions in the delivery chains. In the past few weeks, restrictions on entering and leaving the country have had an increasingly negative impact, as they make necessary service and maintenance work on internationally traded assets more difficult. The extent to which the economic downturn in the economies particularly affected by the coronavirus will impact demand for economic goods from North Rhine Westphalia cannot yet be definitively predicted. Although production has resumed in China, and most EU countries seem to have the worst behind them, other economic areas such as the United States and the South American continent, as well as India, are showing reason for concern. For its part, the export-intensive economy of NRW requires that the advantages of the international division of labour, in particular the acquisition of durable goods and private investment, are not put on too long a hiatus or even permanently reduced.

It is to be noted as one encouraging glimmer of hope that the situation of German exporters has recovered somewhat; the downturn of the German economy is less severe than expected. According to the ifo Institute, it will shrink by 5.2 percent this year. In the summer, researchers had predicted a decline of as much as 6.7 percent. On the other hand, growth in economic output will be lower in the coming year: the ifo Institute now expects 5.1 percent instead of 6.4 percent. The increase expected for 2022 amounts to 1.7 percent.[1]

The trade conflicts plaguing us, however, remain unresolved, and nationalist tendencies have even increased in the wake of the coronavirus pandemic. These in turn engender protectionist tendencies, which endanger the advantages of the international division of labour.

[1] https://www.ifo.de/ifo-konjunkturprognose/20200922

Coming out of the crisis stronger
Economic stimulus packages have been passed at the federal and state levels with the aim of resuscitating the economy and boost growth.

The State Government in particular has developed steps for long-term qualitative growth to make the economy fit for dynamic development.

In terms of foreign trade, the Government stresses the indispensability of a smoothly functioning internal market in the European Union and unimpeded global trade in goods as soon as possible and advocates wise coordination by the European Union. Isolated border closures, which fortunately have never occurred between North Rhine-Westphalia and our most important and closest trading partner, the Netherlands, must be avoided in future throughout the Schengen area, even in crisis situations. The full freedom of movement of persons and services in the Schengen system is a key competitive advantage of the European internal market and therefore essential for economic recovery in the EU. This also applies to intra-European supply chains, which must be protected by coordinated measures against unilateral disruptions.

But it is not only the European Economic Area that needs to be enabled to regain its potential for growth. North Rhine-Westphalia, with its highly competitive, export-oriented companies and as the largest German location for direct foreign investment, is closely integrated into international trade and economic relations. Our companies particularly benefit from unhindered access to international markets. North Rhine-Westphalia as a business location also derives a high proportion of its innovative strength from the foreign companies that come and establish locations in the state. To cope with the economic consequences of the coronavirus crisis, we more than ever need free world trade and, if possible, global protection of investment. The State Government will intensify its efforts to achieve this together with the Federal Government and the European Commission. The highest priority – particularly for internationally operating small and medium-sized enterprises (SMEs) – must be the development of new dynamics within the WTO multilateral trading system to establish

common rules for fair competition and legal certainty for investors.

Former Commissioner for Trade Phil Hogan commented as follows:
"In terms of drawing conclusions from the crisis, we need to think about how to ensure the Eu's strategic autonomy. Strategic autonomy does not mean that we should aim for self-sufficiency. Given the complexity of supply chains, this would be an unattainable goal. (...) For example, we need to look at how to build resilient supply chains, based on diversification, acknowledging the simple fact that we will not be able to manufacture everything locally."

The integrity of the internal market must not be jeopardised by isolated national stockpiling strategies. Addressing the European Union, it is now also important to further simplify state aid and public procurement law and its procedures in order to pave the way for fast qualitative growth. To this end, the requirements of state aid law must be designed to promote innovation, digitalisation and the mitigation of climate change. The State Government is lobbying the European Commission and the Federal Government for this.

Every crisis is also an opportunity for a new beginning. That is why we want to use the foreign trade strategy – also in conjunction with the digital strategy, the industrial policy model, the hydrogen strategy and the innovation strategy – to highlight the measures and ways in which North Rhine-Westphalia can adapt its outstanding international competitive position to new developments, open up new markets and exploit the potential for the performance and future viability of the economy even better through international partnerships for innovation.

We will further increase the attractiveness of North Rhine-Westphalia as a business location through investment-friendly framework conditions coupled with the cosmopolitan attitude of our population and based on a research and science landscape that no other region of comparable size can offer.

2.2 Europe – for open and fair world trade

2.2.1 Initial situation

The European Union is one of the most export-oriented economies in the world. It is also the world's largest single market and trading bloc, the largest recipient and source of foreign investment and the main trading partner for over 80 countries.

In view of these superlatives, the commitment to free world trade with fair international competitive conditions provides important impulses for economic growth and employment worldwide and is the basis and prerequisite for prosperity in the EU. This makes the EU the reference model for integrated markets and added-value international division of labour in an increasingly volatile international landscape; a model that can also serve as a basis for counteracting the recent trend towards isolationism. The EU is the main driver for the removal of trade barriers, investment security and a multilateral trade regime.

However, the high number of new restrictions hindering EU exports and the preference given to domestic investors in many national markets show that protectionism in world trade has still not been overcome and has even been on the rise again in recent years as a supposed means of protection against transformational processes. The European Commission pointed this out in its annual report on barriers to trade and investment. For the foreign trade policy of NRW, this is a mandate to step up our efforts to keep global trade flows open.

2.2.2 Mandate for action

The State Government has long advocated open markets, fair international competition and trade liberalisation based on clear, predictable and multilaterally agreed rules. We are intensively pursuing this goal in close cooperation with the Federal Government and business associations in the context of member state participation in the negotiation and conclusion of multilateral trade agreements within the framework of the WTO, bilateral free trade agreements, international instruments for dispute settlement and investment protection agreements. At the European level, we promote our goals with the representation of the State of North Rhine-Westphalia and in cooperation with the chamber representations and business associations.

In this we are guided by the following principles:
Easily understandable rules that facilitate international trade for companies and open up access to previously more isolated markets are a prerequisite for the conclusion of new agreements. Regulations on the protection of intellectual property, the recognition of national standards, viable agreements on issues such as visa facilitation, the further recognition of professional qualifications and the strengthening of digital trade are also required at the European level.

Trade agreements can help companies find new sales markets, increase profits and create jobs – particularly in an export-oriented country such as Germany. Not only big corporations, but first and foremost small and medium-sized enterprises benefit from the elimination of customs duties and other trade barriers. For instance, the EU Commission stated in its SME strategy as early as March 2020 that the number of SMEs exporting to other member states could be higher if regulations were reduced and simplified. To date, only 17% of all SMEs in the manufacturing sector export within the internal market, for example. SMEs perceive the different procedures and administrative provisions in the member states as complex and burdensome, and compliance with them has a greater impact on SMEs than on larger corporations.[2]

A sound trade policy must also include instruments for trade protection, however, because only fair trade is free trade. Against this background, it is particularly important to provide an answer for trading and subsidising practices by foreign countries that distort competition and to regularly update the protective instruments of the WTO's and the EU's trade policy in order to resolutely meet the challenges of a globalised world. Anti-dumping measures and common European rules on state-regulated foreign direct investment can be established to protect European companies and industrial locations more effectively against unfair competition.

[2] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of Regions: An SME Strategy for a sustainable and digital Europe, 10 March 2020, p. 7 ff. (COM 2020 103)

2.3 North Rhine-Westphalia as a location

2.3.1 The location

North Rhine-Westphalia is a dynamic business location in the heart of Europe. It is the most populous and also the most densely populated of the 16 federal states of Germany. There are 17.9 million people living in an area of 34,112 square kilometres. With its 14 million inhabitants, the Rhine-Ruhr Metropolitan Region is the largest metropolitan area in Germany and therefore the only location in Germany that is comparable with the largest European metropolitan regions of London, Moscow, Paris and Istanbul in terms of economic power and potential.

With 711 billion euros, North Rhine-Westphalia generates around 21 percent of Germany's gross domestic product (GDP), by far surpassing all other federal states. The overall trade volume of North Rhine-Westphalia is around 439 billion euros.

20 of Germany's 50 best-performing companies are based in North Rhine-Westphalia, e.g. Bayer, Bertelsmann, Deutsche Post, Deutsche Telekom, E.ON, Henkel, Metro, Rewe, RWE and ThyssenKrupp. North Rhine-Westphalia is home to major world-class industrial companies as well as hundreds of smaller and medium-sized "hidden champions" that are leaders in their fields.

North Rhine-Westphalia is the state of SMEs and strong family-owned businesses: more than 713,000 small and medium-sized enterprises (SMEs) form the economic backbone of the region. They account for 99.4 percent of all businesses in the state. The skilled trades sector is represented by around 190,000 companies in North Rhine-Westphalia and, with over 1.1 million employees, is also one of the largest employers in the state.[5]

In addition, North Rhine-Westphalia has an outstanding transport infrastructure. Two international airports (Düsseldorf, Cologne/Bonn) and four others with European connections are located in North Rhine-Westphalia. More than 2,250 km of motorways, 17,600 km of national and regional roads and 6,000 km of rail enable the transport of people and goods. The world's largest

[3] https://de.statista.com/statistik/daten/studie/5023/umfrage/entwicklung-des-bruttoinlandsprodukts-von-nordrhein-westfalen-seit-1970
[4] Federal Statistical Office (Genesis), 2020
[5] North Rhine-Westphalia: Germany's economic centre; NRW.Invest

inland port is located in Duisburg, a hub on the New Silk Road. 720 km of waterways with 120 ports are available for the transport of goods to their destinations. Of the top 25 largest logistics companies in Germany, nine are headquartered in North Rhine-Westphalia, including Deutsche Post DHL, Rhenus and UPS Germany. Around one quarter of all logistics centres in Germany are located in North Rhine-Westphalia. Another source of pride for the region is its world-class logistics research, as represented by the Fraunhofer Institute for Material Flow and Logistics in Dortmund. Europe's largest logistics research cluster, developing the logistics of tomorrow, is operated from here.

North Rhine-Westphalia grows with the challenges and shapes the dynamic development of the business location. This has created attractive city destinations as well as rural living environments and creative urban spaces with a high quality of life in the heart of Europe.

These locational advantages mean that North Rhine-Westphalia is Germany's number one investment location. More than 20,000 foreign companies have already invested in North Rhine-Westphalia and manage their German or European business operations from here. This includes global corporations such as 3M, BP, Ericsson, Ford, Huawei, QVC, UPS, Toyota, TCS and Vodafone. North Rhine-Westphalia enjoys more investments from abroad than any other German federal state: the location attracts 23.3 percent of all foreign direct investment (FDI) in Germany.[6]

More than 160 million people live within a 500 km radius of the state capital of Düsseldorf alone – this corresponds to almost 1/3 of all consumers in the EU. This radius describes one of the most competitive regions in the EU. The well-developed cross-border transport infrastructure with a dense motorway network, international airports and a waterway connection to the two large international ports of Antwerp and Rotterdam, with Europe's largest inland port of Duisburg as a logistics hub, transhipment point and distribution centre mean that no other location can compete in reaching so many people with such a high purchasing power within such short distances. For these reasons, North Rhine-Westphalia is the ideal location as a springboard for the European market. This makes North Rhine-Westphalia a particularly attractive location for trade and service activities.

[6] https://www.nrwinvest.com/de/standort-nrw/das-spricht-fuer-nrw/investitionsstandort-nr-1-in-deutschland

2.3.2 The potential

North Rhine-Westphalia has built and expanded its strong economic position over many decades. From a region traditionally characterised by mining and industry, North Rhine-Westphalia has long since developed into a modern industrial and service location.

The State Government supports the establishment of innovative new companies and start-ups. The goal is for North Rhine-Westphalia to be among the world's 30 leading start-up ecosystems by 2025.

With the "New Start-up Era North Rhine-Westphalia", a forward-looking start-up strategy was formulated which takes into account the entire start-up process. In addition to funding and advisory services that are available to all founders, the strategy also highlights and summarises special offers for sector-specific founders.

Universities are also highly important for start-ups. They contribute decisively to the transfer of knowledge and research and encourage scientists with their innovative ideas to venture a start-up. With six Exzellenz Start-up Center.NRW universities, the State Government intends to develop excellence in start-ups. The six selected universities (Aachen, Bochum, Dortmund, Cologne, Münster, Paderborn) will receive a total of 150 million euros by the end of 2024.

North Rhine-Westphalia is also excellently positioned in the field of battery research with the establishment of the "Battery Cell Research Production". In addition to the WWU Münster with the Battery Research Centre (MEET), the Helmholtz Institute Münster and the RWTH Aachen are also involved in the project. It is managed by the Fraunhofer Society.

North Rhine-Westphalia also has a lively start-up scene. Young start-ups in the seeding and foundation phase can now find a dense network of supporters in North Rhine-Westphalia. Incubators such as "Startplatz" in the Rhine metropolises of Düsseldorf and Cologne, "Garage 33", the "Founders Foundation" or "Co:Forward" in the Aachen region support start-ups with workspaces and qualification activities. In 2016, the State Government established six regional "digital hubs" in Aachen, Bonn, Cologne, Düsseldorf/Rhineland, the Münsterland and the Ruhr region to connect start-ups with SMEs and large industrial companies. The DWNRW hubs offer specific support services for growth and networking of digital start-ups and act as regional contacts for the "NRW ecosystem". This is complemented by two federally funded digital hubs in the fields of logistics (Dortmund) and insurtech (Cologne). More and more companies from NRW are also developing their own accelerator concepts in order to invest in innovative technologies and business models.

With the NRW.BANK, North Rhine-Westphalia has by far the most active state development institute in Germany and offers a broad range of activities in the field of venture capital. In particular, the NRW.BANK.SeedFonds, NRW.BANK.Venture Fonds as well as the fund-of-funds activities, which are active throughout the state, are becoming increasingly effective. The two federal venture capital funds, High-Tech Gründerfonds and Coparion, are also based in North Rhine-Westphalia. This offer is complemented by numerous private venture capital companies.

Not least, North Rhine-Westphalia can boast efficient, decentralised administrative structures and capable local governments by international standards. The State Government will continue to improve this locational factor with a variety of digitisation initiatives. Already now, the Wirtschafts-Service-Portal.NRW website enables digital business registration with interactive support and is being expanded into a comprehensive service portal for the business community. A digitally supported commercial site management system, on the basis of which the transparency of attractive commercial sites can be increased and site marketing can be further developed, is being tested in the Rhineland region.

North Rhine-Westphalia is also attractive due to its excellent research and development facilities. No other region in Europe has so many scientific institutions in an area of comparable size. 68 universities, over 60 technology and start-up centres and more than 50 non-university research institutions form one of the densest research networks in Europe and offer ideal conditions for the transfer of technology. Close cooperation between business, science and research is an important prerequisite for the innovative strength of the location. The research facilities include internationally renowned institutions such as the Jülich Research Centre, the German Aerospace Centre and the 14 Fraunhofer Institutes and 12 Max Planck Institutes jointly funded by the Federal and State Governments.

Add to this the high level of research competence and the capable innovative companies of all size categories in North Rhine-Westphalia and it becomes clear why the

state is the ideal location for the increasingly important cooperation between companies, research and administration required to innovate and transform the economy.

2.4 North Rhine-Westphalia as an exporter

2.4.1 Initial situation

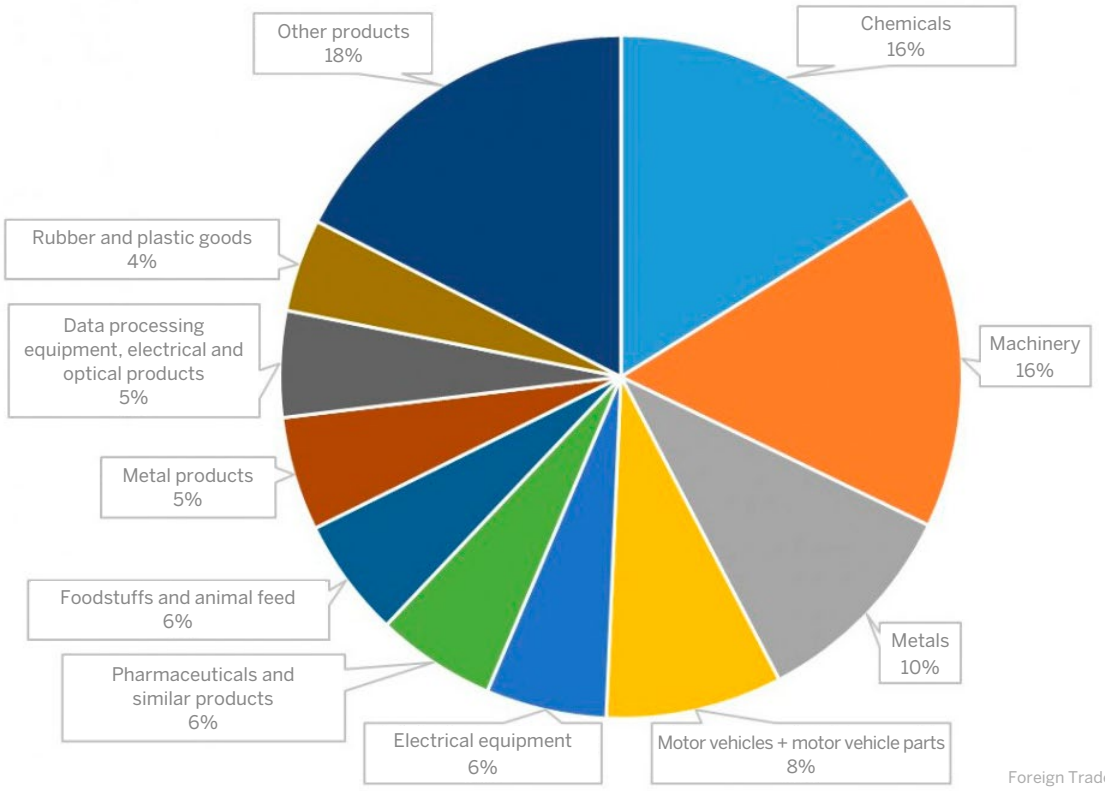
With an export volume of 194 billion euros (2019), North Rhine-Westphalia has been one of the three federal states with the highest export volume for many years. If the economic strength of the state as a whole is taken into account, however, there is still room for improvement.

In 2019, more than 60 percent of all exports from North Rhine-Westphalia went to EU countries. Compared with Germany as a whole, products from the chemical industry and metal production dominate the export goods in North Rhine-Westphalia. North Rhine-Westphalia delivers a higher proportion of its exports to EU countries than the rest of Germany.

The most significant export countries in terms of volume are the Netherlands, France, the United States and the People's Republic of China. The most important exported goods are chemical products, machinery, metals as well as motor vehicles and their parts.

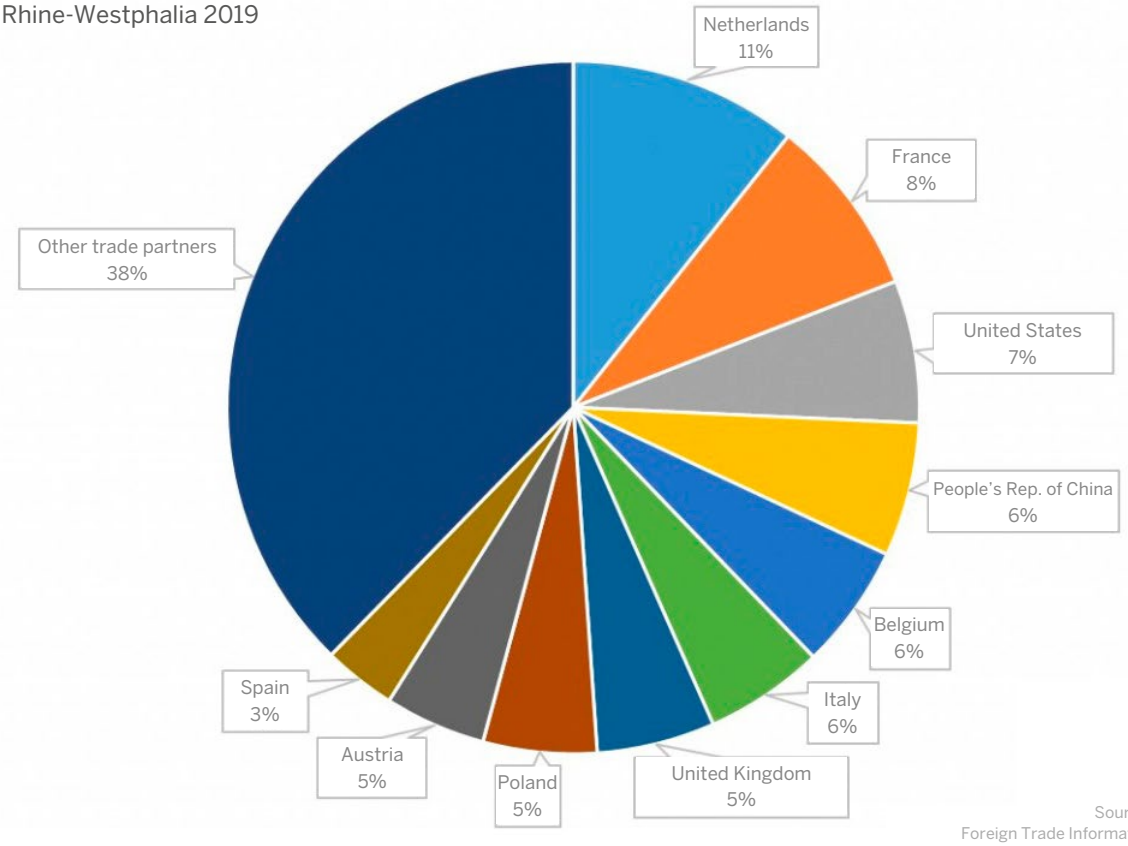
In terms of imports, the Netherlands, the People's Republic of China, France and Belgium are North Rhine-Westphalia's most significant supplier countries. The most important imported goods are data processing equipment, electrical and optical products, motor vehicles and motor vehicle parts, crude oil and natural gas, chemical products and metals.

Foreign trade – export by category of goods for North Rhine-Westphalia 2019



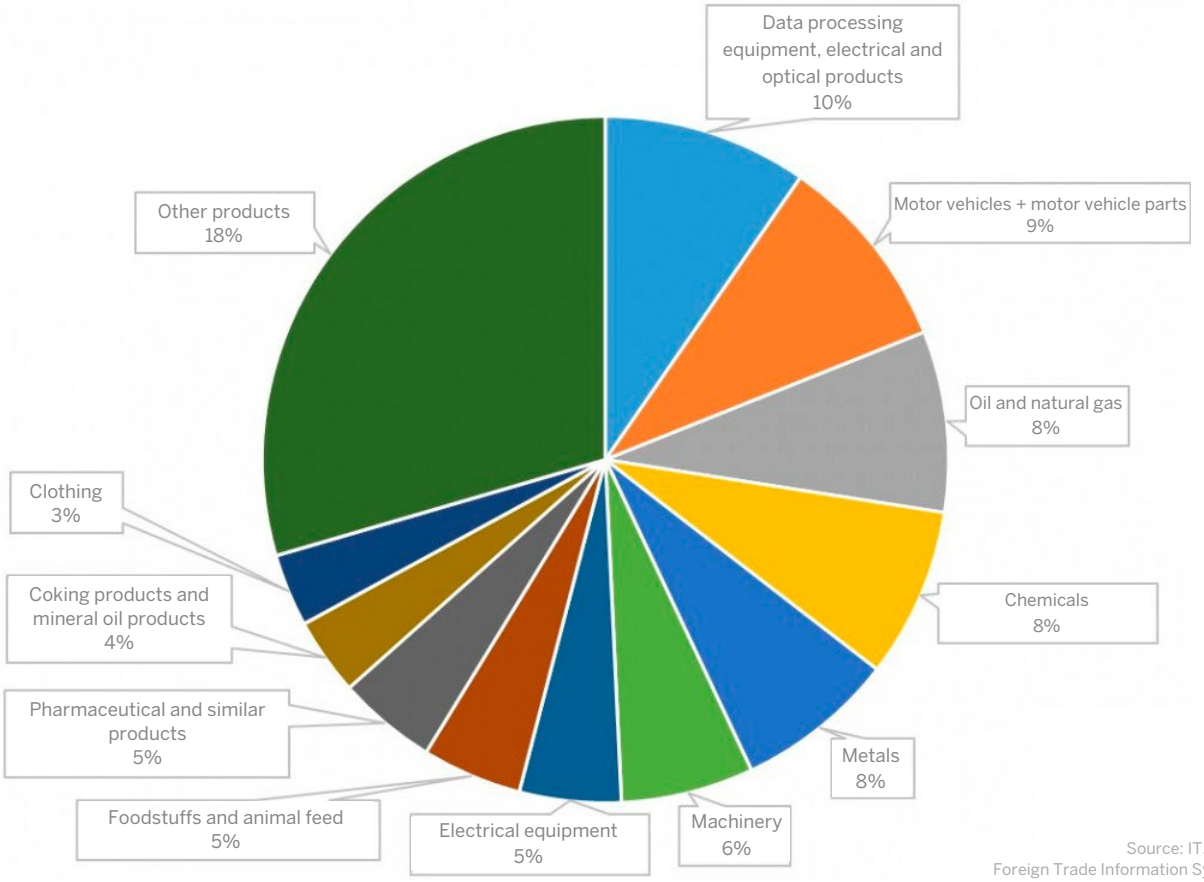
Source: IT.NRW, Foreign Trade Information System

Foreign trade – export by trade partners for North Rhine-Westphalia 2019



Source: IT.NRW, Foreign Trade Information System

Foreign trade – import by category of goods for North Rhine-Westphalia 2019



Source: IT.NRW, Foreign Trade Information System

2.4.2 The potential

North Rhine-Westphalia fulfils all the requirements for expanding this strong position. The strategic goal of the State Government is to support companies in opening up and defending markets. Our world is faced with ever faster change. Successful companies meet this challenge through adaptations and agile structures. Here, among other things, North Rhine-Westphalia can rely on its highly efficient, often family-run small and medium-sized enterprises. With their market success, they have already shown in the past that they can identify trends early on and integrate them into their business models.

In order to distinguish themselves from cheaper products, industrial suppliers in North Rhine-Westphalia are increasingly combining their products with complementary services. These investment goods-related services are not included in trade statistics, but are becoming increasingly important and are used by companies in NRW to create added value and to distinguish themselves from the competition.

The locational advantages of North Rhine-Westphalia described above also facilitate the continuous penetration of foreign markets.

This means that also the large companies established in North Rhine-Westphalia often enjoy the best conditions: With their strength of capital, large number of qualified employees, international networks as well as research and development capacities, they are ideally placed to develop new products, processes and (digital) business models. In cooperation with the state's universities and research institutions and by leveraging a dynamic start-up scene, they can initiate innovative solutions to problems in their respective industries and develop new products and processes for successful establishment on the world market.

3 A foreign trade strategy for North Rhine-Westphalia

3.1 Starting point: Goal of the foreign trade strategy

In our market economy, a shrewd foreign trade strategy supports the activities of the economy with the goal of securing attractive and growth-promoting direct investment to North Rhine-Westphalia and opening up high-growth foreign markets with an eye to the future for our companies. This goal can only be pursued successfully if the framework conditions under which companies operate internationally are known and the target-oriented mandates for action are derived from this.

In recent years, the growth of world trade has slackened noticeably. It was still around eight percent from 1992 to 2000, and 6.5 percent from 2000 to 2007. In the last 13 years from 2007 to the present, however, world trade has grown by only three percent. At the same time, the slowdown in economic growth has been less pronounced. While global trade grew at about twice the rate of global production until 2010, both are now growing at a similar rate. As a result, global economic growth has become much less trade-intensive. Several factors have contributed to this:

- The years leading up to the financial crisis were marked by a liberalisation of trade and a reduction in customs duties. In recent years, however, the commitment to free trade has waned, with growing protectionism instead crippling the international exchange of goods.

- The share of the emerging markets in the global economy and its growth is steadily increasing. However, the elasticity of trade is much lower in emerging markets than in advanced economies. This means that the growing importance of these countries reduces the elasticity of global trade.

- China's share of global economic output in particular is growing steadily. The country's focus on economic independence has reduced its reliance on imports for economic growth.

- Investment in equipment has lost importance worldwide compared to consumption, in particular of services. While investment goods are often traded across borders, consumption often takes place within national borders.

- In purely arithmetical terms, world trade is also reduced when raw material prices (calculated in US dollars) fall.

- Many exporters – especially from Germany – have invested heavily abroad for years in order to benefit from the advantages of manufacturing close to the customer. This does not come at the expense of domestic locations, because it also secures added value at home, such as for central services; though this can slow down the growth of the share of exports.

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It is also questionable how the ambitious European climate targets will affect international trade. A one-sided burden on European companies would be counterproductive in terms of economic and climate policy ("carbon leakage"). For this reason as many other economies as possible should be convinced to introduce appropriate pricing of CO_2.

3.2 Megatrends

In light of this, five megatrends can be identified which form the basis of a foreign trade strategy for North Rhine-Westphalia (see Figure 1). The essential strategic areas of activity (see 3.3) can be derived from these.

Megatrends are changing the general conditions for foreign trade

Globalisation		**International interdependency** of economies and openness of markets.
Digitalisation		**Restructuring of processes** and organisations by means of current (digital) **technologies** and methods.
Neo-ecology		**Economic action** associated with limited **resources** and intact ecosys-tems.
Complexity		Increasing **multidimensionality** of current and future challenges and opportunities.
Natural disasters and pandemics		**Realignment** of economic focus due to unforesee-able events such as **disasters** and **pandemics.**

3.2.1 Globalisation

Due to its location and economic power, North Rhine-Westphalia is closely intertwined with numerous economic areas. In addition to the European internal market, which forms the backbone of our foreign trade activities, we have extensive cross-border trade relations with all other major economic areas.

Traditionally, the North American continent with the USA and Japan as a friendly anchor in East Asia are of particular importance. Relations with the Soviet Union and its successor states have also been strong across system boundaries since the days of the Cold War. These experiences have helped to forge a resilient bond with the emerging economic world power that is China. Over the last decade, North Rhine-Westphalia has also intensified its links with another Asian economic power: India. Economic relations with the ASEAN states in South-East Asia, with Latin America and with our neighbouring continent of Africa promise further potential. Thanks to the large number of internationally operating companies with high market shares and export volumes in many sectors, there is also a good basis for intensifying cooperation on these three continents. In addition to conventional international trade, companies also use instruments such as direct investment and strategic alliances.

Due to its advantageous geographical location, North Rhine-Westphalia benefits particularly strongly from globalisation and the integrated European internal market. The state is located in the heart of Europe and borders on the highly industrialised EU member states of the Netherlands and Belgium. In the Rhine-Ruhr Metropolitan Region, North Rhine-Westphalia has a location with international appeal and significance that is unique in Germany.

This is also reflected in the strong orientation towards foreign trade of North Rhine-Westphalia's economy and its focus on the European market. For example, eight of the ten most important countries for export and import are located in Europe.[7/8]

The close networking of companies from NRW within Europe also offers opportunities for the joint development of third-party markets. Cooperation with European partners can establish a balance between competitive advantages and disadvantages and relevant offers can be developed jointly, in particular for markets that are still less developed. The State Government careful-

[7] www.it.nrw/statistik/eckdaten/ausfuhr-und-einfuhr-nach-den-wichtigsten-verbrauchs-bzw-herstellungslaendern-2107
[8] www.export-app.de/uploads/Aussenwirtschaftsreport-NRW-2018%202019.pdf

ly assesses its foreign trade activities in the context of the respective political relations and operates within the framework set by the Federal Government and the European Union.

Consistent internationalisation of the economy results in considerable welfare gains. More than 20,000 foreign companies employ over one million people in North Rhine-Westphalia.[9] Foreign direct investment helps create thousands of new jobs in North Rhine-Westphalia every year.[10] The high share of exports from companies established in North Rhine-Westphalia also secures and creates jobs, enables our companies to participate in global growth markets and makes the economy more robust against fluctuations of the internal market.

Another effect of global trade relations that should not be underestimated is the resulting competitive pressure, which forces local companies to flexibly adapt and further develop their business model to the requirements of international markets in order to defend or expand the market position they have achieved in competition. In this way, globalisation fosters innovative strength of companies and increases the wages of employees. Above all, the many small and medium-sizes enterprises which are world leaders in their markets and reliably maintain their high market shares across all technological changes are a good example of this strength of NRW's economy gained through globalisation. Foreign companies reinforce this trend and push forward the development of the business location through innovations and know-how.

This trend towards globalisation has, however, been slowing down for some years now. The competitive pressures associated with globalisation, distortions of competition by state-owned corporations and the increasingly difficult protection of intellectual property are tempting the traditional champions of free trade, first and foremost the United States, to adopt protectionist defensive measures. Economic sanctions such as those imposed against Russia have resulted in the closing of markets and the establishment of governmental localisation requirements. This poses new challenges for globalisation. Even countries with a usually great affinity for free trade are threatening to withdraw from global cooperation and the mutual opening of markets. The UK's departure from the EU shows that, even in affluent Western societies, moving away from multilateralism can become politically acceptable to a majority. This is a dangerous development, because in times of cross-border production, globally harmonised coordination and regulation are essential.

In addition, unilateral protectionist measures reduce the scope companies are afforded for planning and investment. This can be seen in the economic consequences of the UK's leaving the EU, for example, which, despite a transitional phase, is already leading to a significant decline in trade volume with the UK[11] and is also having a noticeable impact on the business of the overwhelming majority of NRW companies involved in and with the UK.[12]

The development of trade restrictions and the increase in trade conflicts are also worrying. Since 2009, the number of trade barriers imposed by WTO members has been steadily increasing and stood at nearly 1,300 barriers at the end of 2019. Ongoing trade conflicts between political and economic heavyweights also show that market openness can no longer be taken for granted.

A sharp decline in global trade volumes has been observed in the wake of the coronavirus pandemic. The drastic economic consequences suggest that the pandemic will also permanently change the global economy in the long term. In the long run, the coronavirus is unlikely to jeopardise globalisation altogether, though it is to be expected that challenges already apparent in recent years will intensify. Trade relations between the USA and China are currently in the process of taking a whole new shape.

In addition, restrictions on production in the countries most affected by the virus and restrictions on entering and leaving those countries imposed to prevent its spread, as well as the near-total collapse of passenger air travel in the initial phase, have highlighted the volatility of the international division of labour. This intensifies worldwide considerations of greater regionalisation and diversification of supply chains (nearshoring), which had already begun earlier due to local added-value requirements, among other things.

[9] www.nrwinvest.com/de/ueber-uns/pressemitteilungen/detail/news/detail/News/auslaendische-direktinvestitionen-in-nordrhein-westfalen-2019-weiter-auf-erfolgskurs-tuerkei-erstmal

[10] www.nrwinvest.com/fileadmin/Redaktion/downloads/FACTSHEET_FDI_Reporting_2019.pdf

[11] https://export-app.de/uploads/Aussenwirtschaftsreport-NRW-2018%202019.pdf

[12] www.wirtschaft.nrw/sites/default/files/asset/document/iw-abschlussbericht_brexit-nrw_20190320.pdf

[13] www.gtai.de/gtai-de/trade/zoll/zollbericht/wto/versteckter-protektionismus-ist-im-trend-157398

3.2.2 Digitalisation

Digitalisation is a key market driver, serving high demands for transparency and capability to deliver as well as the desire for individualised products and services. Digital technologies such as robotics, artificial intelligence, blockchain and cloud computing are becoming the biggest drivers of growth in the global economy.

They also create valuable data streams that companies can use to gain new insights and develop new business models. The disruptive nature of the platform economy signifies a profound change in added-value models. It poses major challenges for companies across all sectors and at the same time offers great opportunities. With its technological competence, its dynamic start-up scene and its close-knit, strongly application-oriented research landscape, the economy of North Rhine-Westphalia is on the right track. In no other segment of the economy, however, does success depend so much on a continuous and active international exchange for constant further development and innovation of business models. It is therefore an important task of foreign trade policy to support companies and research institutions from North Rhine-Westphalia with internationalisation and building and expanding networks.

This is a major challenge for SMEs in particular, as they traditionally have little or no research and development departments of their own. On the one hand, this gap can also be closed through increased networking of SMEs with the science and research institutions in the state as well as through international technology and knowledge transfer. In this context, the State Government will predominantly strengthen the ties with our neighbours in the Benelux region in order to further develop what is already a close alliance into a unified technology and research area in north-western Europe.

North Rhine-Westphalia can offer an excellent basis for this. 70 universities and more than 50 non-university research institutions in the state are researching ground-breaking ideas for the future.

Digitalisation is changing all sectors of the economy to varying degrees. The logistics sector, which is highly relevant to foreign trade, is particularly strongly affected by this. In digitalised Logistics 4.0, for example, the use of information and communication technologies (ICT) means the promotion of networking and interlinking of processes, objects, supply chain partners and customers

[14] www.mkw.nrw/hochschule-und-forschung/forschung/forschungseinrichtungen

in order to increase efficiency and effectiveness. This creates new challenges in information technology for the logistics sector, such has the provision of real-time information for the tracking of goods.

North Rhine-Westphalia can benefit from digitalisation to become the most modern and environmentally friendly business location in Europe. Already now, the state offers a great market potential for domestic and foreign companies, with strong industrial structures, a very well-positioned ICT sector and a dynamically growing start-up ecosystem.

In addition, the State Government is promoting digital transformation in business and administration through its digitalisation offensive. With currently five DWNRW hubs, the state offers successful regional platforms for the digital economy that facilitate cooperation between start-ups, SMEs and the industrial sector. The DWNRW hubs support digital start-ups in the growth phase and connect them with investors and established companies, also in the regions. Cooperation projects such as a state-wide start-up and investor database have been initiated from the hub network, facilitating access to the "NRW ecosystem". The state is also increasingly promoting innovative start-up concepts form universities through the "Start-up Transfer" programme and supports the Exzellenz Start-up Center.NRW universities.

The position of North Rhine-Westphalia as a modern business and knowledge location continues to be shaped by digital centres such as the cybersecurity cluster of the University of Bonn together with its various partners, consisting of research institutions, federal authorities such as the Federal Office for Information Security (BSI) in Bonn and Internet service providers, the new Max Planck Institute for Cybersecurity and Privacy as well as the Horst Görtz Institute in Bochum and Germany's biggest technical university, the Rheinisch-Westfälische Technische Hochschule Aachen (RWTH Aachen). Highly active industry networks and clusters on the Rhine and Ruhr complement the scientific activities to expand knowledge transfer.

The issue of cybersecurity in particular has gained significantly in relevance and public awareness due to the rapid acceleration of digitalisation in recent months. Regardless of the size of the company or the nature of activities (e.g. the cyberattacks on healthcare facilities in North Rhine-Westphalia), the level of protection of internal data, but especially that of customers, plays an increasingly important role. In this context, North Rhine-Westphalia's strong position in science and industry – both in terms of cybersecurity products and services in the narrower sense and in terms of supporting the general economy – should be supported as part of the state's foreign trade policy.

5G is a key technology that will help drive the digital transformation of business and society. North Rhine-Westphalia intends to assume a leading role in the use and further development of 5G. The conditions for this are good: All three mobile network operators as well as the relevant network equipment suppliers operate in the state.

North Rhine-Westphalia was the first and so far the only federal state to present a 5G strategy early on. The goal of the strategy is to rapidly expand the infrastructure for 5G mobile communications, to test 5G applications as early as possible and to bring them into widespread use quickly so that North Rhine-Westphalia can open up new markets as a pioneer and benefit from the positive effects on its economy. Within the framework of the 5G.NRW competition, up to 90 million euros will be made available for innovative projects in the coming years. In addition, the State Government maintains the dialogue with all relevant players contributing to the development of the 5G infrastructure in North Rhine-Westphalia in order to identify potential challenges at an early stage and to work together on solutions that will bring North Rhine-Westphalia forward.

The megatrend of digitalization has such a disruptive impact on all areas of life that it must be ensured that people and society benefit from it. That is why the digital strategy of North Rhine-Westphalia emphasises social participation and enabling everyone to make use of the opportunities. The State Government's understanding of digitalisation as a joint effort is also reflected in North Rhine-Westphalia's "Initiative Wirtschaft & Arbeit 4.0", which brings together companies and workforces in the shaping of digitalisation processes. Areas of activity and digital initiatives in the digital strategy for North Rhine-Westphalia, the industrial policy model and the regional innovation strategy are likewise highlighted.

In terms of foreign trade, it is also significant that digitalisation is leading to a paradigm shift regarding added value. Here it is necessary to assess the consequences for the foreign trade activities of our companies, to develop strategies and to offer targeted support services. The manufacture of products will become increasingly digitised and connected with a global "Internet of Things" infrastructure. This development changes added-value effects, as the example of 3D printing shows. The actual creation of value takes place not so much at the production site of the final product, but where the intellectual

property has been created. This not only has an impact on the assessment of customs duties, but also reduces the incentive to supply finished products to third-party markets. The tendency to reduce exports hampered by customs duties and other trade barriers in favour of direct investment, which is already apparent as a result of protectionist measures, is further reinforced by the effects of digitalisation. In addition, the COVID-19 pandemic shows the vulnerability of value chains and may encourage a shift of production back into the domestic economic area, at least in industries of "systemic importance". For the export-oriented economy of North Rhine-Westphalia this means a significant challenge. In the future, technological competence and specialisation will become even more important for those wishing to maintain their share in international markets. The state's foreign trade policy must provide targeted support for this process of change.

3.2.3 Neo-ecology

The term of neo-ecology denotes a change in overall societal values and actions towards a resource-efficient, sustainable economy.[15]

The initial situation for North Rhine-Westphalia is quite challenging in this respect. As the no. 1 energy generating state and the industrial heart of Germany, North Rhine-Westphalia is the federal state with by far the highest production rate of fossil energy and the highest consumption of raw materials.[16] The further technological differentiation that is essential for the future viability of our economy and, in particular, the digital transformation are causing the demand for basic and so-called high-tech metals to continue to grow, for example.

North Rhine-Westphalia still needs further efforts if it is to develop an ambitious transformation path for its economy that is aimed at sustainable and export-oriented structures. Industrial innovation concepts, such as circular creation of value, which strives for a gradual dematerialisation of product services, must be implemented much more intensively across the entire spectrum of industrial added-value activities.

It is precisely through fundamentally new products with largely emission-free production processes that comparative competitive advantages arise in the world markets.

Consistently closing material cycles can significantly contribute to a transformation process that makes industrial production in North Rhine-Westphalia more modern, competitive and resilient, while at the same time helping to cut the link between growth and resource consumption.

The energy revolution, with the phase-out of bituminous coal mining already completed and the decision to end open-cast lignite mining, will turn North Rhine-Westphalia into a net energy importer, at least for a transitional period. Imports account for almost 40 percent of North Rhine-Westphalia's raw material requirements. This dependency is a characteristic feature of the global division of labour, which creates prosperity worldwide, but also entails economic risks. During the outbreak of the COVID-19 pandemic, for example, severe bottlenecks interrupted the supply of raw materials and intermediate products in North Rhine-Westphalia. The shortage of raw materials and intermediate products became at

[15] See www.zukunftsinstitut.de/artikel/neo-oekologie-die-maerkte-werden-gruen.
[16] See www.umweltportal.nrw.de/ressourcenverbrauch.

times the second largest obstacle to production for the manufacturing industry in North Rhine-Westphalia.[17]

This is why foreign trade policy must focus more on securing imports of raw materials. Partnerships with other economic areas should also take into account this aspect and lead to a stronger focus on potential markets (Africa, Eurasia, Latin America) in the foreign trade strategy.

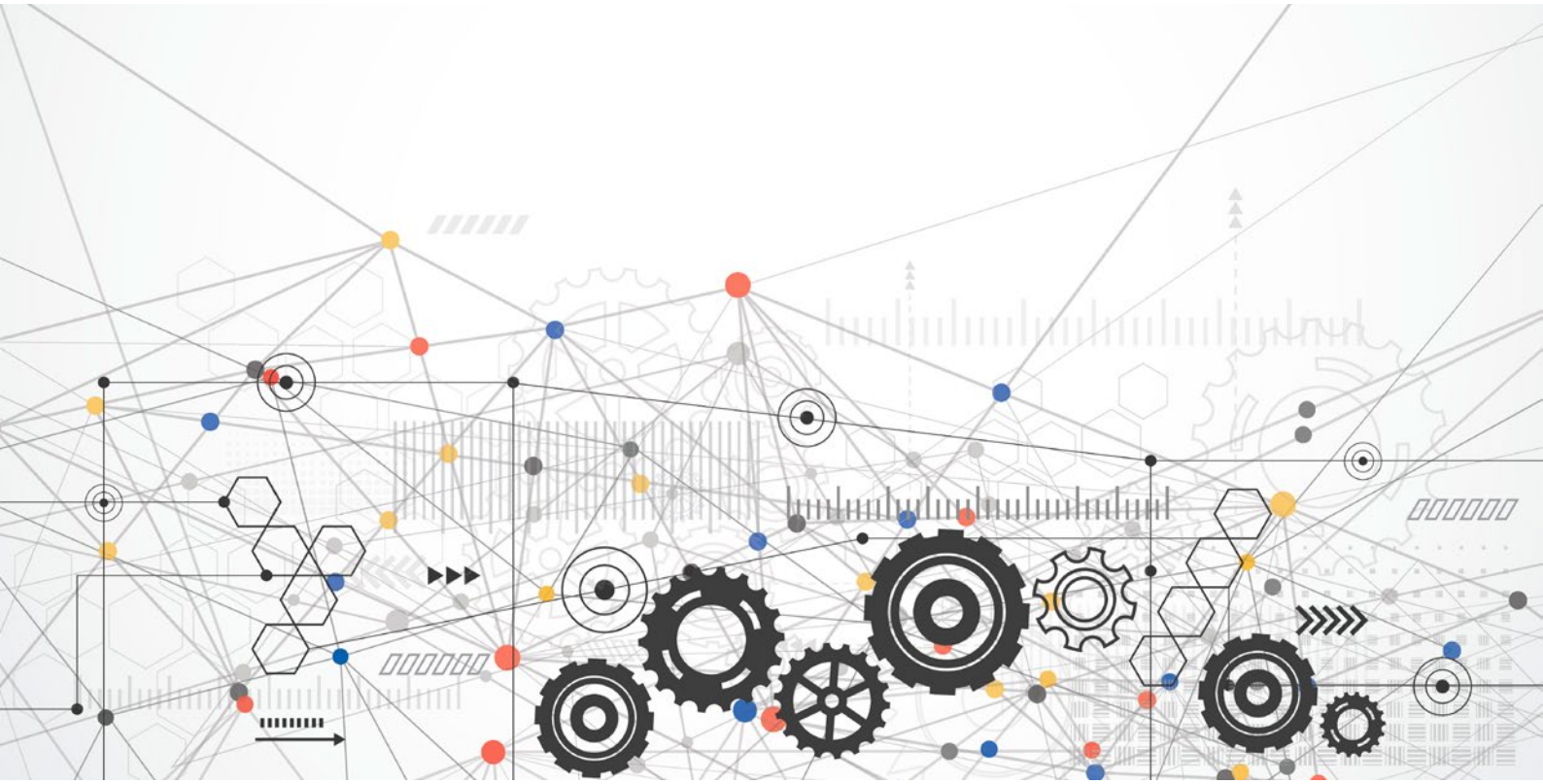
For North Rhine-Westphalia, it is becoming increasingly important in global trade to understand economic activity in the context of limited resources and intact ecosystems. In 2015, the global community adopted the "2030 Agenda", in which it agreed on 17 "sustainable development goals". In addition, 195 nations agreed on a legally binding climate protection agreement in the form of the 2015 Paris Agreement. North Rhine-Westphalia was the first federal state to commit itself to implementing the sustainable development goals.

In view of the growing awareness of the consequences of climate change, the European Council has decided to make Europe the first climate-neutral continent by 2050. The European Commission has therefore proposed a European Climate Protection Act in its "European Green Deal" in March 2020.[18]This means that net greenhouse gas emissions would end by 2050 at the latest and economic growth would no longer be linked to resource use.

For the future viability of North Rhine-Westphalia's foreign trade, it is vital to see the change to an ecological economy as an opportunity and to invest in sustainability.

The trend towards neo-ecology opens up excellent international business opportunities for North Rhine-Westphalia. The state can point to technologies and services for environmental protection and combatting climate change that have already been successfully implemented and can be used in many regions of the world. The successful structural change in the Ruhr region can serve as an example for many countries. This results in opportunities for export and investment in many markets on all continents, including the ACP countries. Another option is cooperation with development policy organisations, such as the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) with its regional office for North Rhine-Westphalia in Düsseldorf.

[17] www.nrwbank.de/export/sites/nrwbank/de/corporate/downloads/presse/publikationen/nrw-bank-ifo-geschaeftsklima/2020-05_Detailauswertung.pdf S. 11.
[18] https://ec.europa.eu/commission/presscorner/detail/de/IP_20_335



3.2.4 Complexity

The growing interconnection of economic, technological and ecological challenges is a key feature of this globally interdependent world. In this respect, the challenges of our current globalised world differ from the risks of the past. The development of foreign trade is also significantly influenced by decisions taken by governments, banks and multinational corporations.

International interdependencies, for example, make it increasingly impossible to consider problems at the local level in isolation. Taking into account nature and the environment, for example, is highly demanding since it is so diverse and also constantly changing.

One complex area of conflict in the context of foreign trade policy is that between conventional industry and ecology. For instance, manufacturing is the largest sector of the economy with a particularly high share of exports, but on the other hand it is also (still) responsible for particularly high energy consumption with high emission intensity. The foreign trade strategy can support the shift towards even greater sustainability. At the same time, economic and environmental policy decisions must always take into account the impact on international competitiveness.

Due to the ever-increasing complexity of the global economy, it will be necessary to rethink many principles with the goal of mitigating risks and making the domestic economy resilient to crises. The goal should be, among other things, to support the economy, to build up different branches of specialisation, to act innovatively and to build up appropriate resilience for crisis situations.

The foreign trade strategy is intended to provide an answer to the question of how to tackle the challenges of complex problems in a targeted and focused manner. The more diverse, complex and innovative the resources, knowledge and opportunities, the more promising the future prospects for the state's economy.

3.2.5 Natural disasters and pandemics

The frequency and intensity of extreme weather events and natural disasters are increasing as a result of climate change.[19] At the same time, the COVID-19 pandemic shows us how vulnerable a globally connected world is to the rapid spread of epidemics.

These events directly and indirectly affect North Rhine-Westphalia's foreign trade relations in a variety of ways. A particularly striking example is the periodic and probably worsening low water level of the Rhine as one of the world's busiest waterways and central transport route for trade in North Rhine-Westphalia. This restricts the sphere of action of the logistics sector, which is particularly strongly represented in North Rhine-Westphalia, the business models of port operations and all those companies that depend on flawless logistics in their supply chains.

Measures to contain pandemics, such as the lockdowns imposed across the continent in the first phase of the COVID-19 crisis, can severely disrupt, if not temporarily halt, economic life. This has a significant impact on international trade, which relies on the free movement of persons, goods and services.

The high vulnerability of supply chains, particularly in areas of systemic importance, and the dependence on individual suppliers in the supply sectors must therefore be protected more strongly in future by complementary measures. First answers may lie in the diversification of supply chains and the increased attraction of foreign direct investment to North Rhine-Westphalia. The foreign trade policy of North Rhine-Westphalia will take greater account of this aspect particularly in the case of so-called sectors of systemic importance. The positive aspects of globalisation will also help here, because North Rhine-Westphalia can fall back on a well-established structure of international contacts that facilitate achieving these goals.

[19] https://www.shelterbox.de/klimawandel-und-naturkatastrophen/#Naturkatastrophen

3.3 Areas of activity in foreign trade for North Rhine-Westphalia

Four key areas of activity for promoting foreign trade in North Rhine-Westphalia result from the megatrends that will shape foreign trade in the coming years:

- Commitment to open markets;
- Focus on innovation, technology and talents;
- Sustainability as an opportunity;
- Strategic adaption and faster response by leveraging agile structures (see Figure 2).

Areas of activity are defining foreign trade promotion in North Rhine-Westphalia

Open markets

Multilateralism and pluralism

Avoidance of trade barriers

Positive role of international investors and companies

Innovation, technology and talents

Development, application and export of forward-looking focus topics

Involvement of experts from science and practice

Sustainability

Protection of environment and climate

Resource efficiency

Energy efficiency

Focus on agility

Permanent revision and adaptation of strategy and implementation

Fulfilment of economic, social and societal needs

3.3.1 Area of activity "Commitment to open markets"

Open markets are particularly important for the state of North Rhine-Westphalia due to its strong foreign trade, both in terms of exports and imports.[20] Open markets are a basic prerequisite for world trade and for the successful foreign trade of the state of North Rhine-Westphalia. In order to make the most of the advantages of globalisation, North Rhine-Westphalia is continuing to expand its strong relationships with a large number of technology and potential markets and is consistently committed to free, fair and open world trade. In its industrial policy mission statement, the State Government has already emphasised the importance of rules for fair international competition and open access to third markets in order to maintain North Rhine-Westphalia's high level of competitiveness. To this end, the State Government also actively participates in and supports the negotiations on new EU free trade agreements and advocates a multilateral trade system at all levels.

The great economic benefit of free trade is demonstrated, for example, by the EU agreement with Japan which, through the extensive dismantling of customs duties and non-tariff trade barriers, enables improved market access for companies from North Rhine-Westphalia to the Japanese market as well as cooperation and division of labour.

North Rhine-Westphalia supports regional and global cooperation formats. In the immediate vicinity, the state participates in the INTERREG A and B programmes to reduce formal border barriers, as well as in programmes for improved cross-border cooperation, for example with the Netherlands through the GROS list. On the global scale, North Rhine-Westphalia maintains a network of cooperation partnerships across regions in Europe (including Hauts-de-France, Silesia, Saint Petersburg, Rostov-on-Don), America (Pennsylvania and Minnesota), Asia (Fukushima, Jiangsu, Shanxi, Sichuan), India (West Bengal) and Africa (Ghana).

Trade barriers are not the only things that have a negative impact on the attractiveness of the destination country. For this reason, the State Government is working to reduce bureaucracy, simplify administration and implement largely digitalised processes through its various "debureaucratisation packages". These measures contribute to the high attractiveness of North Rhine-Westphalia as a business location. The goal is to consolidate and increase the high number of over 20,000 international companies currently operating in the state and the foreign direct investment amounting to 170 billion euros.[21] The free movement of capital in the European Union, which in principle also applies to third states, creates good conditions for a financing environment that facilitates investment of (venture) capital and financing channels for start-ups. The internationalisation made possible by this should help North Rhine-Westphalia maintain its leading position as the "no. 1 state for start-ups".[22]

Our commitment to open markets shall be manifested in the following measures:

- Solutions will be jointly developed to provide the best possible support in the event of difficulties to companies from North Rhine-Westphalia abroad and to foreign companies in North Rhine-Westphalia.

- We will continue to campaign for the adoption of new free trade agreements and work in a committed and focused way to ensure the full benefits of existing agreements. Only 77 percent of companies nationwide currently make use of EU free trade agreements. SMEs seize these opportunities even less than the average. North Rhine-Westphalia therefore promotes greater acceptance and use of free trade agreements and encourages this by reducing bureaucracy, improving public relations work and providing information and advice.

- All aspects of the commitment to open markets will be pursued by the State Government through its strong networks at the federal, European and international levels. North Rhine-Westphalia's own state representations in the Federal Government and the EU, its liaison offices abroad and its representation on the European Committee of the Regions will be particularly useful in this regard. At the same time, the state will also promote market openness in multilateral bodies. These bodies include the Benelux Union, the Regional Weimar Triangle and the Cross-Border Coronavirus Task Force.

[20] www.destatis.de/DE/Themen/Querschnitt/Jahrbuch/jb-aussenhandel.pdf?__blob=publicationFilean S. 435.

[21] www.nrwinvest.com/de/standort-nrw/das-spricht-fuer-nrw/investitionsstandort-nr-1-in-deutschland/

[22] www.land.nrw/de/pressemitteilung/deutscher-start-monitor-nordrhein-westfalen-baut-seine-spitzenstellung-als

[23] www.gtai.de/gtai-de/trade/zoll/zollbericht/eu/erhoehte-nutzung-von-freihandelsabkommen-zu-erkennen-158984

In terms of content, the State Government will urge these organisations and initiatives to make future trade agreements as business-friendly as possible. North Rhine-Westphalia will also try to prevent new trade barriers from emerging at an early stage, particularly in areas with high relevance to foreign trade or a high potential for the future. Of course, the country will also continue to work for the swift and fair removal of existing trade barriers, such as US import tariffs on steel and aluminium imports. In addition, the State Government will use the instrument of the Bundesrat initiative should a federal-law initiative become necessary to condemn isolationism and/or defend the openness of markets.

3.3.2 Area of activity "Focus on innovation, technology and talents"

The area of activity "Focus on innovation, technology and talents" describes a consistent further development of the state's foreign trade policy to strengthen the quality of the location and the marketing opportunities of our companies. It provides the necessary link between the foreign trade strategy and the political goal of making North Rhine-Westphalia a pioneer of innovation, digitalisation and climate-friendliness. This is a basic prerequisite for the prosperity and economic sustainability of the state. At the same time, the foreign trade strategy interconnects with the state's tourism strategy at this point. This strategy aims, among other things, to increase the quality of life and quality of stay for tourists, businesses and their employees, and to strengthen the attractiveness of the state.

The foreign trade policy is intended to be an important future means of strengthening innovation and orientation towards technology in administration, business and science, retaining and recruiting talent in North Rhine-Westphalia and thus contributing to the further development to the business location.

Artificial intelligence (AI) is the key technology for digital transformation across all sectors. It opens up a high economic potential for North Rhine-Westphalia with its supporting industries, the strong SME structure and the many hidden champions.

The potential uses of AI in business are diverse, ranging from applications in production processes such as maintenance of systems and machinery, manufacturing and capacity planning to quality control. In addition, AI is finding its way into end products and services and is also enabling entirely new business models to come into being.

In order to systematically exploit the opportunities that AI offers for the state and to bundle and further strengthen competences in the state, the State Government of North Rhine-Westphalia has set up the KI.NRW competence platform. The goal is to accelerate the transfer of AI from cutting-edge research to industry, to implement specific projects in important future fields, to establish a leadership region for professional qualification in AI and to provide impulses for social discourse.

In addition, we will broker technology partnerships with the world's most innovative regions to help our companies access the latest knowledge essential to their business model and pave the way for them to link their own innovative products and processes with international partners from these regions for mutual benefit. One example is the establishment of a digital platform for building networks of SMEs and start-up companies in cooperation with the NRW House in Israel.

In order to strengthen the various domains of these areas of activity, it is also necessary to attract international investors contributing to the aforementioned political goal in a targeted manner. The focus of this process will be on actors in the areas of innovation.

Areas of innovation have been declared core elements of innovation policy by the State Government and as areas of particular importance for the further economic development of North Rhine-Westphalia. They are all highly relevant for economic policy, innovative strength and growth potential.

In the areas of innovation, there are currently five sectors of particularly high importance for foreign trade:
- mechanical engineering,
- the electrical industry,
- motor vehicles and their parts,
- the chemical industry and
- the pharmaceutical industry.

Each of these five sectors is currently being funded by EU and national co-financing as part of a leading market, [24] plays an important role in current foreign trade in North Rhine-Westphalia[25] and displays an above-average innovation intensity[26] Sectors currently less oriented towards foreign trade are developing so dynamically, however, that the choice of focus sectors must also take future potential into account. Digital technologies such as cybersecurity, blockchain, digitally connected production, digital logistics, digital energy systems and artificial intelligence are particularly promising here.

The State Government considers blockchain technology, along with artificial intelligence, the Internet of Things and other technologies, as an important component of the future digital technology mix. Industrial application in the B2B sector is of particular interest in this context. Blockchain technology enables digital sovereignty over shared data in a networked economy.

The promotion of foreign trade will therefore also focus on
- the ICT sector with its strong future potential,
- the energy and environmental sectors, and
- mobility and logistics

The key technologies defined by the State Government provide further orientation for focusing on promising topics. The key technologies include hydrogen technology, nanotechnologies, microsystems technology, photonics and quantum technology as well as new materials (with the latter also being a leading market). The State Government has already recognised these key technologies as "innovation drivers in all industries and markets" and identified them as "driving forces for major disruptive technologies".[27] The focused support and cooperation of companies working on corresponding technologies allows the resource-efficient fulfilment of the goals in this area of activity. Support activities should be aimed in particular at improving the export capabilities of the companies.

In order to win over companies and getting them to establish new locations in the state, the attractiveness of North Rhine-Westphalia must be consistently development and strengthened. North Rhine-Westphalia already has a good starting position here, for example in the field of digitalisation and the ICT economy. The state is home to 24,300 ICT companies and can therefore boast the highest density of ICT companies of any federal state. North Rhine-Westphalia's digital economy is already teeming with more than 400 start-ups in the Internet sector, whose import and export activities have been experiencing extensive growth for years. Companies with high technological success and strong research and development departments are of particular importance for foreign trade. These "technology leaders" do an above-average share of their business internationally and their turnover is highly dependent on exports. Supporting innovative companies, particularly SMEs and start-ups, which typically have limited resources, is therefore a good way to encourage North Rhine-Westphalian companies to enter the foreign trade economy.

Our foreign trade policy will take these good conditions as a starting point to connect the existing resources in research and business and a dynamic start-up ecosystem with the corresponding players in innovative foreign markets. In order to ensure that new technologies find increasing use in production and that innovative business models can be rolled out better, the transfer of technology and knowledge as well as networking between research institutions, start-ups, SMEs and big corporations will be expanded. This is also in line with the conviction that intensive interdisciplinary and international cooperation between science and business enriches the application-oriented innovation landscape and the ecosystem for start-ups in the state. The development of new added-value models in the sense of the further development of the platform economy also plays a special role in this context. More and more importance is also attached to the trade in intangible goods. Especially for the digital and knowledge economy, the international exchange of digital services, research and development results is becoming increasingly important. Also in this context, it is important to remove barriers and establish both sector-specific and cross-sectoral cooperation.

[24] www.wirtschaft.nrw/leitmarkt-strategie-nrw; www.efre.nrw.de/fileadmin/user_upload/Programmtexte/Regionale_Innovationsstrategie.pdf
[25] A share of at least five percent of North Rhine-Westphalia's total exports and/or imports in 2019. www.it.nrw/statistik/eckdaten/hauptausfuhrgueter-2101 and www.it.nrw/statistik/eckdaten/haupteinfuhrgueter-2104
[26] A share of at least five percent of innovation expenditure in relation to turnover according to the ZEW Innovation Survey 2019. www.zew.de/fileadmin/FTP/mip/19/mip_2019.pdf, p. 12.
[27] www.wirtschaft.nrw/schluesseltechnologien
[28] https://www.nrwinvest.com/de/branchen-in-nrw/informations-kommunikationstechnologien
[29] www.land.nrw/sites/default/files/asset/document/digitaler_wandel_in_nrw_-_fortschrittsbericht_der_landesregierung.pdf S. 2-5.
[30] https://5g.nrw/app/uploads/2019/09/2019_Facts_and_Figures_final.pdf
[31] www.bertelsmann-stiftung.de/fileadmin/files/BSt/Publikationen/GrauePublikationen/NW_Innovative_Milieus.pdf S. 27.

As an indirect effect, the efforts undertaken in this area of activity can also increase the attractiveness of North Rhine-Westphalia to foreign skilled workers and thus reinforce the development towards an even more innovative and competitive economy.

3.3.3 Area of activity "Sustainability as an opportunity"

In the course of the structural change aiming to move away from the long tradition of using natural resources, a broad competence in environmental and energy technology has developed in the state of North Rhine-Westphalia. The decision to phase out coal-based power generation by 2038 at the latest is another milestone in a forward-looking energy revolution. By doing so, the energy industry in North Rhine-Westphalia is positioning itself for a sustainable future and consequently promotes innovative developments in the energy sector.

The EnergieAgentur.NRW provides information and brings together stakeholders in the energy sector on behalf of the State of North Rhine-Westphalia. These years of competence in the energy sector are also in great demand internationally and thus bring North Rhine-Westphalian expertise to international markets. In Umweltwirtschaft.NRW, the state also has an active competence network which builds on the State Government's strategies in the fields of the environmental economy and innovation. This expertise can also demonstrate the compatibility of social, economic and ecological goals at the international level.

It remains important to keep the level of ambition for the economic transformation process in North Rhine-Westphalia high. The players in foreign trade can make a significant contribution to this by continuing to intensively promote exchange and cooperation. For it is not only in North Rhine-Westphalia, Germany or Europe that players are pursuing ambitious diversification and modernisation agendas with regard to the economy. Cooperation and exchange are essential to the development of modern, competitive and resilient economic structures. This also applies to the transformation process towards a sustainable economy.

The consistent use of the potential of sustainable business practices to the benefit of foreign trade can strengthen North Rhine-Westphalia's economy as a whole and secure its international competitiveness.

Sustainability will increasingly determine the competitiveness of companies worldwide, and this not only because of the decarbonisation[34] required under international law and the ever more stringent environmental regulations worldwide. Maintaining competitiveness is therefore also a key goal of the NRW Energy Supply Strategy presented by the State Government in 2019.

North Rhine-Westphalia's international competitiveness can be further improved by promoting sustainable business models.[33] A future-oriented promotion of the state's foreign trade must therefore take into account the trends towards neo-ecology and, if possible, contribute to shaping it. For the work of the various stakeholders within North Rhine-Westphalia's foreign trade sector, this means that raising awareness of and supporting the implementation of decarbonisation strategies and shaping the transition to a circular economy are areas of special focus.

Global demand for sustainable products and green technologies will continue to grow as awareness of the climate crisis increases. At the same time, climate change is increasing the global market potentials for green business models and technologies. One example of this is certainly the current development of the hydrogen economy, which can significantly contribute to making industrial processes climate-neutral. The export quota of North Rhine-Westphalia's environmental industry, which is worth almost 38 billion euros, is already a strong 40 percent if locally provided and non-exportable construction and services are excluded.[35] In addition

[32] Decarbonisation means moving away from the use of carbon-based energy sources, especially in the CO_2 -intensive energy industry

[33] www.wiwo.de/technologie/green/gewinne-steigern-durch-mehr-nachhaltigkeit-6-unternehmen-zeigen-wie-es-gehen-kann/13551384.html; www.morganstanley.com/access/why-sustainable-companies-can-outperform

[34] Circular economy is the organisation of economic production process in the form of closed cycles to the greatest extent possible. The goal is to achieve the highest possible resource efficiency. In a circular economy, existing materials and products are shared, leased, reused, repaired, refurbished and recycled for as long as possible. The term "circular economy" has a broader meaning when it is used in the European context and in the English-speaking world than how it is used in German

to new sustainable products and services, entirely new industries are emerging, such as the "sharing economy", which enables the shared use of unused resources.

In addition to the decarbonisation opportunity it represents, the circular economy also has high international market potential. The circular economy has the potential to bring about a radical change in the use of raw materials, because the end-of-life of the products is already taken into account when they are created. This means that waste is transformed into a valuable source of raw materials.

Their high strategic relevance, strong innovative capacity and high growth potential speak for a focus on modern environmental technologies. The global market volume of environmental technology and resource efficiency is estimated to be 5,900 billion euros in 2025, with an average annual growth rate of 6.9 percent. One particularly important area of environmental technology in North Rhine-Westphalia is waste and recycling management. As an export-intensive federal state and Germany's major location for the environmental industry, North Rhine-Westphalia can benefit particularly from the positive development of environmental technology. European countries are expected to remain the dominant sales markets for North Rhine-Westphalian companies in the environmental technology sector.[38]

In addition, services and work provided by skilled trades, such as the renovation of buildings to make them more energy-efficient, also contribute to an increase in sustainability relevant to foreign trade.

[35] www.umweltwirtschaft.nrw.de/umweltwirtschaft-nrw/ueberblick
[36] www.bmu.de/fileadmin/Daten_BMU/Pools/Broschueren/greentech_2018_bf.pdf S. 8.
[37] www.umweltwirtschaft.nrw.de/umweltwirtschaft-nrw/ueberblick
[38] www.bmu.de/fileadmin/Daten_BMU/Download_PDF/Wirtschaft_und_Umwelt/gta_unternehmensbefragung_bf.pdf

3.3.4 Area of activity "Strategic adaption and faster response by leveraging agile structures"

The focus of this area of activity is on the way in which findings regarding foreign trade strategy are implemented.

Due to innovation cycles getting increasingly shorter and technological breakthroughs being unpredictable, foreign trade activities must be flexibly adaptable. This has been particularly evident in the developments seen regarding the relevance of sustainability for economic processes. Global environmental and climate policies have proven to be unpredictable, requiring sudden changes in corporate strategies and demand for foreign trade promotion services.

The observed volatility of international trade relations is another reason for the need for flexible adjustment. These high dynamics must be met with agility. This agility is promoted by flat hierarchies and allowing players in foreign trade great leeway for action. The basic organisational understanding must allow for the greatest possible freedom for discussions and dialogue and the development of strategic adjustments as well as new innovative approaches. This is the only way to identify and implement appropriate responses to market shifts and to seize opportunities. Another indispensable element is uncomplicated, open and continuous communication between all parties active in foreign trade in North Rhine-Westphalia. Among other things, improving the digital presence of the foreign trade promotion agencies would be conducive to meeting this requirement. This will ensure improved information transparency with regard to activities, responsibilities and processes within and between the various active parties. This in turn requires the bundling and an appropriate, clear allocation of competences, which is the third essential component of agile foreign trade.

This foreign trade strategy provides the first essential component of agile foreign trade: a basis as a mandate and orientation aid for all parties active in foreign trade, which can be used to independently derive the appropriate measures in each case. The second component is the reorganisation of foreign trade in NRW, which reduces the complexity of decision-making processes by bundling and clearly assigning tasks and responsibilities as appropriate. In addition, both digital services and digitalised processes allow the target group-specific adaptation of contents as well as their resource-saving use independent of location. This will particularly benefit domestic SMEs and start-ups with limited resources as well as foreign companies without access to corresponding foreign offices. Finally, digitalisation and flexibilisation of the services offered also increase the attractiveness and professionalism of foreign trade promotion.

Reorganisation of foreign trade promotion

Foreign trade promotion in North Rhine-Westphalia is already well positioned with relevant players and instruments, e.g. through strong networks and partners (the foreign trade associations), chambers of commerce, the network of chambers of commerce abroad, chambers of skilled trades, associations, clusters and sector-specific networks. It comprises both the measures for opening up and developing international markets (outgoing) and enlisting domestic and foreign companies (incoming) as well the international marketing for NRW as a location for business and innovation. However, the growing challenges in gaining free access to world markets and developing new target markets, as well as the volatility of international trade relations, require more agile and adapted structures.

Developing and dealing with international markets as well as searching for cooperation partners and export transactions are complex tasks. Countries with well-established market economies usually create an environment in which companies can conduct business largely without government intervention. In such cases, foreign trade can essentially be supported by the chamber organisations with their knowledge of what companies need. This is particularly true for the European internal market. The role of the state in this context is centred on support for networking, in particular with research institutes and administrative bodies. In countries where traditions of state trading still continue or where the state has a strong influence on the economy, the state is often indispensable, and in any case helpful, in opening the way for companies to enter markets or to secure market activities. Here the state and its foreign trade association, together with the German chambers of commerce in the target country, can support the necessary maintenance of the positive political environment. In the field of encouraging companies to establishment new locations in North Rhine-Westpha-

lia, the state has the central task of promoting North Rhine-Westphalia as a business location abroad and attracting direct investment to North Rhine-Westphalia through its foreign trade association. Particularly for investments of significance to the state, the foreign trade association will devote increased attention to marketing and relocation management also in the future.

The State Government has decided to combine the state's economic policy presence abroad and on international markets with its efforts to attract international investors in a single company, the NRW.Global Business GmbH, since the strict separation of the two areas is no longer appropriate in international trade and economic relations increasingly characterised by digitalisation.

The NRW.Global Business GmbH is the operative arm for the coordination and implementation of the foreign trade promotion activities of the State of North Rhine-Westphalia and the strategic, organisational and content-related partner of the Ministry's foreign trade department and the central contact for stakeholders in the foreign trade sector.

In particular, it conducts international marketing and market development activities for North Rhine-Westphalia as a business location, as well as investor recruitment and support with the goal of attracting companies and creating jobs in North Rhine-Westphalia. To this end, the company plans and coordinates foreign trade measures and activities with the aim of effective and transparent foreign trade promotion in North Rhine-Westphalia.

In any case, the close cooperation with the chambers (chambers of commerce, chambers of skilled trades and the network of chambers of commerce abroad) and the NRW.BANK remains the basis for the future planning and practical tasks. In addition, ZENIT GmbH will also be closely involved in the processes and the exchange with clusters, associations and industry networks will be intensified and further expanded, so that the expertise available can be taken into account as much as possible and incorporated into the foreign trade concept. In addition, experts from the fields of science and practice, as well as prominent figures and celebrities representing the location of North Rhine-Westphalia, will be involved even more in the future. Specialists in innovation, technology and research are to be involved particularly in the implementation of the area of activity "Focus on innovation, technology and talents" in the context of defined overarching focus topics.

The orientation towards sector-specific, target market-related and thematic market development and internationalisation programmes is intended to enable the company to develop strategically important target markets sustainably, while at the same time being able to respond flexibly to short-term changes. Due to the necessity of choosing a strategic focus, relevant target markets are to be identified and suitable instruments for the export-oriented sectors of North Rhine-Westphalia's economy are to be developed based on market experience from previous projects of the foreign trade associations together with the foreign trade advisory council, the advisory council and supervisory board of the new company, representatives from the private sector, company networks and the clusters. Coordinated joint actions will be closely geared to the needs of the domestic economy and its companies.

Coordination and cooperation of existing players and instruments will also be advanced in order to increase the effectiveness and efficiency of foreign trade promotion. Improved transparency of information on existing structures, programmes and funding opportunities is to be promoted. At the same time, the efficiency of foreign trade promotion is to be increased through synergy gains and a coherent brand presentation, in particular in the context of location marketing. The cooperation with the most important partners of NRW's foreign trade, the chambers of commerce, the skilled trades, the NRW.BANK and ZENIT, is laid down and transparently assigned in a cooperation agreement.

3.3.5 Performance criteria

For a transparent representation of the results and the progress in the areas of activity, five performance criteria (indicators) have been developed to enable a qualitative assessment.

The implementation of the areas of activity is to be quantifiable, forward-looking, focused, effective and agile.

In order to make foreign trade promotion quantifiable, the focus will be on opening up new markets for companies from North Rhine-Westphalia, supporting the establishment of branch offices abroad and attracting investors. To do this, international innovation and cooperation projects are to be initiated and efforts are to be made to recruit specialists.

The achievement of goals is to be assessed, for example, on the basis of key performance indicators (KPIs) drawing from the following factors:

- Number and quality of jobs secured or newly created in North Rhine-Westphalia through foreign trade;
- Opening up and development of new foreign markets by the NRW export industry;
- Securing international competitiveness by attracting companies from innovative future-oriented sectors to North Rhine-Westphalia.

Forward-looking promotion of foreign trade
In the past, the focus of foreign trade was usually on specific foreign markets, countries and regions, and activities were structured accordingly.

Due to the increasing interconnection of different topics and sectors in international value chains, however, sectors, clusters and new technologies are gaining in importance. In a globalised world and in volatile markets, competition is increasingly decided at this point.

In addition, the goal is to build up greater resilience to country-specific developments. The work of foreign trade promotion of the state of North Rhine-Westphalia will therefore in future be increasingly oriented towards certain topics and/or sectors in order to shape the significance and increasing dynamics of these external factors.

A focused treatment of the focus topics with developed contents requires a high degree of specialisation with (agile) project work for implementation. The merger of the two companies to form the NRW.Global Business GmbH will generate new synergies and increase the efficiency of foreign trade promotion. In order to further improve the performance capacity, it is planned to link activities for the promotion of foreign trade more closely with the local and regional economic development organisations in the state. The local and regional economic development organisations are important partners in the state's foreign trade promotion. They support the activities of NRW.Global Business both in opening up international markets and in supporting foreign investors, as they know the local economy and are close to the companies based in their respective area. Thematic cooperation in particular is also intended to take place, e.g. along a value chain.

In addition, attractive local area potentials for the establishment of companies in international competition can be developed in cooperation and exchange with the local and regional economic development organisations. The local and regional economic development organisations in North Rhine-Westphalia are supported by a comprehensive, topic-related range of further training courses offered by NRW.Global Business and project-related cooperation.

In order to further increase the effectiveness of foreign trade promotion, the instruments that have so far been considered effective should continue to be used and, if necessary supplemented by specific measures. In order to ensure the broadest possible participation of various stakeholders in the focus topics, greater used should also be made of digital tools, such as open innovation platforms, which can support the formation of opinions and decision-making.

The following instruments of foreign trade promotion are worth mentioning here:

- Political support for foreign trade activities
- Support in market development (including – digital – delegation visits, market exploration, initiation of contacts, search for sales partners and mediation of cooperation partners)
- Attendance of trade fairs abroad and promotion of small groups
- International location marketing for North Rhine-Westphalia as a business and innovation location
- Direct acquisition of foreign companies
- Centralised relocation management
- Support for technology cooperations, in particular with start-ups
- Financial support for outgoing and incoming activities

In addition, cooperation with the Enterprise Europe Network (EEN) offers an excellent opportunity to support companies in North Rhine-Westphalia. The focus is on the internationalisation of small and medium-sized enterprises (SMEs) from the fields of industry, commerce and skilled trades. Another focus is on the promotion of cooperation and cluster formation among companies, universities and research institutions. In North Rhine-Westphalia, this project is being implemented under the NRW.Europa brand by ZENIT as the consortium leader and NRW.BANK.

Foreign trade promotion ultimately must be positioned in such a way that it can pro-actively take on the diverse challenges of a globalised world and all the difficulties associated with it. For the creation of an agile foreign trade promotion, the cooperation and coordination between the players in many instances must therefore be designed in such a way that it can act flexibly in order to implement the necessary changes and adapt to volatile conditions.

3.4 Instruments

In the past, delegation visits with political support and business delegations without political assistance as well as logistical instruments, such as the provision of office space abroad and attendance of trade fairs to promote networking, have proven to be particularly efficient instruments of foreign trade promotion.

Both travel and attendance of trade fairs should, however, always be complemented by digital tools. Mixed forms of face-to-face and digital formats, so-called hybrid conferences, are also a suitable variant in this context. That being said, direct personal contact is still indispensable for initiating new contacts and building trust, particularly in foreign trade in which cultural identities play a huge role. In this environment, digital or hybrid forms of contact are primarily suitable for maintaining already sufficiently close contacts and for formal activities. For example, the signing of previously personally negotiated minutes and declarations without a major binding effect in video conferences has proven to be a suitable means of reducing time-consuming travel.

As far as trade fairs are concerned, personal contact is likely to remain the primary means of establishing business contacts, particularly for small and medium-sized enterprises, which are a particular focus of the state's foreign trade promotion activities.

To finance and secure exports and foreign investments, companies have access to a wide range of public funding instruments provided by the Federal and State Governments. The NRW.BANK is a partner providing advice and access to financing of business abroad and supports projects of relocation to North Rhine-Westphalia.

The establishment of the "Rhine-Ruhr Metropolitan Region" brand should be promoted in order to strengthen the attractiveness and competitiveness of NRW as an economic region as a whole. The Rhine-Ruhr Metropolitan Region, consisting of the Ruhr area and the Rhineland, offers an opportunity for North Rhine-Westphalia to enter into dialogue with other mega-regions in the world on an equal footing and to use the corresponding locational advantages for marketing at trade fairs and during delegation visits in an international context. In addition to intensified topic-related cooperation between the Ruhr area and the Rhineland, joint marketing at the national and international levels is therefore also planned.

As far as relocation activities are concerned, the task is to make existing attractive sites more accessible by means of transparency and to be able to better and more quickly determine the readiness of suitable sites for construction, which is crucial for the realisation of direct investment. The state will therefore press ahead with digitalisation and interconnection of all relevant plans and procedural requirements and, above all, provide better and more effective support for the phase between enlisting and the start of construction.

In addition to the conventional instruments of foreign trade promotion, additional instruments must be developed and used to establish and support innovation partnerships between companies, research institutes and administrative bodies from North Rhine-Westphalia and partners from other markets, especially those possessing particular innovative strength. The state will therefore increasingly promote intercultural encounters, work shadowing, trainee programmes, etc. in this area. In addition, the attractiveness of exports and investments by companies from NRW in newly industrialised and developing countries must be supported by appropriate financing assistance. Together with the NRW. BANK, the state will examine financing options for improved market penetration, including financing offers from the Federal Government and various development organisations.

Start-ups in particular often lack the financial resources for expansion abroad. Increased promotion of excellence in North Rhine-Westphalia independent of location, in addition to broad-based support, is intended to promote start-ups from the industries of the future. To this end, the establishment of new support programmes aimed at increasing the export capability of (young) companies from the focus sectors would be a good idea. At the same time, new instruments and incentives for international start-ups are to be created at the state level in order to establish North Rhine-Westphalia as an attractive and competitive location in Europe and Germany.

Both as an investment location and as an exporter, North Rhine-Westphalia can ultimately be strengthened through cooperation with neighbouring regions, primarily the Benelux countries. In doing so, the attractiveness of the closely integrated economic area of north-western Europe (North Rhine-Westphalia, the Netherlands, Belgium, Luxembourg, Northern France) can be embedded in the foreign trade positioning of North Rhine-Westphalia.

A network of good partnerships with regions of comparable quality in other countries can also create exclusive access to international markets benefitting the topics the state is focused on. The connection of the Rhine-Ruhr Metropolitan Region with comparable regions, such as Greater Tokyo and Los Angeles County, can also be promoted in this context.

With our foreign trade strategy we intend to contribute to North Rhine-Westphalia's ability to even better showcase its high attractiveness and export potential as a business location with highly competitive companies and a climate-neutral, agile, innovative and digital economic structure.

4 Annex: COVID-19 pandemic review

The impact of the COVID-19 pandemic on the foreign trade strategy of the State of North Rhine-Westphalia can be illustrated by means of 5 key COVID-19 pandemic drivers

- Health and hygiene
- Digital transformation
- Glocalisation
- Market and competition
- VUCA world

COVID-19 pandemic drivers	Most significant impacts (sample)
Health and hygiene	• Increased market power and societal importance of the chemical and pharmaceutical industries as well as research • New market potentials for the health and medical sectors due to consumers' preference of a healthier lifestyle • Strict regulations on occupational health and adherence to hygiene (including protective equipment
Digital transformation	• Comprehensive use of digital work in both the private and public sectors, associated increased requirements for digital infrastructure and employee skills • Increased importance of cybersecurity due to potential hacker attacks on working-from-home activities • Intensified automation and digitalisation of processes in view of absences due to illness and security concepts • Expansion of digital offerings of companies, in part making use of innovative technologies (e-commerce instead of physical presence, virtual reality instead of direct interactions)
"Glocalisation"[1]	• Geographical/physical regionalisation and potential simplification of supply chains • Return of industry and suppliers, expansion of storage inventories to ensure supply capabilities • Stricter political and legal requirements to ensure supply with products of systemic importance
Market and competition	• Spread of digital, data-based business models, growth potentials for start-ups with a corresponding focus • Displacement of companies with less innovative and financial strength, particularly SMEs • Increased market concentration due to relative market advantages of large companies, in part also through state support
"VUCA"-world[2]	• High economic and geopolitical risks regarding future developments • Rapid change and ever shorter innovation cycles, resulting in increased requirements for strategic and agile action

[1] Terminological synthesis of globalisation and localisation, describes the decentralisation of markets and value chains while cooperative systems are intensified

[2] Acronym of volatility, uncertainty, complexity and ambiguity; describes increasingly unforeseeable general global conditions

Health and hygiene
The COVID-19 pandemic driver health and hygiene describes the societal shift towards increased concern for physical and mental health and a healthier lifestyle. This shift has manifested itself by a reorientation towards a more independent health sector in Germany. The experience with the pandemic has brought into focus the importance of a sovereign and comprehensive medical care system. Legal trade barriers which have arisen in the meantime with regard to the export of certain goods of systemic importance take account of this change. All sectors relevant to health are expected to experience substantial growth, particularly the chemical and pharmaceutical industries. The now greatly heightened social awareness with regard to pandemics and natural disasters could change the structure of North Rhine-Westphalia's exports. An increase in sales of chemical and pharmaceutical products within Germany and Europe is conceivable. The expertise in the chemical and pharmaceutical sectors established in North Rhine-Westphalia contributes to a successful positioning in future international trade.

Digital transformation
The COVID-19 pandemic has accelerated the spread of digital technologies in the private sector, public services and personal life. The second COVID-19 pandemic driver "digital transformation" covers this trend with its promising opportunities and high risks. This relationship could lead to a positive impact on the economy of NRW later on, for example through the establishment of new, innovative concepts and sectors of the economy, and through the more efficient production of goods. Cybersecurity and the stability of servers are among the issues that need to be addressed in terms of risk.

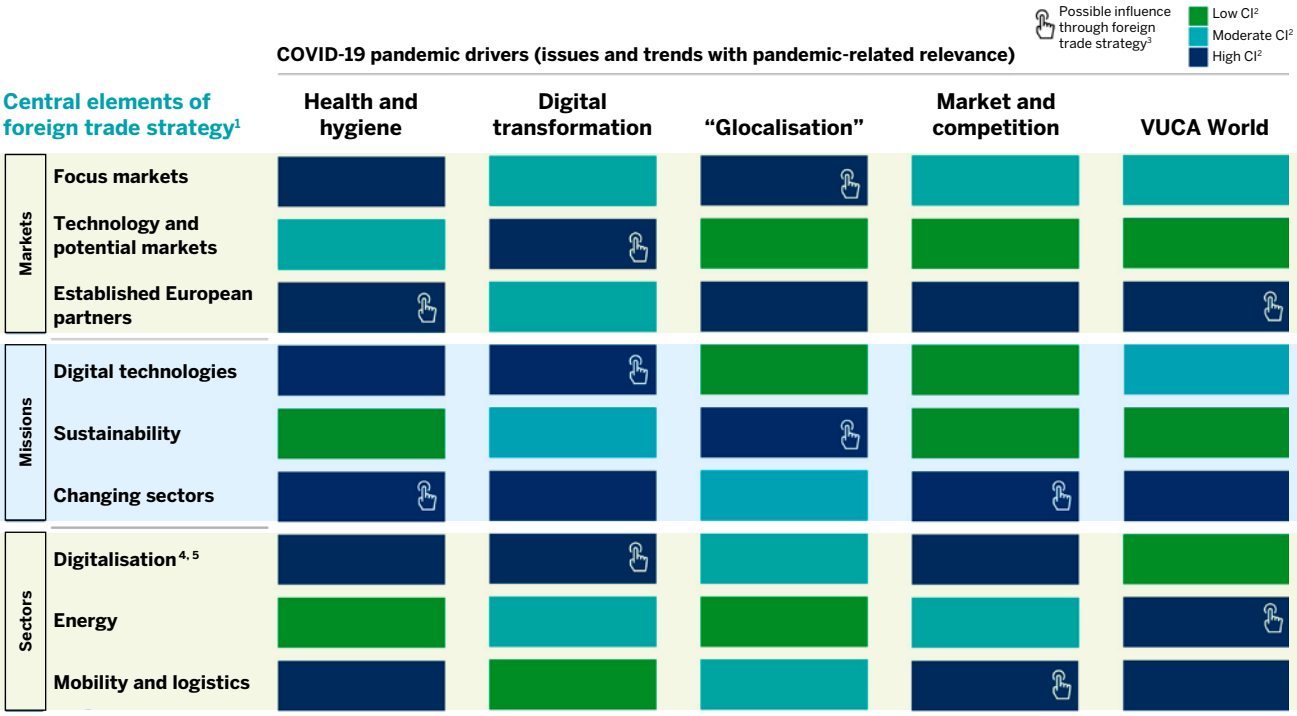
Glocalisation
Glocalisation, the conceptual synthesis of globalisation and localisation, describes the decentralisation of markets and value chains with a simultaneous intensification of cooperative systems.

Market and competition
The COVID-19 pandemic will fundamentally change the composition of market shares in certain sectors of the economy. Data-based and digital business models are among the main beneficiaries here, which in turn creates space for innovative start-ups. In addition to the growth of some sub-sectors, the pandemic has been a real test for financially weaker small and medium-sized enterprises. The market share of SMEs, which are essential for the economy of North Rhine-Westphalia, could decline in favour of larger suppliers.

VUCA world
The fifth and final driver identified is the "VUCA" world. The acronym VUCA stands for volatility, uncertainty, complexity and ambiguity. External shocks, such as the coronavirus pandemic, lead to a dramatic increase in entrepreneurial risk under VUCA conditions. This means that companies are in need of a clear orientation framework. In this way, investment and expansions can be better planned and uncertainty can be reduced.

Relevance of the COVID-19 pandemic drivers for the foreign trade strategy
Within the framework of the COVID-19 pandemic review, relevant elements of the foreign trade strategy were assessed on the basis of these five COVID-19 pandemic drivers and examined in greater depth in light of a high impact of the pandemic as well as significant potential of impact of the foreign trade strategy.

The COVID-19 pandemic review identifies the elements of the foreign trade strategy that impact the COVID-19 pandemic drivers and can be influenced strategically



[1] Selectively derived from Chapter 5.3 of the Venture.Idea project report and the survey results
[2] COVID-19 Impact
[3] Possible influence of foreign trade strategy only assessed in case of high CI
[4] Digitalisation sector here means companies in the information and communication technology sector in particular
[5] The central elements "Digital technologies" and "Digitalisation" are analysed together below du to their substantial overlap

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