Regional Strategic Action Report

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Country:	Slovakia
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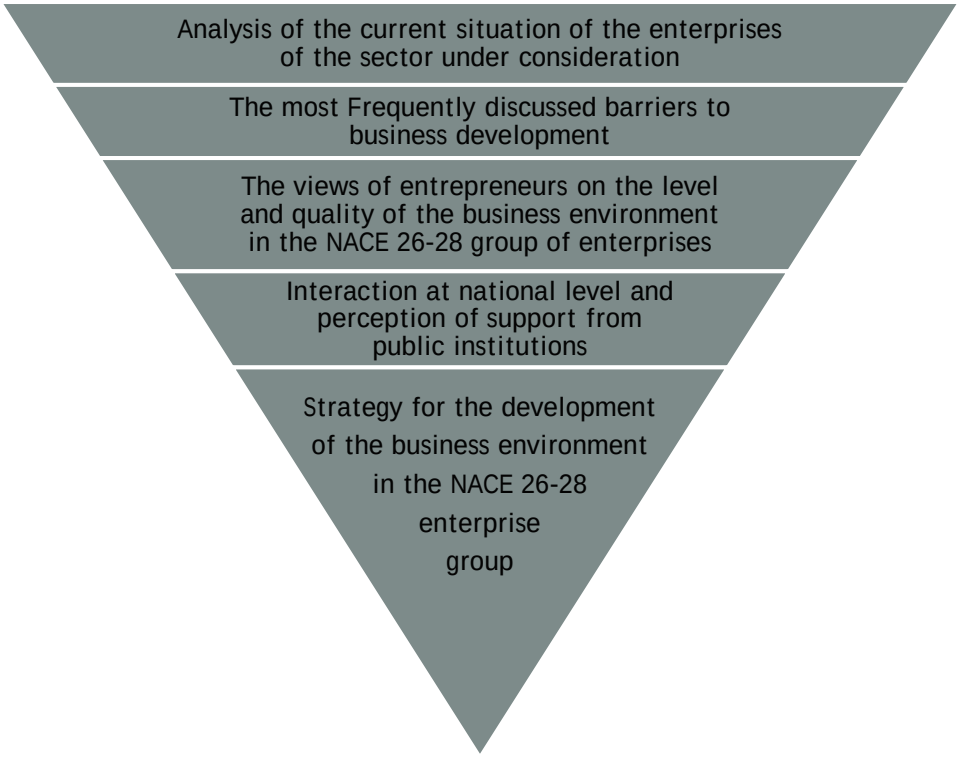
Introduction

The development of the business environment of the Slovak Republic is strongly dependent not only on decisions taken at national level, but increasingly on decisions at European level, with strong interactions on the economies of Asia and North America. As a result of globalisation of economic relations, the impact of international competition is growing and the creation of holding structures makes it difficult for small and medium-sized enterprises (SMEs) to do business. The European executive declares the idea of a strong position for SMEs and family businesses, but a very cautious attitude is more appropriate in terms of real support for entrepreneurship. This is evidenced by recent developments during the pandemic crisis.

The aim of the regional strategy, knowing the possible scenarios, is to draw attention to the need for targeted support, which must be comprehensive and must not only focus on supporting the various financial schemes, but also on creating opportunities for cooperation, exchange of experience, support for entry to foreign markets and, last but not least, links to research and education institutions.

Figure 1 Thinking process in the formulation of the regional strategy



Source: ♪ Own description ♪

The target group of the regional strategy is business entities belonging to NACE groups 26-28. The findings summarised in this document are intended to serve as a basis for further communication with interest associations, government executives and European structures.

The regional strategy has been developed on the basis of partial Qualitative and quantitative analyses, reflecting the needs of businesses and regional options.

Executive Summary

Analysis of the state of play of the enterprises of the sector under consideration

The basis for examining the current situation is both the quantitative characteristics captured in the accounts of enterprises in the NACE 26-28 Subgroup and the comparison with developments in the whole economic environment.

In recent years, various forms of disruption have been relatively frequent, which complicate business and are reflected in corporate performance. CoVid-19 is a form of black swan (unusual event, extreme economic shock, retrospective predictability of origin) and its impact on corporate performance will be visible in the financial years 2020 and 2021. It can be assumed that many economic ties are so distorted that a relatively strong wave of bankruptcies and bankruptcies will follow the end of the state's use of support instruments. The escape from this situation may be a higher form of cooperation between businesses and the Internationalisation of Prospective businesses.

Table 1 Macroeconomic indicators for the Slovak Republic

Indicator	2017	2018	2019	1. Q 2020
Gross domestic product - (in bill. EUR MILLION) - year-on-year change (%)	 84,9 3,4	 88,6 3,5	 92,3 3,6	 96 3,7
Unemployment rate (%)	5,95	5,04	4,14	3,24
Annual inflation rate (%)	0,2	0,2	0,2	0,3
Average nominal monthly wage (EUR)	954	1 013	1 072	1 131
Foreign Direct investment (in bill. EUR MILLION)	46,56	47,97	49,38	50,79

Source: Euroeconomics [http: //www.euroekonom.sk/](http://www.euroekonom.sk/)

State of financial performance in NACE group 26

The group includes the manufacture of computers, peripheral equipment, communications equipment and similar electronic products, as well as the production of components for these products. This includes the production of consumer electronics, measuring, testing, navigation and control equipment, irradiation, electromedical and electrotherapeutic equipment, optical instruments and equipment, and the production of magnetic and optical media.

Table 2 Evolution of the number of NACE 26 economic entities

Characteristics	2. Q 2017	2. Q 2018	2. Q 2019	2. Q 2020
Total economic subjects	1 129	1 354	1 489	1 682
Business	1 129	1 354	1 489	1 682
The public sector	1	1	1	1
Private sector	967	1 155	1 266	1 450
Foreign controlled enterprises	161	198	222	231

Source: Slovak Statistics Office http: //datacube.statistics.sk/ —!/view/sk/VBD_SLOVSTAT/og2022qs/v_og2022qs_00_00_00_sk

The analysis of financial performance was carried out on a sample of 416 to 809 enterprises (for 2015-2018).

Table 3 Evolution of median selected financial performance indicators of NACE 26 economic entities

Indicator	2015	2016	2017	2018
Tier 1 liquidity	0,58	0,78	1,09	1,21
Tier 2 liquidity	1,39	1,7	2,13	2,28
Tier 3 liquidity	1,62	2,07	2,49	2,59
Maturity of short-term receivables (days)	58,87	58,30	55,41	49,22
Maturity of short-term liabilities (days)	92,19	78,33	81,79	80,06
Total asset indebtedness (%)	51,46	44,39	38,96	39,58
Return on equity (%)	7,73	7,58	4,42	5,53
Profitability of sales (%)	2,05	2,62	2,12	2,76

Source: Cribis Universal Register https: //www2.cribis.sk/

Summary: In swift liquidity, the situation is signaling a growing share of cash resources, with other liquidity indicators following this trend, with lower dynamism. The divergence in the collection of short-term debts and the settlement of short-term liabilities signal the retention of resources (in more detailed examination of receivables and business liabilities, rather the opposite trend is apparent, the slowing of the collection period from 39 to 35 days and the intensive reduction of the credit transfer period from 25 to 14 days). There is a positive trend in reducing overall indebtedness, which is negatively reflected in the return on equity. Profitability in sales remains relatively low compared to economic growth.

State of financial performance in NACE group 27

The group includes the production of products that generate, supply and use electricity, the production of electric lighting, signaling equipment and electrical household equipment (production of electronic products is excluded).

Table 4 Evolution of the number of NACE 27 economic entities

Characteristics	2. Q 2017	2. Q 2018	2. Q 2019	2. Q 2020
Total economic subjects	1 545	1 567	1 672	1 813
Business	1 545	1 567	1 672	1 813
The public sector	1	1	1	1
Private sector	1 368	1 384	1 475	1 588
Foreign controlled enterprises	176	182	196	224

Source: Slovak Statistics Office http: //datacube.statistics.sk/ —!/view/sk/VBD_SLOVSTAT/og2022qs/v_og2022qs_00_00_00_sk

The analysis of financial performance was carried out on a sample of 546 to 673 enterprises (for 2015-2018).

Table 5 Evolution of median selected financial performance indicators of NACE 27 economic entities

Indicator	2015	2016	2017	2018
Tier 1 liquidity	0,49	0,45	0,58	0,69
Tier 2 liquidity	1,24	1,19	1,36	1,50
Tier 3 liquidity	1,55	1,58	1,62	1,86
Maturity of short-term receivables (days)	57,01	55,08	54,92	48,23
Maturity of short-term liabilities (days)	91,47	84,38	82,62	76,74
Total asset indebtedness (%)	57,83	59,05	54,17	51,12
Return on equity (%)	10,42	11,15	10,58	10,52
Profitability of sales (%)	2,75	2,97	2,98	2,63

Source: Cribis Universal Register https: //www2.cribis.sk/

Summary: In swift liquidity, the situation signals a stagnating share of cash resources, while other liquidity indicators follow this trend, with the same dynamic. The divergence in the collection of short-term debts and the settlement of short-term liabilities signal the retention of resources (in more detail, the opposite trend is seen in more detailed examination of receivables and liabilities, the slowing of the collection period from 43 to 37 days and the intensive reduction of the credit transfer period from 30 to 20 days).The positive trend, in moderate deleveraging of overall indebtedness, does not appear to be negative on equity profitability. Profitability in sales remains relatively low compared to economic growth.

State of financial performance in NACE group 28

The group shall include the manufacture of machinery and equipment which operate independently of materials either mechanically or thermally or undergo treatment of materials (e.g. processing, spraying, weighing or packaging), including their mechanical components, which produce and use force, and all specially manufactured primary parts.

This includes fixed and mobile or hand-held equipment, whether manufactured for industrial, construction and civil engineering, agricultural or domestic use, the manufacture of special equipment for passenger or freight transport within defined Boundaries.

Table 6 Evolution of the number of NACE 28 economic entities

Characteristics	2. Q 2017	2. Q 2018	2. Q 2019	2. Q 2020
Total economic subjects	1 565	1 590	1 639	1 683
Business	1 565	1 590	1 639	1 683
The public sector	1	1	1	1
Private sector	1 328	1 331	1 376	1 416
Foreign controlled enterprises	236	258	262	266

Source: Slovak Statistics Office http: //datacube.statistics.sk/ —!/view/sk/VBD_SLOVSTAT/og2022qs/v_og2022qs_00_00_00_sk

The analysis of financial performance was carried out on a sample of 684 to 809 enterprises (for 2015-2018).

Table 7 Evolution of median selected financial performance indicators of NACE 28 economic entities

Indicator	2015	2016	2017	2018
Tier 1 liquidity	0,35	0,32	0,40	0,45
Tier 2 liquidity	1,07	1,08	1,28	1,29
Tier 3 liquidity	1,32	1,31	1,59	1,61
Maturity of short-term receivables (days)	60,16	59,91	61,18	60,80
Maturity of short-term liabilities (days)	93,48	98,01	97,06	86,28
Total asset indebtedness (%)	65,70	63,92	57,62	56,76
Return on equity (%)	11,65	11,58	8,92	9,23
Profitability of sales (%)	2,22	2,45	2,16	2,82

Source: Cribis Universal Register https: //www2.cribis.sk/

Summary: In swift liquidity, the situation signals a stagnating share of cash resources, while other liquidity indicators follow this trend, with the same dynamic. The divergence in the collection of short-term debts and the settlement of short-term liabilities signal the retention of resources (the trend of a very slow reduction in the collection period from 46 to 43 days and the slowing of the credit transfer period from 38 to 32 days is evident in a more detailed examination of business receivables and liabilities). Overall indebtedness remains stable, but the return on equity has Declined. Profitability in sales remains relatively low compared to economic growth.

Main regional challenges and needs

European Commission Communication No 553 of 6 October 2010 set out measures to achieve the Europe 2020 objectives of smart growth through regional policy and its financing. The first measure to achieve the objectives of the Europe 2020 strategy is the development of **smart specialisation** strategies. The aim is to concentrate resources on the most promising areas of comparable benefit, i.e. current sectoral or cross-sectoral activities, eco-innovations, high added value markets, existing networks or specific research areas. Under these conditions, and in the interests of an effective cohesion policy, the development of smart specialisation strategies has become ex ante conditionality in the draft legislation – the general regulation for the European Structural and Investment Funds for the period 2014-2020 (hereinafter referred to as "ESIF").

The basic premise of the creation of the Strategy of Research and Innovation for Smart Specialisation of the Slovak Republic (hereinafter referred to as "Smart Specialisation Strategy" or "RIS3") is to demonstrate that the Slovak Republic has the ability to strategically manage and concentrate permanently limited resources with the aim of sustainable development, while harmoniously developing the Republic on the principles of smart, sustainable and inclusive growth for strengthening the competitiveness of the Slovak Republic and the European Union as a whole. For these reasons, the formulation of the strategy and its implementation must respect the principle of partnership, comprehensive communication and participatory preparation, approval, implementation, monitoring and evaluation of the results achieved by the widest possible range of its direct and indirect actors.

The Slovak Republic is a small, highly open economy with a size comparable to those of the large EU countries. For this reason, the concept of smart specialisation is not applied at national level. The country's long-term lagging behind in the intensity of innovation activities at company level, in spending on R & D and innovation projects whose implementation outputs end in practice, in technology transfer, in the exploitation of cooperation potential, in patent activity, in cooperation between research institutions and industry, in the use of venture capital, but also in a number of aspects determining the efficient use of human resources. The neuralgic point is also the continuing weak level of cooperation between scientific research, school and economic potential for the development and growth of the competitiveness of the industrial base, combined with the creation of competitive innovative products, technologies and services.

Given the limited resources and capacities, the strategy is concentrated on a limited number of priorities, which are determined on the basis of the country's strengths and international specialisation. This is reflected in the focus of individual investment measures in such a way that they are not fragmented and that the Structural Funds, public budgets and private resources are concentrated on competitively advantaged priorities with the highest potential for development.

Basic trends in the development of Slovak exports

The share of exports of goods and services in the gross domestic product of the Slovak Republic increased in 1995-2012 from 57.8 % to 95.4 %. There was a dramatic increase in the openness of the economy mainly after 2000, in connection with the introduction of economic reforms, the economic boom in the world and the confirmation of the status of the SR as the future EU Member State. A further significant increase occurred after 2005 with the arrival of large foreign investors in the automotive and consumer electronics sectors. At present, Slovakia has a high degree of integration into global networks of trade in goods and services.

A. Export of goods

Around the time period 1997-2011 in Slovak exports of goods it was possible to see a clear trend towards specialisation in certain types of products:

- the share of the eight most important product classes in total exports increased from 53.5 % to 73.9 %;
- the share of the three most important product classes (84 – Nuclear reactors, boilers, machines, appliances, parts, 85-Electrical Machinery Instruments and Equipment, and 87 – Vehicles other than rail, their parts and accessories) grew from 26.0 % to 53.2 %.

In 2011, more than half of Slovak exports of goods consisted of only three classes of products. The fastest growing exports in class 85 – Electrical machinery and equipment (from 7.0 % to 29.0 %). In 2009, the share of this class in total exports even reached 25.8 %.However, the sector has proved to be relatively vulnerable in times of crisis. From other important export sectors, the share of exports of iron and steel decreased (the share of total exports fell from 12.4 % to 6,0 % in 1997-2011). More or less stable export shares were maintained by automotive industries such as rubber (2.3 % versus 2.4 % in the period 1997-2011), plastics (4.4 % versus 3.3 %) and iron and steel products (3.8 % versus 2.7 %).

The competitive advantage of Slovakia within the main export markets (European Union, China and Russia) can be characterised by indices of export specialisation. The Balasso Index of Revealed comparative advantage (RCA2) indicates that in comparison with the EU27, most of the advantages of Slovakia are concentrated mainly in the export of cars (RCA = 1,628), consumer electronics (RCA = 5.005), electrical machines and devices except consumer electronics (RCA = 1,131) and iron and steel (RCA = 1,832). Slovakia also has a slight comparative advantage in the export of machinery and equipment (RCA = 1,041).

B. The anchorage of the most important sectors in the Slovak economy

Linking the most important industries to domestic production, their ability to stimulate economic activities with their domestic subcontractors is an important parameter of the development of the company highlighting their anchoring into the economic and social

framework of the country. Only if export-intensive sectors are sufficiently anchored to the structure of the economy can their potential be exploited and developed. Ideally, the sectors in which the country specialises in exports are: I) lucrative in terms of high added value; well anchored in the productive structure of the economy; III) linked to other sectors of the domestic economy.

The main export industries of the Slovak industry are so far characterised by a high degree of intermediate consumption and low level of added value (production of motor vehicles, manufacture of computer, electronic and optical products, metal production, production of metal structures, average level of added value in Slovak economy). There has been no significant increase in the share of value added in total production in either of the sectors under review in the period under review. Services have shown a positive trend in increasing the importance of exports of computer and information services. The growing anchorage of the following key export sectors to the domestic economy:

- has positive effects on employment and economic growth;
- Reduces the risk of economic collapse in the event of the departure of significant foreign investors from Slovakia,
- it contributes to employment growth.

Analysis well interlinked within supply-customs networks and also with other, medium-sized sectors (rubber and plastic production, machinery and equipment production, electrical machinery manufacture, manufacture of metal products and structures). This is a classic example of the interlinked variety of complementary productions combined in the production of complex automotive and consumer electronics products.

From the point of view of smart specialisation, it is appropriate to focus on the further development of complementary sectors related to the manufacture of cars and consumer electronics and to increase their level of added value. Research, in particular in the field of metallic and non-metallic materials, can also help to increase added value. These are priority areas of material research and industrial technologies (transport, mechanical engineering, electrical engineering). An important priority is also information and communication technologies, which are increasingly being applied both as a separate export item and as a complementary input in the production of cars and consumer electronics (e.g. navigation software, control systems, communication systems, etc.).

Specificities of export in NACE 26-28 sector

The basic principle underpinning the smart specialisation process of individual Member States is to define RIS3 specialisation areas within the so-called 'entrepreneurial discovery process' (EDP), i.e. deriving priority RD&I areas based on business opportunities and needs.

Four strategic objectives have been identified to meet the structural change of the Slovak economy towards growth based on increasing innovation capacity and excellence for supporting sustainable employment growth and quality of life of the country's citizens and

fourteen sub-targets as a set of individual policies. In order to achieve these objectives, three basic areas of specialisation were approved by the Government of the SR:

- areas of economic specialisation, based on traditional anchored economic sectors which have the potential to significantly influence the achievement of the strategic objectives of RIS3;
- perspective areas of specialisation, which are fast growing and show high development potential for the Slovak economy,
- areas of specialisation in terms of available scientific and research capacities.

Table 8 Domain 2: Industry for the 21st century

Key relevant EN NACE sectors	Functional ties
C20 Manufacture of chemicals and chemical products C22 Manufacture of rubber and plastic products C24 Production and processing of metals C25 Manufacture of metal structures, excluding machinery and equipment **C27 Manufacture of electrical equipment** **C28 Manufacture of machinery and equipment n.e.c.** D35 Electricity, gas, steam and air conditioning supply	C13, C14, C15 Manufacture of textiles, Manufacture of apparel, Manufacture of leather and leather products + related products C10, C11 Manufacture of food, beverage production C16 Processing of wood and manufacture of products of wood and cork, except furniture; manufacture of articles of straw and plaiting material C17 Manufacture of paper and paper products C19 Manufacture of coke and refined petroleum products C21 Manufacture of basic pharmaceutical products and pharmaceutical preparations C23 Manufacture of other non-metallic mineral products **C26 Manufacture of computer, electronic and optical products** C29 Manufacture of motor vehicles, semi-trailers and trailers C30 Manufacture of other transport equipment C31, C32 Manufacture of furniture, Other production J62, J63 Computer programming, consulting and related services, Information services M74, M75 Other professional, scientific and technical activities, Veterinary activities

Source: EN-RIS3_IMPLEMENTACNY-PLAN_SK_final_EK

Domain description:

Production and processing of metals, metal structures, mechanical engineering and manufacture of electrical equipment are traditionally strong and competitive industries of Slovak value. In terms of economic specialisation, these industries show high shares in exports and also high values of comparative advantage coefficients compared to the EU28 and neighbouring small and open economies. Sectors have high business expenditure on R & D in the Slovak Republic. A significant proportion of allocations were also directed to these sectors (through the promotion of new and progressive materials and production technologies). The domain also has the second highest number of patents and trademarks. In the field of nanotechnologies, metallurgy and mechanotronics, Slovakia has a comparative technological advantage on EU markets.

Table 9 Domain 3: Digital Slovakia and creative industries

Key relevant EN NACE sectors	Functional ties
C26 Manufacture of computer, electronic and optical products J62, J63 Computer programming, consulting and related services, Information services M74, M75 Other professional, scientific and technical activities, Veterinary activities	C17 Manufacture of paper and paper products C20 Manufacture of chemicals and chemical products C22 Manufacture of rubber and plastic products C23 Manufacture of other non-metallic mineral products C24 Production and processing of metals **C27 Manufacture of electrical equipment** **C28 Manufacture of machinery and equipment n.e.c.** C29 Manufacture of motor vehicles, semi-trailers and trailers C31, C32 Manufacture of furniture, Other production M69, M70 Legal and accounting activities, Management of firms; management consultancy services J62, J63 Computer programming, consulting and related services, Information services J59 Manufacture of films, videos and television programmes, preparation and publication of sound recordings M73 Advertising and market research

Source: EN-RIS3_IMPLEMENTACNY-PLAN_SK_final_EK

Domain description:

The domain "Digital Slovakia and Creative Industry" integrates the strong position of Slovakia in the production and export of consumer electronics and in the production of ICT services (especially cybersecurity). At the same time, these sectors are the main platforms for the development of the creative industry, which is now increasingly being transferred to the web. The domain has a strong competitive advantage in global markets thanks to the production of consumer electronics. In ICT services, domestic Slovak companies are also promoting well in global markets. The domain has a high number of patents and trademarks.

Entrepreneurs' views of the level and quality of the business environment in the NACE 26-28 group of enterprises

The quality of the business environment should be seen in two levels: on the one hand, the perception of the business opportunities generated by the market and competition, while significantly increasing the potential of companies that can export advanced services; II) on the one hand, in view of the administrative and tax burden on businesses (which is one of the frequently criticised facts).

Discussions held with representatives of the NACE 26-28 business entities in the period April 2020 to September 2020 presented various views on the lack of support for entrepreneurs in innovative sectors who also carry out their business activities in foreign markets.

The most frequently mentioned problem was unclear, delayed and sometimes unaddressed assistance under the influence of the CoVid-19 pandemic, and the whole issue has a far-reaching impact on the economy in 2021 and 2022. Naturally, the assessment of the current economic situation is also perceived by entrepreneurs in a broader context, and during the discussions they have formulated three areas that need to be communicated with national and European authorities:

- CoVid-19 and providing assistance to enterprises in the second and third waves of the pandemic;
- slow start-up of the European economy as a result of the US-China conflict;
- internal structural problems of enterprises operating in NACE 26-28 sectors too concentrated on automotive or low added-value production.

The export performance of advanced services within the sector under consideration is subject to a number of facts. The presence of multinational groups causes a partial distortion of the perception of this activity, as subsidiaries have limited competence to export to third countries. On the other hand, companies with a national owner feel high pressure from cheap competition from Asia and, despite high quality standards, enforcement is particularly difficult due to price dumping. High-innovative Slovak companies, on the other hand, do not perceive specific barriers, they have their customers (also in a group of renowned European and American companies). From a managerial point of view, the export of advanced services was partly made more difficult by the cancellation or virtualisation of exhibitions and fairs, significant restrictions in air transport (not possible to visit business partners) and overall concerns about the functioning of global logistics chains. Businesses are aware of the uniqueness of the current situation and opt for waiting tactics.

Most frequently discussed barriers to business development

The development of entrepreneurship in the Slovak Republic is often associated with the debated various forms of barriers caused by the operation of the national regulator and, in some cases, by the harmonisation of our law with EU requirements, represented by the European Commission and the European Parliament. One of the EU's missions is to create the conditions for European economies to remain in contact with mature market economies and to build sustainable European prosperity. In practice, this means removing various forms of barriers, barriers and disadvantages that hamper the competitive environment and restrict cooperation between businesses.

A. National barriers to business development

Economic policy measures that monitor balance and healthy economic growth lead to decisions on the development and implementation of legislation, with a negative impact on economic activity. The most frequently discussed and criticised are the measures that lead to the emergence of barriers:

- In the field of taxation – methods of determining the tax base (tax recognised and non-recognised items); the amount of the tax rate; providing tax relief, tax breaks; the system of payment of tax advances; administration of tax obligations.
- In the field of levy – the method for setting the minimum and maximum amount of the levy base; the amount of the drainage load; administration of levies obligations.
- In the social field – by formulating requirements for employers that increase the unit labour price (work surcharges outside the standard regime; creation of the Social Fund; limiting the flexibility of the employment relationship; gastro-leaflets and meals supplements).
- In the area of communication with the authorities – a high level of red tape; limited functionality of communication systems (eGovernment); complicated and lengthy enforcement of the law; a malfunctioning capital market; overregulated banking sector.

The specific and relatively often mentioned lack of development of the competitive environment is the positive discrimination of large and strategic multinationals, which is reflected in a specific regime for the negotiation of business conditions, ways of meeting tax and levies obligations, greater willingness of the legislature and executive to grant various specific concessions. SMEs thus remain on the periphery and can only benefit if they are part of larger economic units.

B. Transnational barriers to business development

The issue of targeted support for entrepreneurship by EU bodies has been debated rather intensively recently. In order to maintain balanced regional development, certain policies have been introduced in the past, the implementation of which has certainly had negative effects and affected the holistic development of the national environment. An anomaly arose in Slovak conditions, when Bratislava as the capital of the country is excluded from support schemes of several European programmes focusing on building and promoting business relations. At the same time, labour migration shows a higher intensity of interest in the capital and not only in terms of business and employment opportunities.

Another relatively frequently discussed barriers are the lack of policy on strategic investments, structural reforms, the bureaucracy of business life (excessive administrative burden in drawing up the Euro-project agenda and demonstrating the efficient absorption of resources).

No less serious problem and consequent barrier to development are the inconsistent approach and ambiguous EU upholding of economic interests of entrepreneurs vis-à-vis major trading partners (e.g. USA, China), lack of uniform protection against unfair practices, dumping prices, problematic enforcement of patent and copyright law and other distortions of economic relations. From the point of view of the internationalisation of entrepreneurship, the most serious barrier is the protectionist policy of decisive economic players and retaliatory tariffs, the effects of which on businesses cannot be predicted.

Vision for Service Export excellence

Services recorded a relative decline in importance in Slovak exports in the years 1995-2012. This was due to both the growing importance of car and vehicle exports and the stagnation of the growth in revenues from exports of tourism and transport services (including oil and gas direct debits).

The share of knowledge-intensive services in the current account of the balance of payments amounted to 48.13 % in the EU27, but only 23.13 % in the SR in 2011. The Balass index of the revealed comparative advantage indicates that in comparison with the EU27, most of the benefits of Slovakia are concentrated mainly in exports of services with a low level of added value. Transport services (31.3 %, RCA = 1,54) and tourism services (36.7 %, RCA = 1.84) dominated in the structure of exports of services of the SR. Within the group of knowledge-intensive services of the SR lags in direct debits for R & D services (RCA = 0,79) and advertising, marketing and design services (RCA = 0.82).However, Slovakia is well placed and above-average specialisation in the field of computer and information services (RCA = 1,15).The share of these services in total exports of Slovak services continues to increase, from 0.37 % in 1996 (the first data available) to 8.67 % in 2011. Slovakia was successful in exporting computer and information services to the United States, where up to one quarter of exports went from 2008 to 2011. There has been a negative trend in other commercial services, with a share of total exports of services falling from 22.4 % to 14.9 % between 1996 and 2011.

Based on RIS3 a SWOT analysis is processed for Slovakia, which indicates some deficits also in relation to excellence of services (this must be linked to excellence of production itself).

Strengths of the Slovak economy

- Key industries represented in the MNS.
- Competitive technological and product level in export sectors.
- The growing interest of businesses and industrial clusters in rebuilding enterprise research and innovation structures (entities).
- A growing share of information services in the export of services.
- Good results in selected science and technology disciplines, with concentrated research teams and workplaces (materials and nanotechnologies; ICT; biomedical and biotechnology; industrial technologies; energy and energy; environment and agriculture; social Sciences and Humanities).
- Dynamic growth in the use of information and communication technologies in all business processes.
- High-quality human resources in competitively capable industries stemming from traditions.

Weaknesses of the Slovak economy

- Insufficient share of own (Slovak) research and innovation activities in export sectors in Slovakia.
- Absence of industrial research in Slovakia.
- Insufficient involvement of domestic businesses in MNS subcontracting chains.
- Underfinancing of businesses linked to low innovation performance, in particular small and medium-sized enterprises.
- Marginal application of revolving schemes, including venture capital, to support research and innovation and the absence of a venture capital application system.
- Low own added value of production by domestic businesses.
- Lack of a comprehensive strategy for research and innovation and its implementation.
- Excessive number of broadly defined priorities for State policy in the field of science. Fragmentation of resources for building research and innovation infrastructure at national level (SF, SF).
- Extensively built research and innovation infrastructure.
- Barriers to business access to the infrastructure of public research and innovation workplaces.
- Administrative barriers to the practical implementation of EU Structural Funds projects.
- Low level of cooperation between academia and industry.
- Low share of national resources for research and innovation funding.
- Low involvement of Slovak actors in the 7th EU Framework Programme. Lack of competitiveness of Slovak research and innovation organisations within the EU.
- A malfunctioning national innovation system.
- Barriers to the use of IPR protection.
- Inefficient use of resources for knowledge and technology transfer into practice.
- The absence of indirect tools and an incentive environment to support research and innovation.
- Low enforceability of the law.
- Absence of legislation stimulating procurement of innovative products.
- The education system is not linked to the needs of practice, particularly in the field of technical and natural sciences. The absence of a system and support for entrepreneurship education and the development of creativity in the education process.
- Low number of efficient research and innovation staff oriented towards the practical exploitation of results.

Opportunities for the Slovak economy

- Extending the involvement of domestic subcontractors in the global supply chains of MNS.

- The concentration of R & I links with the home MNS of companies into research and innovation centres on a limited number of RIS priority areas3.
- Deepening the trialogue of academia, business and public administration.
- The potential of land fund and domestic strategic natural resources (water, wood, magnesite) in an innovative economy.
- Promoting the transition to green technologies, materials and products resulting from undesirable ecological changes and promoting legislative changes.
- The new "EU Industrial Strategy (Industry 2020)" aimed at revitalising European industry.
- Removing barriers to cooperation (improving coherence) through quadruplehelix as a fundamental principle of public administration (governance) of research and innovation.
- Support for research and innovation projects within the V4 countries and the Danube Strategy and linking within the ERA with the potential of the Centrope region (Bratislava-Brno-Vienna). Better use of Community programmes, in particular Horizon2020 and ESFRI programme and project system
- The use of European Technology Platforms by involving national technology platforms in their work.
- Wider use of Slovak knowledge in carbon-free energy, including its security, accepted by the company.
- Underutilised potential for agriculture and water management.
- Developing social innovation and creative industries.
- The entry of national innovative firms into global markets.
- Support the creation and development of innovative Spin-offs and Start-ups.
- Exploiting the networking potential (businesses, research and innovation structures).
- Encouraging businesses to support innovation and technological transfers by financial instruments (innovative vouchers, venture capital funds).
- Exploiting the potential of ICT services and products in the context of the EU Digital Agenda.
- Restoring the tradition of vocational and technical education. Support for the influx offoreign research and innovation workers and study of foreign students in Slovakia. Involvement of young people in solving practical business problems.
- Creation of conditions for the return of Slovak citizens active in foreign research and innovation structures.

Threats to the Slovak economy

- Transfer of investors to territories with other comparative advantages than SR (EU).
- Lack of investment in knowledge-based products and technologies, also due to the non-linkage of the MNS to local research and innovation infrastructure.
- Reluctance of business entities to invest in research and innovation in Slovakia.
- Limiting the desired financial support of the research and innovation system in the Bratislava region.

- The autonomy of the education, research, innovation and business sectors, resulting in a different understanding of the role of research and innovation.
- A changing population structure with an increasing share of the population with poor quality education and low work skills.
- Continuing orientation of education into areas not corresponding to the consumption of economic practice and the knowledge society.
- Deteriorating structure and quality of graduates of the educational process. Missing graduates especially in technical and natural sciences. The continuing outflow of talents abroad.
- Imbalance in the age structure of employees.

Identification of areas of specialisation of the Slovak economy

Based on the analysis of economic development of the Slovak Republic, areas of specialisation based on anchored traditional economic sectors and perspective areas of specialisation from rapidly growing sectors in Slovakia have been identified, which show high development potential for the Slovak economy. The basis for specialisation is the analysis and interconnection of the development of the economy, infrastructure and capacities of research and innovation. The allocation of industry in Slovakia is not always spread in parallel as research and innovation capacity. It is therefore necessary to create research and innovation opportunities for existing businesses in order to exploit both potentials on the one hand and, on the other hand, to create an environment for the creation of businesses using the already built research and innovation capacity. In order to maximise the full potential and synergies, priority areas need to be mutually beneficial in relation to the environment and society. This would achieve the national and especially regional competitiveness of businesses not only on the local market but also on the global market, which will contribute to increasing the overall competitiveness of the European Union.

A. Areas of economic specialisation

- Automotive and mechanical engineering.
- Consumer electronics and electrical equipment.
- Information and communication products and services.
- The production and processing of iron and steel.

Trends in economic specialisation:

- increasing the domestic added value of products, in particular by effectively transferring technologies and the results of science and research into the production process;
- developing industry-oriented manufacturing processes for better use of available resources, higher recycling rates and the use of environmentally friendly materials through scientific and technological development and innovation;

- the use, deployment and replacement of materials used to date with modern materials with a new and higher complex of performance, including technological processing (machining, forming, bonding),
- development of technological investment units, especially in the field of metallurgy, mechanical engineering, power engineering and integrated industrial equipment, with regard to the application and use of light metals and modern materials in the production of transport and construction technology in order to reduce the total weight and contribution to the green economy, development and application of composite materials,
- development of technological investment units, especially in the field of energy and industrial equipment, with regard to the internationalisation of activities and the development of so-called "emerging countries",
- streamlining production and logistic processes;
- the use of robotisation and ICT in production processes,
- engaging in supply chains and internationalisation ("the purchase of cooperation is a purchase") transfer of know-how from big to small and vice versa in cooperation relations;
- energy efficiency and renewable energy sources.

B. Perspective fields of specialisation

- Automation, Robotics and Digital Technologies.
- Processing and recovery of light metals and their alloys.
- Manufacture and processing of polymers and progressive chemical substances (including smart fertilisations) Creative industry.
- Recovery of the domestic raw material base.
- Support for smart technologies in the field of raw materials and waste treatment in the region of emergence.

Development trends in prospective areas of specialisation:

- new technologies enabling data transmission, processing and storage;
- intelligent production systems;
- smart and industrial transport;
- smart consumption management technologies;
- advanced chemical technologies for the production of modern fertilisers;
- technologies and services for active life and ageing, i.e. health care, diagnostics and wellness;
- support for smart technologies in the field of raw materials and waste treatment in the range regions.

Some areas of specialisation identified have partially created conditions for increasing their economic performance and competitiveness through the implementation of research and innovation activities, including in cooperation with research and innovation organisations with infrastructure capacities. However, to make their activities more efficient, it will be necessary to complete the necessary structure, mechanisms and links to improve their innovative performance.

Vision for service excellence

Building on the main vision of the Slovak Republic in the field of innovation – "Incentivising a structural change of the Slovak economy towards growth based on increasing innovation capacity and excellence in research and innovation, in order to promote sustainable income growth, employment and quality of life" – will be fulfilled by its transformation towards a knowledge-based economy. The main industries will be restructured towards higher value-added production. Subcontracting companies operating in the automotive and electrical industries, ICT and other sectors in Slovakia will reflect global trends and will be more closely involved in cooperation with the MNS and the identification of new strategic segments. It is the new strategic segmentation that will make it possible to rebuild their own value chains and exploit new market opportunities (niche markets) and open up new markets.

Thanks to product and process innovation, companies will become globally competitive and will be involved in the supply chains of other MNSs in the wider region, in particular with a view to fast-growing markets. The shift within the value chains of the MNS will create the conditions for better cooperation with the MNS in implementing innovative solutions. In addition, businesses will identify forward-looking strategic segments through cluster cooperation, thereby diversifying product portfolios of prospective sectors. Innovative solutions will be implemented not only in industry but also in global markets. Employment in the sophisticated manufacturing, ICT and knowledge-intensive services sector will be increased. Effective system support for businesses based on a combination of long-term professional assistance and funding will be created in order to eliminate the negative trend of lagging behind in innovation and marginalisation of enterprises. This will enable businesses to exploit the capacities of research, development and innovation centres built to meet the needs of smart specialisation sectors, which will develop the next generation of required products, technologies and materials.

Assessment of innovation performance

The Slovak Republic has long been one of the EU countries in the international comparison of Innovation Union Scoreboard (IUS) that lags behind the EU average in innovation performance. For a more precise specification, Slovakia was one of the countries with the highest growth in innovation performance in the period from 2010 to 2012, i.e. at the beginning of the implementation of the Europe 2020 strategy.

The first dimension of the assessment of innovation performance by the IUS is the resources divided into human capital and funding. The positive elements of innovative development are the high proportion of graduates of doctoral studies (3.1 per 1 000 inhabitants).25-34 years old, but with poorly represented technical and natural sciences). The quality of the Slovak scientific-research system according to the evaluation of the IUS falls significantly behind in several criteria. Slovak science is largely

closed, the level of involvement in the international research context is low, as is the level in the number of the most cited scientific publications. In the area of innovation finance, Slovakia has long been characterised by under-utilisation of venture capital due to the lack of competitiveness of this instrument and its problem implementation.

The second dimension of the assessment of innovation performance is business activities. The situation is particularly unsatisfactory in the area of intellectual property, where we are lagging behind the EU average, neighbouring economies and European innovation leaders, particularly in the area of patents. Countries such as Finland or Sweden will create almost 25 times more patents per billion euros (GDP) than Slovakia. Some explanation for this poor state of affairs in the area of 'production' forms of intellectual property can be a comparison of the two indicators of the IUS – business R & D expenditure and non-R & D related innovation expenditure. Slovak companies prefer the purchase of finished technologies, external knowledge or external R & D over business expenditure on their own R & D. There is little patenting in Slovakia (also) because companies invest little in R & D and they prefer to buy ready-made technologies and knowledge. The reason for this is probably the fact that the MNS present performs these activities most often in their home countries.

The third dimension of innovation performance is the economic effects of innovation. From the analysed indicators a significantly strong part of the Slovak economy is the contribution of exports of medium and high technologies (medium and high-tech) to the trade balance. The worst position in the economic effects of innovation is the indicator of revenues from the sale of licenses abroad, in which Slovakia exhibits minimum values according to the IUS. Revenues from the sale of patent licences are directly linked to the low patent 'production' of domestic R & D.

A. R & D priorities

- Material research and nanotechnology focusing on new materials (especially light construction materials and composites, organic materials, plastics, steel and special materials), surface treatments and system diagnostics for applications in the fields of economic specialisation of Slovakia, specifically in the automotive industry, mechanical engineering, electrical engineering, electronics, metallurgy, energy. Slovakia has more than 1 000 researchers in these areas, who have published almost 30 % of all outputs in international scientific journals.
- Information and communication technologies focusing on information and communication systems, including technology process management systems, as well as datamining and large data processing services and the secure use of ICT, including web technologies and cloud solutions. These also form the centre of the creative industry in Slovakia, which has been a growing segment of Slovak services exports for 10 years and currently represents 40,000 employees. Together with business services, it accounts for more than a third of Slovak exports of services. This thematic area presents the potential for the creation of new small businesses and the development of existing businesses and the creation of new high value-added jobs. This agenda is key to fulfilling the EU's Digital Agenda in the Slovak Republic. There are nearly 1,300

R & D staff working in academic institutions with this focus, and approximately 1,500 graduates per year have completed their second degree course. The segment has the highest success rate in all research sectors.

- Biomedical and biotechnology focusing on new diagnostic and treatment procedures for cancer, heart, vascular and brain diseases, endocrine and metabolic disorders, infectious diseases and allergies. In the field of biotechnology, in particular pharmacological and industrial biotechnology. There are almost 2000 researchers in the segment who publish more than a quarter of all Slovak publications in international scientific journals. The main application of results translates into diagnosis, prevention and treatment of diseases and cooperation with three medical faculties.

B. Technological priorities

- Industrial technologies with an emphasis on automation, control, robotics as well as technologies for forming, machining and merging new metal and non-metallic materials and composites, logistics technologies, polymer, wood and products processing technologies.
- Efficient and usable energy sources (reducing energy intensity, reducing emissions, ALLEGRO programme, smartgrid technology, nuclear power plant safety, etc.). Slovakia has experience in the construction, operation and decommissioning of nuclear power plants and at the same time has built research and training capacities. Ensuring the energy security of the country through the search for new sustainable ways of generating electricity is a natural priority.
- Environment, agriculture, food security with a focus on advanced technologies and practices in the field of agriculture and food to ensure that healthy food production is sufficient.

C. Social priorities

Social thematic priorities are set with regard to the most pressing problems of society, which are most burdensome by Slovak society. The Slovak Republic has relatively adequate scientific potential in a wide range of disciplines in social sciences and humanities. The societal thematic priorities are:

- Population ageing and quality of life, focusing in particular on active ageing, health security for older citizens, including mental health assistance, social security, removal of barriers to handicapped and friendly self-government. According to demographic outlook, the population of Slovakia will soon be one of the fastest ageing in Europe. The need to find solutions that improve the conditions for the active life of older people and their quality of life is all the more serious.
- Multi-ethnicity, social inclusion and poverty problems of some population groups. The focus will be on finding solutions in population groups most affected by poverty, identifying both objective and subjective causes of emerging poverty, habits and

specificities and finding effective solutions. Emphasis will be placed on sustainable solutions in the long term.

- Applying young people in changing circumstances. The use of young people, especially after school, is critical in raising and preparing young people for the profession. High youth unemployment rates encourage the search for more effective approaches. There are currently several alternatives for young people, not just employment. There is also scope in the areas of creative activity and the development of own entrepreneurship, so attention will be paid to how to support mechanisms to help young people take up.

Position of small and medium-sized enterprises in export

According to Eurostat data, the share of intra-Union exports of small and medium-sized enterprises in the EU Member States accounted for 42.8 % of total exports to EU countries. Within the Slovak Republic, exports of SMEs accounted for 28.9 % of total exports to the European Union (2018). Small and medium-sized enterprises in Slovakia are also lagging behind EU Member States in terms of the share of exports to non-EU countries. In 2017, in Slovakia, SMEs accounted for 15.1 % of total exports outside the EU (in the EU 33.0 % of total exports outside the EU).

As part of the comparison of export performance with other EU Member States in 2017, Slovakia ranked with 28.9 % of SMEs' share of exports to EU countries at the last rankings of the EU countries under review (26th place) and last in the V4 region. More than two thirds of total intra-Union exports were made up of SMEs in Cyprus (81.8 %), Latvia (78.8 %), Estonia (74.2 %) and the Netherlands (68.0 %). Only Germany (26.9 %) and France (24.9 %) have reached a lower proportion of SMEs than in Slovakia.

More than three quarters of total external exports were made up by SMEs in Cyprus (87.9 %) and Estonia (79.7 %).Furthermore, more than two thirds of total exports outside the EU were generated by SMEs in Latvia (74.5 %).Less than one third of the total external export volumes accounted for by SMEs in the UK (32.4 %), Romania (31.3 %), Ireland (26.8 %), the Czech Republic (26.6 %), France (19.3 %) and Germany (17.9 %).Slovakia has been ranked last in terms of the volume of exports of SMEs to non-EU countries since 2013. Even in 2017, Slovakia was ranked last (with 15.1 % share of SMEs).

In 2017, intra-Union imports of small and medium-sized enterprises of EU Member States accounted for 49.8 % of total imports from EU countries. Within the Slovak Republic, SME imports accounted for 44.5 % of total imports from European Union countries. Even with imports from outside the EU, small and medium-sized enterprises are lagging behind EU Member States. In Slovakia, SME imports accounted for 16.8 % of total non-EU imports (in the EU 42.0 % of total imports from non-EU countries).

From the point of view of the commodity structure of exports of small and medium-sized enterprises (according to the classes of the Harmonised System), exports of machinery, equipment and electronic equipment dominated in 2018, representing almost one third (32.4 % and EUR 6.062.8 million respectively) of total SME exports. Other major export commodities of SMEs included:

- basic metals and their products with a share of 16.0 % (2.996.0 million Euro),
- vehicles, aircraft, transport equipment with a share of 10.4 % (1 939.7 million Euro),
- plastics, rubber and articles thereof with a share of 7.0 % (EUR 1 312.0 million),
- chemical products with a share of 4.4 % (EUR 817.8 million),
- various industrial products with a share of 4.3 % (EUR 797.6 million),
- plant products with a share of 3.9 % (EUR 729,1 million),
- food industry products 3.2 % (EUR 597.6 million),
- wood and wood products, wood and charcoal 3.1 % (572.2 million Euro).

As part of the year-on-year comparison of the commodity structure of SME exports, exports of basic metals and products from them rose most significantly by EUR 355.1 million, machinery, appliances, electrical equipment, by EUR 139.2 million, pulp, pulp and paper by EUR 80.3 million and vehicles, aircraft, vehicles, vehicles by EUR 60 million.

Statistical data on the commercial exchange of high-tech goods (high-tech goods) are among the indicators used to assess the level of the knowledge economy. The high-tech group of goods is assessed on the basis of SITC Rev. 4 Standard International Trade Classification and contains technical products whose production includes high R & D intensity. This group includes products from the following basic areas – electronics and telecommunications, electrical engineering, pharmacy, chemistry, aeronautics, non-electrical machines, scientific instruments, computing, other high-tech.

In 2018, small and medium-sized enterprises accounted for 27.5 % of total exports of high-tech goods, while their share decreased only at a minimum year-on-year (by 0.2 p.b.).In terms of the structure of enterprise size categories, the share of micro-enterprises in total exports of high-tech goods amounted to 9.8 % (by 0.1 p.b. more than in 2017).At least the share of small businesses increased to 6.7 % (by 0.2 p.b. year-on-year).In the case of medium-sized enterprises, a year-on-year decrease in the share of exports of high-tech goods as the only size category from the SME perspective. Their share in 2018 was 11,0 %, i.e. by 0,4 p.b. less than in 2017.

From a territorial point of view, SMEs export to the five most important countries (by volume of exported goods) within the EU's single market:

1. Germany – is characterised by a significant presence of machinery, apparatus and electronic equipment (41.1 %). The share of base metals and their products was 15,8 %.Vehicles, aircraft, transport equipment accounted for 15.6 % of SME exports to Germany, and plastics, rubber and articles made up of 6.1 %.For other individual commodities, their share did not exceed 3.0 %.

2. Czech Republic – almost one quarter of small and medium-sized enterprises' exports to the Czech Republic in 2018 were machines, appliances, electronic devices (24.9 %). Basic metals and their products accounted for 17.9 % of exports of SMEs to the Czech Republic. The share of plastics, rubber and their products was 9.9 %, the share of chemical products was 8.5 %, the share of vehicles, aircraft, transport equipment was 7.6 % and the share of food products was 5.1 %. For other individual commodities, their share did not exceed 5.0 %.

3. Poland – more than one quarter of total SME exports to Poland accounted for a share of machinery, equipment, electronic equipment (28.6 %). Base metals and their products accounted for 19.1 %, plant products 9.4 %, plastics, rubber and products reached 8.3 % and vehicles, aircraft, transport equipment accounted for 8.2 % of total SME exports. The share of food products was 5.2 %. For other individual commodities, their share did not exceed 3.5 %.
4. Hungary – As part of the commodity structure, exports of SMEs to Hungary were dominated by the presence of machinery, equipment and electronic equipment (20.3 %), basic metals and their products (17.4 %), vehicles, aircraft transport equipment and live animals, animal products (in agreement 7.2 %) and plant products (5.4 %). The share of other individual commodities did not exceed 4.5 %.
5. Austria – Exports included machinery, electronic equipment (24.2 %), base metals and their products (20.6 %), vehicles, aircraft, transport equipment (10.1 %) plant products (8.3 %), plastics, rubber and their products (5,7) and wood and wood products, charcoal (5.6 %). The share of other individual commodities did not exceed 5.0 %.

Outlook for the development of the Slovak economy

The evolution of GDP in the coming years will depend significantly on technological progress, with a higher percentage of growth in this factor for emerging economies such as China. With regard to the country's share of global GDP, a gradual decline in the EU-US share, a significant increase in China's share and a roughly equal share of the Russian Federation can be expected. The management of economic, financial (currently pandemic) crises, restoring confidence in international barrier-free trade (non-protectionist) trade has and will have a significant impact on international commercial activity. Changes in the digitisation of public services and the completion of digital infrastructure are essential to kick-start the economy in the next decade. Central authority, strategy and departmental capacities for its implementation are the basis for the digitisation of public administration. The ambition is to increase use and satisfaction with eGovernment, which requires a focus on full support for the life situations of citizens and entrepreneurs and a new design of services to address them. The cost-effectiveness of the IT state will be reinforced by the introduction of financial management and deduction of the results of digitisation. The creation of a shared service centre will fulfil the role of central purchasing and performance of commodity IT services and goods for authorities. Formal standards for the security of the state's IT services will translate into real security of systems and networks. Completing digital infrastructure and increasing household use of ultra-fast internet will have a multiplier effect on the use of digital skills, public services and support economic performance, including in case of shocks such as the Coronavirus pandemic.

Actions to address the regional challenges

The Slovak economy must respond to megatrends that affect events across society. These trends are global and affect all countries, Slovakia including Slovakia. In particular, demographic, technological, climate and geopolitical challenges need to be addressed. The coronavirus pandemic has highlighted these challenges.

Slovakia is stuck in the middle income trap. The ambition of the vision of Modern and successful Slovakia is to move Slovakia to 92 % of the average GDP per head of the EU 27 by 2030. In terms of quality of life, the biggest challenges for Slovakia are health, education and accessibility of housing.

Slovakia markedly slowed down the pace of convergence with the most advanced EU countries, reaching only 73 % of the EU-27 average in 2018. In ten years since the onset of the crisis, Slovakia has therefore approached the European average by only 2 percentage points (p.b.). However, other aspects of quality of life should not give way to GDP growth. On the contrary, these issues are closely linked, both ways. Many investments in a better quality of life necessarily require more public resources, which can only generate faster economic growth or higher taxation. In turn, higher quality of life stimulates further growth of the economy.

The main source of economic lagging in Slovakia is low productivity due to allocation and technological inefficiencies. Allocation efficiency says that people and capital are not used effectively – they are tied to low-productive activities and in uncompetitive businesses. In particular, the quality and integrity of public administration, which affect regulatory barriers for entrepreneurs and law enforcement, is the culprit. Technical efficiency reflects the degree of technological lagging behind by insufficient take-up of finished technologies or implementation of own R & D.

Most important actions to meet regional challenges at national level

A. pro-growth tax mix

The aim is to make the tax system less burdensome for economic activity and to focus more on taxation on consumption, assets and negative externalities. In order not to be an obstacle, but to help meet the long-term goals and transformation challenges of Slovakia. Changes in the tax mix will be oriented to increase motivation to work and employ (specifically for low-income and long-term unemployed), increased investment attractiveness of Slovakia, fair taxation of assets, application of the polluter pays principle and greater fairness in taxation (tax neutrality). Changes will be designed in such a way that they contribute as little as possible to potential distortions, injustices and inequalities in society.

Moving away from the “assembly hall” economy to industry 4.0 and increasing competitiveness will contribute to boosting productive investment and innovation through

super-depreciation for industrial technologies 4.0 and increasing tax neutrality in the deduction of tax losses, which we today limit most sharply in the EU.

Property taxes on real estate are extremely efficient and if they are linked to market value, they are also very fair. The increase in real estate taxes will also strengthen the self-resources of the municipalities. The measure will require the creation of price maps, the electronicisation and digitisation of land register services.

In line with the polluter pays principle, environmental taxes and charges will be adjusted so that the resulting prices take greater account of economic and implicit costs and guarantee environmentally sustainable production. In this spirit, too, there will be regular indexation of fixed taxes and charges imposed on several externalities. Vehicle taxation will take into account the amount of CO2 emitted. Other negative externalities, such as visual smog from external advertising, also appear.

In order to increase tax fairness in order to reduce the number of Slovak letterbox enterprises in low tax jurisdictions and/or harmful AML practices, exemptions from the application of CFC rules to individuals will be removed. The necessary complement will be the modification of the criminal law, which in its present form, through effective regret, does not incentivise the voluntary payment of taxes, but instead provides de facto unlimited tax amnesty to irresponsible entities.

Main result indicator: share of more harmful taxes for economic growth:

- Objective 1: until 2022: halt the trend towards the growth of Slovak letterbox companies in tax havens.
- Objective 2: until 2024: achieve the EU average in the ratio of more harmful taxes to economic growth in total tax revenues.
- Objective 3: until 2024: reach the V3 average in the ratio of equity taxes as % of GDP.
- Objective 4: until 2024: achieve a tax wedge for individuals at 50 % of the average wage at EU average level.

The main measures are:

- Measure 1: December 2020: adoption of the amendment of the Act on Income Tax (CFC rules) and the amendment of the Criminal Code with effect 1.1.2021.
- Measure 2: January 2021: strengthening the taxation of externalities – taxation on external advertising and the CO2 element in vehicle taxation.
- Measure 3: January 2022: reduce taxation on labour and increase consumption taxation within the framework of the major tax reform adopted.
- Measure 4: January 2022: introduction of full depreciation of investments in industry 4.0.
- Measure 5: January 2022: effective implementation of value.

B. Revision and liability of tax expenditure

The objective is to assess on an ongoing basis the justification and effectiveness of the existing tax exemptions in terms of achieving its purpose and publicly declared tax priorities, by analogy with the revision of expenditure.

Regular annual review of selected tax expenditure (currently approx.60 identified items in a total volume of approx.1,7 bills Euro) would be transparently evaluated their usefulness, efficiency and addressability.

In line with the orientation of the current programming period, tax exemptions will be revised as a matter of priority, which may undermine the ambition to achieve EU policy objectives. In order to eliminate potential distributional impacts on the most vulnerable, the removal of some derogations will require partial compensation on the expenditure side.

Main result indicator: % of tax expenditure cancelled on the basis of the revision:

- Objective 1: until 2021: implementation of the results of the first revision of the tax expenditure in the 2022 budget and through the corresponding amendment of the Act.
- Objective 2: until 2024: reduce the number of inappropriate tax expenditures.

The main measures are:

- Measure 1: December 2020: a timetable for the interim review of tax expenditure.
- Measure 2: July 2021: first revision of the selected group of tax expenditures.
- Measure 3: January 2022: abolishing inappropriate tax expenditure from the first revision.
- Measure 4: July 2022-2026: automatic tax expenditure review process – revision. as of July of year t and the abolition of identified unpurposed tax expenditure subsequently in t+1.

C. Simplification of the payment of taxes and levies

In addition to changing the tax mix and reviewing tax expenditure, we will also focus attention on increasing the simplicity, transparency and comprehensibility of the tax wedge, especially labour. Simplifying the system is a precondition for harmonising taxes and levies and improving competitiveness in the simplicity of paying taxes.

Several steps connected with the use of digital services in the fulfilment of tax obligations (e.g. pre-filled tax returns, e-invoices) together with more accessible public binding opinions of the FS SR will lead to increased legal certainty and simplification of the payment of taxes. A vision of a unified collection of taxes, duties and levies will be restored, which has a fundamental potential to save costs for the state, entrepreneurs and businesses. This change will require adjustments to the activities as well as organisational reform of the institutions concerned.

Main result indicator: time needed to meet tax and levies obligations:

- Objective 1: until 2023: double the number of pre-filled tax returns.
- Objective 2: until 2024: reduction of time needed to meet tax and levies obligations.
- Objective 3: until 2024: reduction of the number of tax payments by a third.

The main measures are:

- Measure 1: September 2021: mandatory disclosure of the statutory opinions of the FS SR.
- Measure 2: January 2022: pilot phase of selected pre-filled tax returns.
- Measure 3: January 2022: introduction of e-invoices.
- Measure 4: January 2024: uniform collection of taxes and duties.

D. Energy efficiency

Slovakia remains one of the most energy-intensive economies, particularly given the structure of industry, as it consumes almost 80 % more energy on GDP than the EU average. In addition, we have a high proportion of public buildings in an unsatisfactory state (75 %) that require reconstruction, preferably in the form of guaranteed energy services. A comprehensive renovation of public buildings and private homes will take place; small and medium-sized enterprises (SMEs) will also be included in the support scheme. Part of the complex reconstruction will be replacement of inefficient solid fuel boilers, insulation, or building of cooling systems, application of modern facade elements or solar panel installation. Most of the heating plants will switch to sustainable gas and biomass in 2021-25. Energy efficiency in the heat sector will be increased by reconstructed pipelines. **Total financial need for the years 2021 to 2026: EUR 1,850 million.**

Slovakia needs to accelerate the promotion of intelligent energy solutions both in the field of regulation and building of energy infrastructure, or storage and promotion of alternative energy sources, including. Especially in the electricity grid, they are not ready for a higher share of RES. Examples of intelligent distribution are Acon and Ingrid projects. Smart methods of operation and development of energy infrastructure (e.g. smart asset management) will be promoted as well as smart solutions for the development and integration of so-called new energy players into the energy market with a view to decarbonisation, decentralisation and digitisation of energy. These activities will be carried out in the context of sectoral integration, which, in addition to the renovation wave, forms an essential element of the European Green Agreement and the EU's recovery plan. **Total financial need for the years 2021 to 2026: EUR 200 million.**

E. Decarbonisation of the economy

Slovak industry accounts for approximately 50 % of total greenhouse gas emissions in Slovakia, while the EU average for 2018 is about 25 %. Industry support programmes such as the Innovation and Modernisation Funds, the Fair Transition Fund will accelerate the transition to a low-carbon economy. Emissions in transport are on an increasing trend. Alternative fuels, including electromobility, have the potential to reduce these emissions.

Investments in charging infrastructure will be supported as well as support for alternative fuel vehicles, especially in the public sector. **Overall financial need for decarbonisation of industry for the years 2021 to 2026: it will be complemented by April 2021 Overall Financial Need for Promotion of Alternative Fuels for the years 2021 to 2026: EUR 100 million.**

F. Science, Research and Innovation

Few businesses in Slovakia innovate compared to abroad, research quality is generally low and underfunded, and there is a lack of stronger public-private cooperation. According to the European Innovation scoreboard, our country is only a moderate innovator (21st place in the EU27). The above-average result is achieved by Slovakia within indicators only in case of the impact of innovation on sales and employment, which is mainly influenced by export performance of the automotive industry.

In all other categories, Slovakia is placed below average – the most significant is in the case of financial support for innovation and research, and especially in the sub-indicator of the use of venture capital, where it reaches only 11 % of the average level in the EU. At the level of aggregate indicators, the lagging behind is significant in intellectual assets, in the share of innovative SMEs, and generally in the attractiveness of the research system and in an innovation friendly environment. Slovakia has a maximum of 50 % of performance in the EU in these categories.

The main source of fundamental and original innovations is enterprise R & D, which remains significantly in Slovakia. In 2017, businesses carried out R & D in the volume of 0.48 % of GDP, making Slovakia one of the last rungs of the EU. On the other hand, the share of business research in GDP has more than doubled in the last 10 years. The main reason for this trend is the contribution of the automotive industry, where expenditure has risen from virtually zero to today's 0.17 % of GDP. The sectors of computer programming, mechanical engineering and rubber and plastic have also contributed to the increase. Other sectors do not increase their R & D expenditure. The low rate of investment in corporate R & D results in few patents, trademarks, utility designs or designs.

Government support for private R & D is yet to be launched, in particular through indirect tax super-deduction and patent boxing. Direct financial resources from government to R & D businesses amount to only a small 0.01 % of GDP. Indirectly, enterprise research is supported by a super-deduction introduced in 2015 and gradually rising (to 200 % in 2020), reaching one of the most generous in Europe. The international comparison as well as the drawing experience in Slovakia show that the countries or companies with the highest investment in research and innovation use a system of tax relief minimally.

In parallel, in addition to the process of standardising procedures and increasing the objectivity of the award of grants, e.g. evaluation by an international panel, research projects only in English, increased flexibility in expenditure, mandatory and ongoing publication of project results, etc.

Support for research and innovation will need new flexible instruments. These are automatic grants by academic output, patent vouchre, matching grants (co-financing to

private or European resources), funding of 'Seal of excellence' projects, or projects that have met the threshold (e.g. MSCA IF, Widenning fellowship, ERC assessment for ERC assessment and second round), financing of ERC research applications (a bridge grant for those reaching B in the second round for the preparation of a new application, the ERC grant for the development of a project for a research project in the context of a research project, and the development of an ERC research application, the grant of the project in the second round, the development of the ERC grant, the ERC grant, the development of a research project in the ERC programme, and the funding of a research project in a second round, in order to prepare for a new application, to the ERC grant, to a grant to the ERC grant, to a grant to the ERC for a research project. There are the support of the ERC project for the development of a project in the project, the development of the ERC project for research, the development of the ERC project, and the development of an ERC grant for a new application, an ERC grant to a research facility, a project in a research facility, a research facility in the project. It is also necessary to increase the resources for growth financing by a prospective company (in the volumes of 1-10 million Euro) which is insufficient in Slovakia (availability of venture capital has the worst rating in the European innovation scoreboard).

The national strategic R & D priorities arising from the updated RIS3 and the revision of R & I spending and policies, and following the transformation of the SAS and structural changes in universities, will be funded by large strategic grants. Large teams with dozens of workers will be funded. The funding reform also includes a commitment to the stability of public resources to competitive research funding, including a regular increase of 0.05 % of GDP per annum in 2021-2030 from the government budget, which will reach around the EU average in 2030.

Total financial need for the years 2021 to 2026: EUR 2,520 million.

G. Corruption, law enforcement and bureaucracy

Slovakia is among the worst countries in the EU in the indicator of perceived corruption. A transparent and non-corruption environment has a positive impact on economic growth through key factors such as public and private investment, human capital development and economic stability. Slovakia is the sixth worst in the EU70 in the perception of corruption; it ranks 59th in the countries studied. The proportion of corruption in everyday life is declining, the problem is, above all, a great deal of corruption into a political system of overcrowding corruption (state capture). Corruption represents a significant obstacle to doing business in Slovakia, according to the Global Competitiveness Report. In order to combat corruption effectively, it is necessary to increase transparency of processes in public administration, quality public services in the communication of companies and citizens with the state, and to narrow the space for unfair activities in the management of state property and resources, public institutions and self-governments. The perception of corruption is also linked to trust in the judiciary and the police. Slovakia is among the worst in the EU, according to a Eurobarometer survey on the confidence of the population.

A prerequisite for trust in the judiciary is enforceability of law and judicial ethics. The length of judicial proceedings plays a crucial role in the efficiency of the judiciary. The Slovak judiciary has been lagging behind the best countries in recent years, mainly in the

length of court proceedings and in the degree of case handling. The significant improvement in the latest CEPEJ evaluation round (2018-2020) is mainly due to a change in the reporting methodology, not necessarily due to improvements in the efficiency of courts. However, the length of court proceedings in commercial disputes continues to increase. The old filings of executions also remain a challenge, despite a new system of filing and specialised court in Banská Bystrica. Old execution cases can still have an impact on the efficient operation of the judicial system. Judicial measures should aim to further improve the handling of cases in court proceedings and to reduce their length. The challenge of the Slovak judicial system may also be the lack of legal assistance to the most vulnerable groups, as is the case for example in the areas of health or social services.

Significant barriers to business in Slovakia are high regulatory burdens, unsatisfactory law enforcement, administrative obstacles to starting a business and slow processes in obtaining building permits. The regulatory environment for business is deteriorating, as can be seen in international comparisons of World Bank Doing Business countries (45th place in 190 countries reviewed, 18th place in the EU77) or the OECD's Product Market Regulation Index. In particular, the need for different licences and permits, as well as significant regulation in professional services, is a problem for starting a business. In building proceedings is a big challenge especially their length, caused not only by legislation, but also by the cumbersomeness of building offices and self-governments. New building laws supported by electronic services would speed up construction procedures more significantly. Enforcement actions (enforceability of contracts, insolvency resolution, protection of small shareholders) would also contribute to the improvement in the business environment.

The judicial system will introduce changes with a positive impact on the business environment, particularly in the area of enforceability of contracts and dealing with insolvency or reducing administrative barriers to entrepreneurship. In order to make insolvency and restructuring proceedings more effective, the reform will be carried out in two steps:

- *The effectiveness of the reform of personal bankruptcies will be evaluated so far in order to give honest debtors space and limit the scope for fraudsters. The reform will also focus on the supervision of courts and the Legal Aid Centre, the analysis of defaulted loans by the state, as well as the linking of personal bankruptcies with effective social, preventive and awareness-raising instruments in favour of debtors.*
- *Preventive tools for early warning of bankruptcy will be put in place for entrepreneurs and a revision of insolvency proceedings will be prepared to reduce costs for honest debtors or creditors and reduce the time needed to settle claims. Bankruptcy and restructuring proceedings will be concentrated in fewer courts. By modifying the register of failings and enhancing the transparency of public bankruptcies.*

In order to improve the business environment, a new business register concentrated on a reduced number of courts will be put in place. The reform will include the introduction of external registrars (notaries) on the agenda of the Commercial Register (along with the development of related digital applications). Tighten up the requirements for the expertise and qualifications of auctioners and auction companies and will introduce electronic auctions. The enforceability of, in particular, uncontested claims by execution or voluntary auction will be improved (together with the development of related digital applications).

The application of the Anti-Certificate Act will be evaluated. The law will be set to make honest business more profitable than dishonest business (together with the adaptation of the related information system).

The following main strategic policies and initiatives – Anti-corruption measures can be presented in summary; Reform of the Judicial Council of the Slovak Republic and the Constitutional Court of the Slovak Republic; Law on Public Prosecutor's Office; Streamlining the civil trial in the judiciary; Court map and court specialisation. **Total financial need for the years 2021 to 2024: there's a calculation going on.**

Key actions to meet regional challenges at company level

It will be developed in the course of the project, based on evidence from monitor, radar, events with entrepreneurs.

Up- and Crosslink to RIS 3 Strategies

Based on analyses of needs of enterprises (providing advanced services) and planned steps within the RIS3 implementation plans, the absence of a more comprehensive approach to support for the export of advanced services can be identified in the conditions of the Slovak Republic.

Three basic areas of specialisation of the SR were approved in RIS3 SR: areas of economic specialisation, forward-looking fields of specialisation and field of specialisation in terms of available scientific and research capacities. These areas have been transformed in IP RIS3 SR into 5 domains of smart specialisation, which were designed on the basis of economic, research and knowledge parameters, in accordance with the principles of the Manual for the development of smart specialisation strategies:[1]

- Means of transport for the 21st century.
- Industry for the 21st century.
- Digital Slovakia and creative industries.
- Public health and health technologies.
- Healthy food and the environment.

From the point of view of the ProsperAMnet project, the main area of economic specialisation, which concerns the fields of:

1. Automotive and mechanical engineering.
2. Consumer electronics and electrical equipment.
3. Information and communication products and services.
4. The production and processing of iron and steel.

Trends in economic specialisation:

- *increasing the domestic added value of products, in particular by effectively transferring technologies and the results of science and research into the production process;*
- *developing industry-oriented manufacturing processes for better use of available resources, higher recycling rates and the use of environmentally friendly materials through scientific and technological development and innovation;*
- *the use, deployment and replacement of materials used to date with modern materials with a new and higher complex of performance, including technological processing (machining, forming, bonding);*
- *development of technological investment units, especially in the field of metallurgy, mechanical engineering, power engineering and integrated industrial equipment, with regard to the application and use of light metals*

[1] Https://www.eurofondy.gov.sk/inteligentna-specializacia/implementacny-plan-ris3-sr/index.html

and modern materials in the production of transport and construction technology in order to reduce the total weight and contribution to the green economy, development and application of composite materials;

- *development of technological investment units, especially in the field of energy and industrial equipment, with regard to the internationalisation of activities and the development of so-called "emerging countries";*
- *streamlining production and logistic processes;*
- *the use of robotisation and ICT in production processes;*
- *engaging in supply chains and internationalisation ("the purchase of cooperation is a purchase") transfer of know-how from big to small and vice versa in cooperation relations;*
- *energy efficiency and renewable energy sources.*[2]

As a closer examination of the development trends, there is a relatively wide scope for points 2 and 3, but only the tools for developing the production process, greening and waste management are invoked in terms of the concrete form of perception of the benefits of these disciplines. Internationalisation is mentioned in the penultimate indent, but without further specification.

The project team, in cooperation with regional authorities and business representatives, will work to make support for the export of advanced services among the priorities of the next programming period in the form of specific institutional recommendations.

[2] Implementation Plan RIS3 – Knowledge to Prosperity – Strategy of Research and Innovation for Smart Specialisation of the Slovak Republic p. 54

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