

## **Irinyi Plan**

### **The Directions of Innovative Industrial Development in Hungary**

Budapest, February 2016

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## **INTRODUCTION – Reindustrialisation as an objective**

The results achieved through improved industrial performance over the past few years are extremely important for the Hungarian Government. In order to further increase the revenues from industry within the Hungarian gross domestic product, the Hungarian Government also developed its ideas in line with the re-industrialisation strategy and objectives of the European Union.

It is our declared goal that within a few years' time Hungary becomes the EU Member State where industrial production has the largest share within the gross national product. Re-industrialisation requires further growth in the industrial output and its increasing contribution to the gross domestic product in Hungary. Hungary intends to maintain its important role in the European motor vehicle manufacturing and also wishes to strengthen its positions in the electronics industry, logistics and health industry. Hungary's geographical location encourages our country to become the major logistic actor of the region. Apart from the sectors with outstanding performance, targeted support to traditionally strong and emerging industries could be the development incentive tool of the Government.

The Government tries to use a complex set of tools to assist re-industrialisation and the development of the Hungarian industry. Apart from direct investment promotion the new indirect instruments, such as economic regulation, are at least equally important. Nothing illustrates the importance of this better than the tendency that the more economically advanced the country is the greater role the administrative environment and obligations imposed on businesses play in maintaining the pace of development. Considering that this deregulation approach is a totally new approach for certain actors, we adopt all related legal regulations by trying to form a consistent and clearly understandable regulatory environment and to prevent any dispute between the authorities and the respective market actors through the termination of any confusion in definitions. The most important instrument in achieving this objective is the rationalised regulatory room for manoeuvre, where direct intervention and sanctions are potentially applied only when absolutely necessary.

## I. RE-INDUSTRIALISATION STRATEGY

### 1. The Re-industrialisation Strategy of the European Union

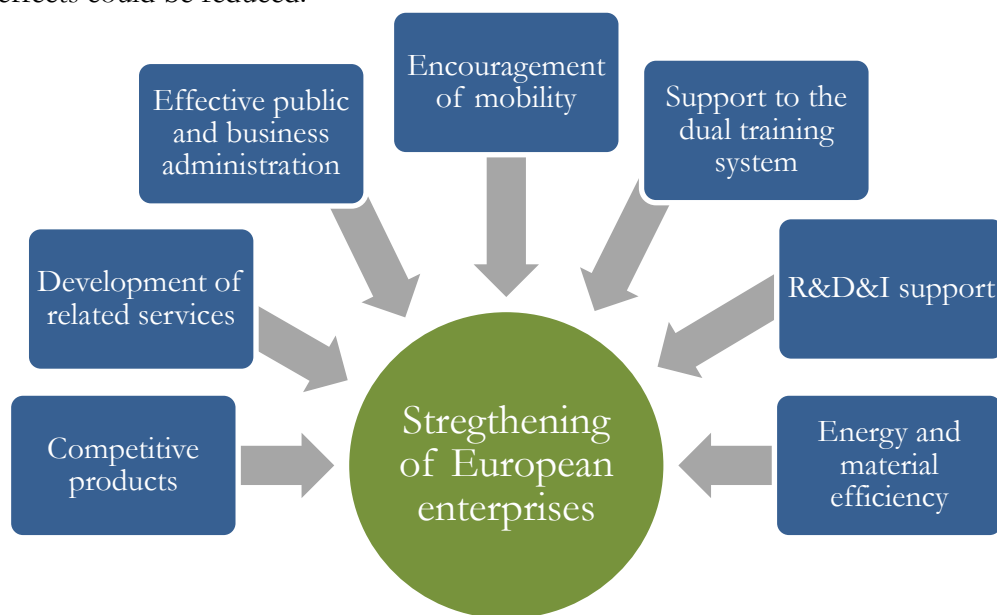
Re-industrialisation is an objective of the European Union. The European Union is lagging behind the strong industrial countries of the Asian region and the USA and its industrial output shrank by more than 20% since 2008. **Reindustrialisation** as stated in the “EU Industrial Structure 2011 – Trends and Performance” Commission report **means a more modern industrial production structure and a shift towards higher added value production.**

At EU level, the average contribution of industrial production to GDP is 17%. **The Commission aims at raising that indicator to 20% by 2020.** To induce growth, the EU and the Member States must take urgent steps in the following areas entailing potential challenges: capital investment, access to financing, public administration, entry into foreign markets, innovation, energy prices and energy efficient production.

The objective of the European Union is to develop conditions under which the SMEs may enter international markets, and through which European enterprises will be able to play an increasingly stronger role in the global value chains.

The above objectives may be achieved with the following instruments:

- **production of competitive goods**
- development of **services relating** to goods (logistics, marketing etc.)
- **improving the efficiency of public administration** in order to increase competitiveness
- **encouraging mobility of enterprises** both within and between Member States
- **targeted support to the dual training system and research-development-innovation**, with which intellectual capital can be converted into material goods
- **efficient utilisation of energy and materials**, through which the economic activities of enterprises would become more effective, CO<sub>2</sub> emission and negative environmental effects could be reduced.



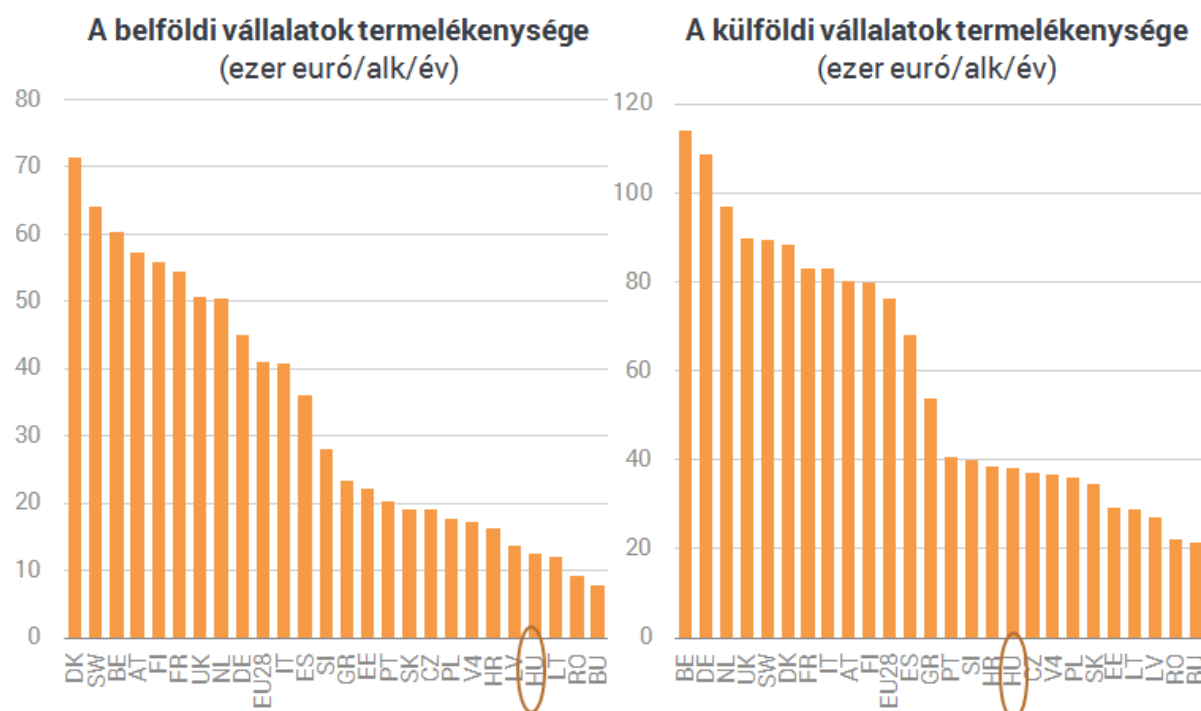
According to the views of the European Commission, **growing performance of industrial production, development of efficiency and productivity of human resources, improved**

export performance and more effective utilisation of innovation capabilities are the indicators of industrial development. The listed factors depend a great deal on the contribution of the financial sector and availability of other financing options.

## 2. Situation of the Hungarian industry, importance of the processing industry

Industry and especially industrial export have become the strongest factor of the Hungarian economy over the past few years. The growth rate, higher than the international growth rate was also the result of the actions taken in the 2010-2014 governance cycle.

The national economy overcame the recession at the beginning of 2013, and has been growing dynamically since then. In 2013 and 2014, the growth rate of the Hungarian economy was higher than the EU average (i.e., 1.3%), with the second best Member State performance after Ireland. According to the growth report published by the NBH at the beginning of December 2015, following the decline in 2009, the per capita productivity (value of goods and services produced by one employee) in Hungary returned to what it was prior to the crisis in 2011-2012 and has been growing steadily ever since. The productivity/employee of Hungarian domestic and foreign companies (EUR 1,000/year) in an international comparison is illustrated in the figure below.



<b>Belföldi vállalatok termelékenysége</b> (ezer euró/alk/év)	<b>Productivity of domestic companies</b> (EUR thd/employee/year)
<b>A külföldi vállalatok termelékenysége</b> (ezer euró/alk/év)	<b>Productivity of foreign companies</b> (EUR thd/employee/year)

Source: Institute for Economic and Enterprise Research “Productivity and Convergence - Hungary’s Outlook” study, November 2015

Hungary’s gross domestic product grew by 1.9% in 2013 and 3.7% in 2014 (the preliminary estimate for 2015 is 2.9%) owing to primarily an increase in industrial output, more specifically the processing industry on the output side. In terms of the sectors of the national economy, the processing industry has the largest GDP generating capacity (primarily through vehicle

manufacturing and related supply sectors) which continuously generates more than 20% of the gross domestic product, as illustrated in the table below:

Period	Grand total Sectors, sector groups of the national economy - GDP (HUF million)	Processing industry (HUF million)	share of the processing industry in GDP generation (%)
2012	28,627,889	5,381,316	22.4
2013	30,065,005	5,731,162	22.6
2014	32,179,666	6,367,141	23.5
2015 Q I-III	24,464,000	5,057,000	24.6

Source: HCSO

The 8.6% increase in the processing industry, representing approximately 95% of the total industrial output in 2014, was significant and mainly due to 20.6% output expansion of the largest sub-sector of vehicle manufacturing. It is another important fact that **the production volume grew in each subsector of the processing industry.**

## 2.1 Capital investments

The HCSO data suggest clear correlation between the growth and increase in capital investments.

The sectors making the largest capital investments over the last two years is indicated in the figure below:

	2013			2014	
	Value of capital investments at current price (HUF million)	Volume index of capital investments, same period of the previous year = 100.0 (per cent)		Value of capital investments at current price (HUF million)	Volume index of capital investments, same period of the previous year = 100.0 (per cent)
Grand total Sectors of the national economy	4,510,023	106.9	Grand total Sectors of the national economy	5,216,024	114
Agriculture, forestry, fishing	1,360,477	103.1	Processing industry	1,551,782	112.7
Mining, quarrying	716,135	119.7	Transportation, warehousing	935,461	128.2
Processing industry	523,966	80.9	Real estate transactions	574,415	107.7
Electricity, gas, steam supply, air conditioning	279,535	103.3	Agriculture, forestry, fishing	320,355	116.8
Water supply; wastewater, waste management	265,965	112.4	Trade, vehicle repair	293,546	104.5

Source: HCSO

Within the total national economy, capital investments went up by 6.9% in 2013 but the whole picture is very complex, because in the processing industry, which is known as the engine of growth, the volume index of capital investments fell by 19.1% in the same year. The growth in volume was even greater, 14%, in 2014. In that year growth was attributable to the processing industry, more specifically, primarily investments into machinery and equipment (24%) and

construction (8.6%). According to the latest available data, in Q1-Q3 2015 the capital investments totalled at HUF 3,411 billion at current prices, compared to the HUF 3,373 billion recorded for the first three quarters of 2014.

	2015 Q I-III	
	Value of capital investments value of capital investments at current price (HUF million)	Volume index of capital investments, same period of the previous year = 100.0 (per cent)
Grand total Sectors of the national economy	3,411,273	101.13
Processing industry	944,307	96.53
Transportation, warehousing	686,016	110.88
Real estate transactions	361,096	105.07
Public administration, defence, mandatory social insurance	216,023	127.16
Water supply; wastewater collection, treatment, waste management	206,549	118.86

## 2.2 Research, Development and Innovation

One of the Europe 2020 objectives is that the R&D expenses should reach 3% of the GDP as an EU average - in 2013 the respective figure was 2.02%. Over the last few decades, the highest figures have been recorded in the Scandinavian countries (3.32% in Finland and 3.21% in Sweden in 2013). Although the Hungarian expenditure as a percentage of GDP increased over the last six years, it is still lower than the 1.8% target set for our country.

According to the HCSO data, the total research and development expenditure was HUF 441 billion in 2014 (5% growth over 2013), of which 48% was financed by companies. HUF 63.5 billion was spent on R&D projects in 2014. The Government had a major role in many aspects and its involvement is still considerable especially in basic and applied research (20% of the total R&D project costs). That is because the corporate sector finances the R&D projects from which it can generate direct and measurable profit.

Due to capital intensity, primarily large companies are engaged in innovation, where the innovation ratio is higher than 65%; the respective figure is just 30% in the SME sector. The applied research and experimental development project expenses of the Hungarian enterprises are dominated by **pharmaceutical production, motor vehicle manufacturing and information technology**. The latter also dominates the basic research activities. The ratio of non-innovative enterprises is high especially in the textile industry, the leather industry as well as in transportation and warehousing, where approximately four fifth of the companies did not implement any new technology, procedure or innovation at company level.

## 2.3 Export

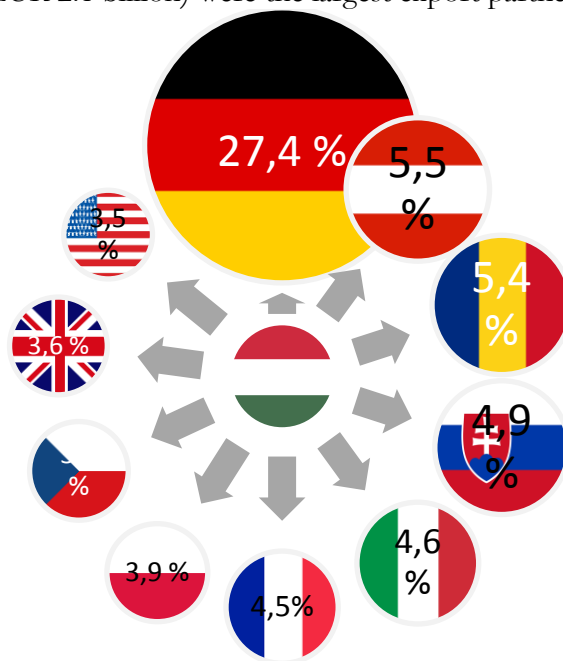
In 2014, the volume of investments into fixed assets grew in most sectors of the national economy, typically involving the commissioning of imported production machinery. The imports of such products went up by 10%, while the volume of exports of the similar products grew only



by 8.7%, which deteriorated the foreign trade balance. However, according to the HCSO data, we can conclude that with improving terms of trade Hungary improved its foreign trade turnover by HUF 96 billion over the previous year and generated HUF 2,363 billion surplus in 2014. In the short term, it improves the external balance, yet it also reveals that our economy is very sensitive to the external economic situation.

In terms of its target countries, the Hungarian goods trade is still heavily concentrated. In 2014, 78.1% of the total exports (EUR 66.2 billion) were sent to the EU Member States. This figure is 5.6% higher than the figure recorded one year before. Within the imports, 75% (EUR 58.7 billion) also come from the EU. There was a major, 9.6% rise in imports compared to the previous year. In the first ten months of 2015, Hungary's foreign trade volume grew by 8% compared to the same period in the previous year.

In 2014, **Germany was the most important** foreign trade **partner** for Hungary, receiving 27.4% of our exports. Our exports to Germany went up by 10.5% since last year. **Our second largest export partner is Austria**, representing 5.5% of our total exports with approximately 3% increase over the previous year's figure. In terms of exports, Romania and Slovakia also stand out (on the basis of the data of the first 11 months of 2015, Romania was the second and Austria the third largest export market). 21.9% of the total exports and 25% of the total imports are managed with our trade partners outside Europe. **Of the non-EU partner countries, the USA** (EUR 3 billion) and **Russia** (EUR 2.1 billion) were the largest export partners in 2014.



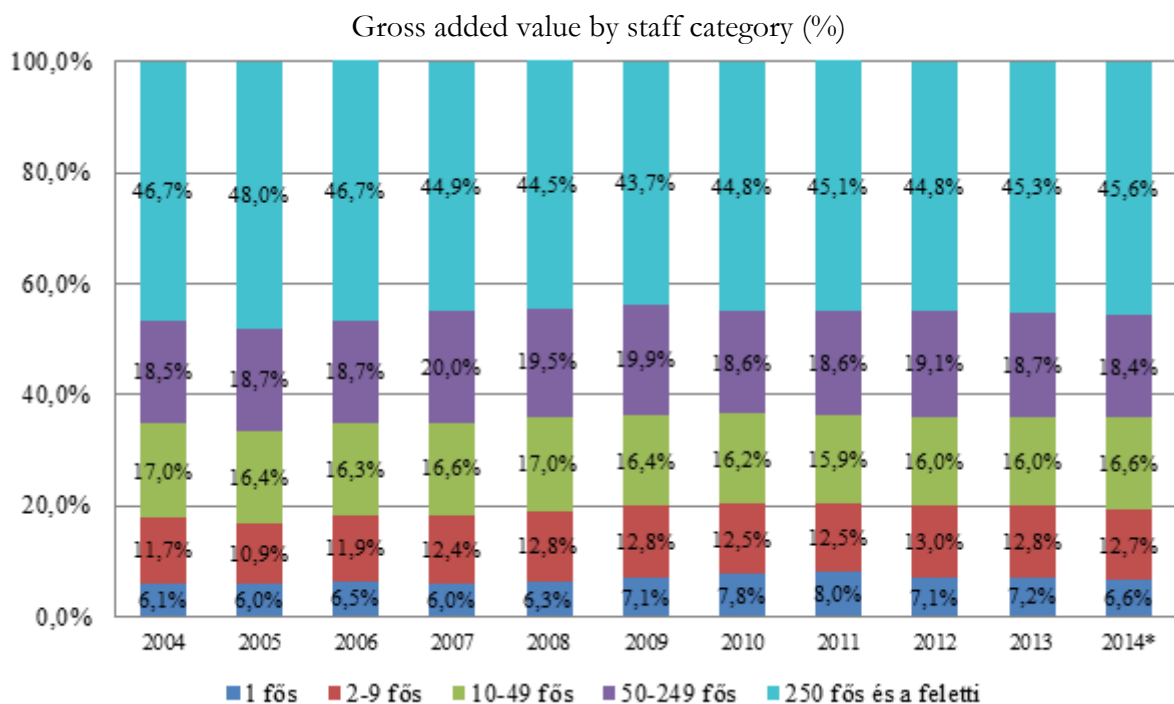
Machinery and transportation means made up 54.6% of the exports in 2014 and 57% in the first 10 months of 2015, while they represented 46.3% of the imports. This chapter contributes to the trade balance with EUR 9.1 billion. The export growth in this chapter was 13%, stemming primarily from road vehicles, where exports grew by 31.8% and imports went up by 22.4%. Such foreign trade processes are driven primarily by the EU-15, but the turnover was increase was also considerable in relation to American and Asian countries. The turnover of electrical machines, electrical devices and instruments relating to the manufacturing of motor vehicle industry products and industrial machines for general purposes expanded significantly in both relations. The trade of **medicinal products and pharmaceutical products** was the largest factor **in the increase of exports**. **At the same time, there were considerable imports in iron and steel and rubber goods**, and the trade in metal products was high in both relations. The reduction in the export of the goods produced by the **chemical industry, which is one of the leading**

**economic sectors**, towards Russia, our largest market, was offset by an increase in the exports to the EU countries. There was a dynamic increase in the import of organic chemical goods (+8.6%) and the trade of essential oil, perfumery products and detergents in both ways.

The small and medium-sized enterprises achieved remarkable results on external markets in

- the manufacturing of textiles, clothing, leather and leather goods
- timber processing, manufacturing of paper products and printing activities
- manufacturing of metal base materials and metal processing products
- production of foodstuffs, drinks and tobacco products
- manufacturing of chemical goods and products

in the 2014 exports. Unfortunately, the enterprises of this category generally exported goods of lower level of processing, which also represented a lower added value.



\*preliminary data

## 2.4 Employment

Employment and unemployment ratio (within the population aged 15-64)				
Region	Employment ratio (%)		Unemployment ratio (%)	
	2014 Q3	2015 Q3	2014 Q3	2015 Q3
Central Hungary	66.6	68.2	5.5	5.1
Central Transdanubia	65.2	69.0	5.1	4.2
West Transdanubia	66.4	68.2	4.5	3.2
South Transdanubia	59.9	60.6	7.5	8.5
North Hungary	56.2	59.9	11.5	8.1
North Great Plain	57.8	60.1	11.5	10.3
South Great Plain	61.3	63.4	8.3	7.2
<b>Total</b>	<b>62.6</b>	<b>64.8</b>	<b>7.4</b>	<b>6.5</b>

Source: HCSO

The NBH publication issued under the title of Growth in 2015 concluded that the activity of the Hungarian labour market rose significantly since 2010 even in international comparison. Following the crisis, the activity ratio was the highest in Hungary among the Visegrád Countries but, in an international comparison, it is still low. However, by the end of the decade, the demographic tendencies may represent more effective limits. Apart from demographic composition, the differences in the level of qualifications can also contribute to the lower Hungarian activity ratio.

In Q3 2015, the average number of employees within the population aged 15-64 was 4,230,000 people, which figure is 110,000 higher than reported for the same period in 2014. Main reasons behind the increase:

- impact of the programmes aimed at boosting employment
- modification of the pension system and review of the disability benefits
- other government programmes (e.g., public employment, introduction of wage and contribution-based subsidies, putting in place an environment supporting atypical employment)
- dynamic economic growth.

By 2015, the labour market differences between the Hungarian regions reduced, e.g., owing to the public employment programmes that concentrated on the least favourable regions. Apart from South Transdanubia, the unemployment ratio also reduced.

The most burning problem of the labour market is the 11% increase in vacancies between 2013 and 2014 (in 2014 there were more than 36,000 vacancies on average), of which two thirds related to the market sector. The sector with the highest labour demand was the processing industry, where employers were looking for employees for information, communication, scientific and technical activities by qualification. Half of the job seekers do not have any vocational qualifications; adult training could be a solution for them.

## 2.5 Training

The competitiveness of a state is determined primarily by the competitiveness of its enterprises, which stems from good workforce and human resources.

The educational system, especially the higher education system, has a major role in the economy. The Global Competitiveness Report published annually by the World Economic Forum divides the development of national economies into three typical phases based on the per capita annual GDP: resource driven, efficiency driven and innovation driven phases.



According to the Report, Hungary at present is in the phase of transition from the efficiency driven phase to the innovation driven phase, and therefore the success of the transition, in which the availability of highly qualified workforce is a major factor, will determine the economic development of next decade.

The ratio of people with higher education among those aged 30-34 is rising continuously in Hungary. Pursuant to point 3 of “Government Resolution 1261/2015 (IV.30) on the approval of Hungary’s National Reform Programme for 2015”, the ratio of people with higher education among the population aged 30-34 will increase to 34 per cent. The respective figure was 32.3% in 2013.

As a result of the transformation currently taking place in vocational training at schools, a well-trained and professionally qualified workforce must be made available to improve the Hungarian economy and this process will also hinder the increase in unemployment rate. Our objective is to terminate the dead-end nature of vocational education, to expand its dual education features and to involve more people into vocational training helping the economy maintain its momentum by training the required number of experts with the required expertise.

The availability of a vocational training, higher education and adult education institutional system of adequate size and quality is a key to the development of the Hungarian economy. The supply of qualified workforce, capable of producing high added value, is the responsibility of higher education. The actors of the Hungarian industry clearly demand experts who leave a practice oriented educational system. At the same time, the lack of sufficient opportunities to expand practical experience to the extent required from the career starters by the future employers is one of the inadequacies of the currently existing two-phase educational system. It is a further **requirement of the companies that young people leaving the higher education should not only be in possession of the technical knowledge and skills** required in their fields, **but also of other skills and capabilities that they can use at a company** (managerial capability, corporate management skills, corporate culture).

**The co-operative or dual training models have proved to be successful** in several countries of Europe. One of the common features of this scheme is that within the framework of the educational system students spend more time in companies on a pro rata basis and, due to the increased number of practical hours, their professional competencies and knowledge about company operation will improve. With the help of this educational scheme, the higher education system can produce individuals who are able to take a job immediately, without several years of

further training and further costs, and therefore this scheme is a fast and effective tool for handling the shortage of quality workforce. **The dual training model has also been introduced in Hungary.** In the framework of the dual training courses launched in the higher education system in September 2015, in total 19 institutions train 440 students with the scheme in co-operation with 200 partner entities.

### 3. Business environment in Hungary

The co-operating environment and structure of business associations are among the factors that determine the competitiveness of a national economy. According to a recommendation of the European Union issued in 2011 the period required for company foundation is adequate if it does not take longer than 3 days and if the costs are lower than EUR 100. The Hungarian system is much better than the EU average and complies with these requirements.

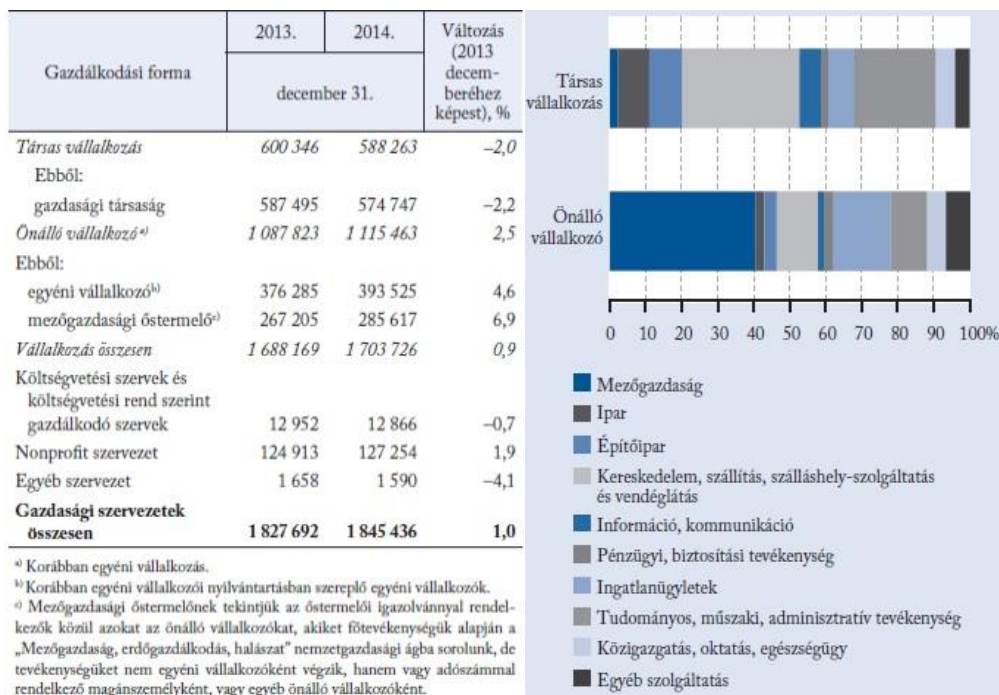
In 2014, Hungary was in the 54th position in the list published annually by the World Bank<sup>1</sup> (four places higher than in 2013) according to how simple it is to found and operate an SME in Hungary. The 189 countries are ranked according to ten indicators, where e.g., Hungary improved in terms of the administrative burden of taxation, yet was in the worst position in terms of the connection to electricity (the time and costs required for connecting a new warehouse building to the electrical network).

Several measures adopted in the recent past were also aimed at improving the business environment and competitiveness in our country. As an example, Act CLXXXVI of 2015 on the amendment of the legal regulations in relation to the reduction of administrative bureaucracy, amending more than a hundred legal regulations, entered into force on 1 January 2016. Apart from bureaucracy reduction, it also contains components that ease taxation, improve the regulatory environment, etc. In addition, further important steps must still be taken e.g., to broaden electronic administration.

In 2014, the HCSO recorded 1,845,000 registered businesses, which number was almost 1% higher than in 2013. By the type of business, in 2014 SMEs represented 99.9% (of which 97.4% were businesses employing less than 10 individuals). The number of business associations and their core activities are illustrated in the figures below:

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<sup>1</sup> <http://www.doingbusiness.org/~media/GIAWB/Doing%20Business/Documents/Annual-Reports/English/DB15-Full-Report.pdf>



Source: HCSO

Type of business	December 31 2013	December 31 2014	Change since December 2013 (%)	Corporate entity
				Individual entrepreneur
<i>Corporate entities</i>	600,346	588,263	-2.0	
Of which:				Agriculture
Business association	587,495	574,747	-2.2	Industry
<i>Individual entrepreneur<sup>a)</sup></i>	1,087,823	1,115,463	2.5	Construction industry
Of which:				Trade, transportation, accommodation service and catering
private contractor <sup>b)</sup>	376,285	393,525	4.6	Information, communication
agricultural producer <sup>c)</sup>	267,205	285,617	6.9	Finance, insurance
<i>Total enterprises</i>	1,688,169	1,703,726	0.9	Real estate transactions
Budgetary agencies and organisations operating according to the budget	12,952	12,866	-0.7	Scientific, technical and administrative activities
Non-profit organisation	124,913	127,254	1.9	Public administration, education, health
Other organisation	1,658	1,590	-4.1	Other services
<b>Total business associations</b>	<b>1,827,692</b>	<b>1,845,436</b>	<b>1.0</b>	

a) Previously individual enterprise.

b) Individual entrepreneurs previously included in the records of individual entrepreneurs.

c) Agricultural producers are individual entrepreneurs with agricultural producer licences who, based on their core activity, are classified into the "Agriculture, forestry and fishing" national economy sector but do not pursue their activities as individual entrepreneurs but either as a natural person with a tax number or an independent entrepreneur.

### 3.1 Hungarian and foreign owned large companies

Foreign owned companies and the direct foreign investments made in Hungary were indispensable to the restructuring of the Hungarian economy. The analysis of the latest, 2012 HCSO data shows that the share of these companies was greater than 50% in the major economic indicators (e.g., sales revenue, added value, etc.) even though their number is lower than 19,000. The Hungarian subsidiaries of foreign companies operate mostly in the processing industry, energy industry and information and communication industry. Hungarian subsidiaries of German companies dominate this category (more than 3,000) but the number of companies controlled from Austria and the United States is also rather high.

The 60 largest Hungarian privately owned companies employ in total more than 36,000 people. Most of them operate in the food industry, but quite a few of them operate as motor industry suppliers, in metal processing or metal works and are engaged in the manufacturing of electronic components and appliances. Their geographic breakdown is balanced, only Budapest stands out from that aspect.

### 3.2 Status of small and medium-sized enterprises in Hungary

In Hungary the ratio of SMEs within the enterprises is higher than the EU average. Especially the share of micro enterprises is high both by number and according to their role in employment. However, the Hungarian SME sector's contribution to the GDP is more than 4 per cent lower than the EU average. In Hungary there are relatively few small and medium-sized enterprises suitable for growth and exports. Since the outbreak of the crisis, enterprises came across hurdles in having access to financing and the unfavourable impacts of that could only be mitigated but not turned around by the introduction of the subsidised financing schemes. Since 2010 the regulatory environment of the operation of the SMEs has improved a great deal, but entrepreneurs still consider administrative burdens one of the gravest problems.

Given the small size of the Hungarian market, the most important growth potential for SMEs is increasing exports. That is why the activities of enterprises on the export markets need to be supported by enabling them to produce competitive and innovative goods and services that can be sold on the export market. **Direct exports cannot be an objective for all enterprises, but indirect exports are feasible for a broader group.** With the help of the supply chain, medium-sized enterprises are able to also involve micro and small enterprises into their export activities. Companies may join the export activities through networking and supply programmes. Co-operation with large enterprises also improves the competitiveness of SMEs.

Our intention is to create a favourable business environment for enterprises by further reducing the regulatory burden, developing an infrastructure for the operation of enterprises and by making it easier to acquire entrepreneurial skills. In the development of the SME sector, the thematic objective is to improve the competitiveness of the companies. Strengthening of SMEs, market and product development and increasing their R&D and innovation potential are essential prerequisites of improving competitiveness.

**Turning into an entrepreneur, utilisation of business opportunities inherent in ideas, product and service development and entry of SMEs onto the regional and international markets** have been identified as the main areas requiring support. The lack of willingness to become an entrepreneur, and of the basic skills required for business practices are the main impediments to the development of a productive and competitive SME sector, and therefore it is one of the focus points of the Government's activities. The other major inadequacy is **the**

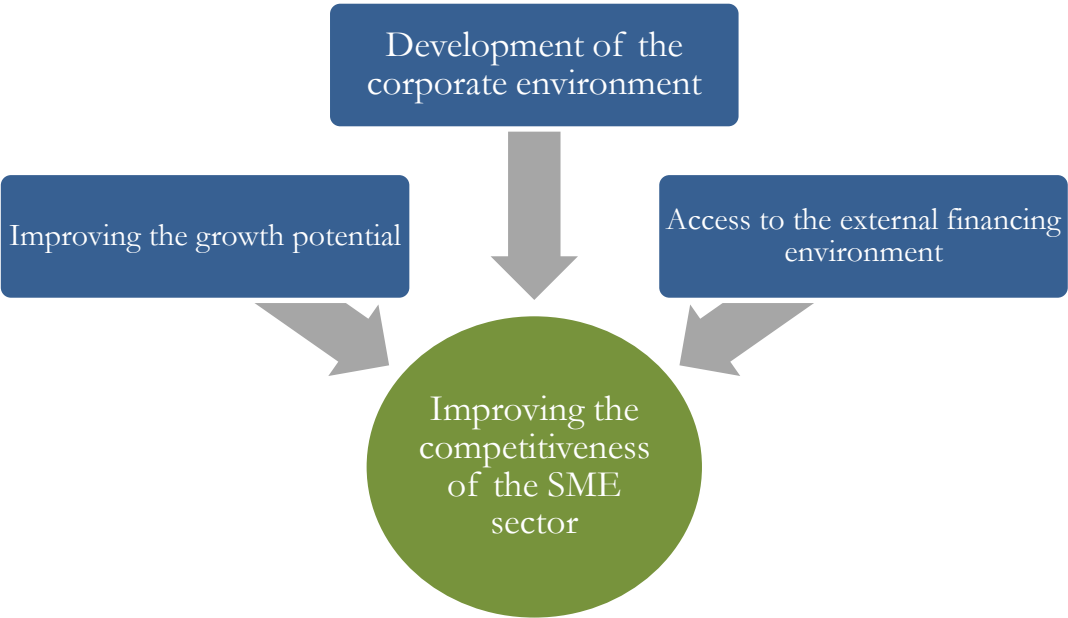
shortage of capital of SMEs and the consequential obsolete business infrastructure, which may be eliminated through capacity extension. The third area is a low level of willingness to co-operate and efficiency, which we intend to remedy by developing networks within the economy.

#### 4. Contribution of the SME Strategy to the implementation of reindustrialisation

In line with the EU industrial policy, support to small and medium-sized enterprises is a key aspect of the Hungarian industrial policy as well. In 2013, the MNE prepared its “Small and Medium-Sized Enterprise Development Strategy for 2014-2020” (hereinafter referred to as SME Strategy), the measures of which may also directly contribute to the Hungarian industrial development endeavours.

The main objective of the SME Strategy is to improve the competitiveness of the sector with a simultaneous economic growth and increase in employment in line with the EU2020 objectives. The objectives of the SME strategy were defined by taking into account the extremely heterogeneous composition of the SME sector. Consequently, in order to be able to manage special problems pertaining to different entrepreneurial segments, it concentrates a great deal on the differentiated development of enterprises. The overall objective of the strategy is to enable as many small enterprises to become medium-sized enterprises as possible. The strategy also targets at strengthening the Hungarian medium-sized enterprises, which in time can turn into internationally competitive large companies, listed on the stock exchange.

The SME Strategy defined three key areas in the field of required interventions: improving the growth potential, developing the entrepreneurial environment and making access to external financing easier.



Increasing the ability to develop and retain markets and differentiated enterprise development are the specific objectives of **improving growth potential**. The first objective can be achieved with appearance on the export market, knowledge and innovation-based development and an increase in the share of production based on the principle of intelligent specialisation. Within the framework of differentiated enterprise development, enterprises receive targeted support suited



to their situation, ambitions, abilities and opportunities, as a result of which more of them will be able to begin a growth phase. The application of differentiated enterprise development tools can help the smaller actors of the sector that have recently started their activities or are capable of growth to a limited extent or are in unfavourable situations converge to the rest and extend their employment potentials. The objectives of this key area include an increase in the number of young and female entrepreneurs and their development tailored to special needs.

Improving the competitiveness of SMEs requires a supportive corporate environment. Consequently, the other key area of the strategy is **the development of the corporate environment**. The specific objectives include the development of the business environment, business and technical infrastructure and state regulations. Within the framework of the latter, the SME sector needs to be supported not only through the reduction of the taxation, bureaucratic and administration burden, but also with measures increasing the efficiency of the enterprise development institutions.

The third key area is **improving access to external financing**. In Hungary the volume of market-based loan financing of enterprises dropped significantly over the last four years and the loss was only partially compensated by the broadly supported financial schemes. The fundamental objective is to improve the borrowing capacity of enterprises. Apart from the removal of the impediments to market-based financing, the continuation, renewal and expansion to the required extent of refundable and non-refundable support schemes tailored to entrepreneurial needs seemed to be the most important factor. In addition, the efficiency of the existing programmes worth continuing also needs to be improved, in which co-ordination of the financing schemes and programme components is one of the key instruments. Apart from strengthening the supply side of financing, the demand side also needs to be backed up, i.e., entrepreneurial skills, especially financial knowledge and skills, need to be developed.

## 5. The support system of industrial development

In the 2014-2020 period, one of the main economic policy objectives of the Government is to raise significantly the contribution of industrial output to the GDP from the current 24%. The Government also helps the reindustrialisation of the country by using EU funds, and therefore wishes to make available non-refundable support as financial assistance primarily to investment projects that focus on production. **Processing industry is the most rapidly growing industrial sector which still has considerable growth capacity**. The processing industry enterprises that have growth potential and are able to grow and are therefore eligible for support produce approximately 7-9% of the GDP. By supporting enterprises operating in the processing industry, a long-term sustainable and advanced industry can be achieved.

**It is among the Government's objectives to enable a large number of Hungarian enterprises to produce competitive goods and final products directly reaching the consumers with the help of already active and new development schemes and to enable more Hungarian small and medium-sized enterprises to join the formed supply chains.** According to the Government's plans, the resources will be available for practically each manufacturing entity.

The Priority Axis 1 of Economic Development and Innovation Operational Programme (EDIOP) contains the EU funds designated for general enterprise development also including the non-repayable support that finances projects implemented in less developed regions. In the Central Hungary Region the priority 1 of the Competitive Central-Hungary Operational

Programme (CCHOP) contains the EU funds. Local government projects are financed from the Territorial and Settlement Development Operational Programme (TOP), while resources are made available for the food industry partially under the Rural Development Programme (RDP).

Two measures are specifically dedicated to industrialisation objectives: **support to the capacity extension of enterprise** and **development of business infrastructure (e.g., industrial parks, logistics centres)**. Within the framework of the 1st priority of EDIOP, a further measure supports the networking of small and medium-sized enterprises and their entry into the market, within the framework of which the options described above are made available to the SMEs and they can also build clusters, form co-operation in supply and their entry into the international markets is also supported. Under the further priorities of the various operational programmes, the **research-development and innovation projects**, info communication projects, energy efficiency investments and employment increasing projects of enterprises are also eligible for support.

### **5.1 Supporting the capacity extension of enterprises**

The total EU support framework allocated to the Priority Axis 1 of EDIOP is HUF 416.98 billion, with which (also including 15% Hungarian co-financing and own funds) at least HUF 490.57 billion worth investment may be financed. The efficiency of the absorption of the support may contribute to the development of the industry and also the economy of Hungary. The primary objective of the priority axis was to make sure that the measure containing the largest amount of funds and supporting the capacity extension of enterprises should specifically support the implementation of industry development objectives with an overall support framework of approximately HUF 323.47 billion.

### **5.2 Business infrastructure development (e.g., industrial parks, logistics service centres)**

Reindustrialisation is an important development policy task under the National Development and Territorial Development Concept (NDTC), potentially leading to stronger partnership between the large corporate and SME sectors. A competitive business infrastructure network and development of industrial crisis areas are included in the objectives of the concept.

Consequently, it is indispensable to perform the industrial activities in sufficient quality in which the network of industrial parks, strengthened in the previous cycle, is an important contributing factor. Support to the establishment of regional centres connects to the Government's programme at several points. The industrial parks are easily accessible and are geographically well distributed in Hungary. With further support to brown field investments, new sites, new regional industrial centres may be created, which can accelerate industrial production and the support to industry development may also be concentrated on less developed regions.

In the 1st priority of EDIOP, the total EU support allocated to the development of industrial parks and logistics centres is HUF 23.97 billion. Within the framework of CCHOP, HUF 5.7 billion worth business infrastructure development may be implemented in Pest County (including 50% Hungarian co-financing and own funds). In terms of business environment development, which supports the operation of small and medium-sized enterprises, priorities 1 and 6 of the Territorial and Settlement Development Operational Programme (TOP) are the main sources of funding.

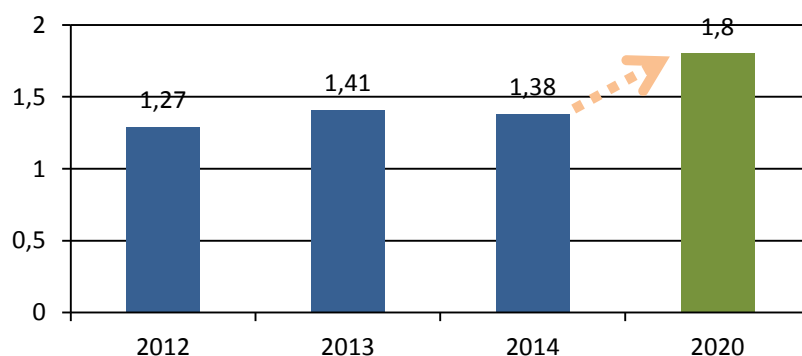
The Modern Cities Programme, launched in 2015, helps developing industrial areas, where the Government defines the development of the industrial area of particular cities as a task for the majority of the towns. NIPÜF Nemzeti Ipari Park Üzemeltető és Fejlesztő Zrt. (National Industrial Park Management and Development Company) was established as the organisation reflecting the role of the state in the development of industrial and innovation areas and for financing the development of industrial sites.

### 5.3 Research, development and innovation

**Technological development is a key factor in the competition among the leading global economic regions.** Research and development also have macroeconomic importance, as the volume of the expenditure reflects the amounts that market actors are willing to invest into securing their future position. Research and development play an important role in sustainable economic development, and in the preservation and improvement of competitiveness. In its Lisbon Strategy adopted in 2000, the European Union set an objective for the Member States to increase their R&D expenses to 3% of their GDP over ten years, in order to maintain the competitiveness of the continent. The same objective is also included in the Europe 2020 strategy, in relation to which Hungary intends to implement research and development specifically supporting manufacturing. In that process, it is important to make sure that the Hungarian SMEs engaged in R&D activities should not be deprived of resources allocated for such purposes.

The establishment of the National Research, Development and Innovation Office (NRDI) on 1 January 2015 was a major step in that process in the recent period. On the basis of the National Research and Development and Innovation Strategy (2013-2020), the NRDI Fund, defined in Section 4(2) and (3) of Act LXXVI of 2014 on Scientific Research, Development and Innovation is the main source of support for the R&D&I sector. The Fund is a notified national support scheme with an approximately HUF 50 billion annual revenue (the main source of its revenue is the innovation contribution paid by medium-sized and large companies). It should be emphasised that all resources made available from the NRDI Fund can be used as own funds for the EU Cohesion Funds with minor restrictions.

**Hungarian R&D expenditure as a percentage of GDP (2012-2020)**



In the new EU programming period, the primary objective of the Structural and Cohesion Funds is to reduce the differences between regions in terms of economic development (by giving a major role to research, development and innovation through the development of intelligent specialisation. In terms of the EU funds available for R&D purposes, the Central Hungary Region (CH) is in a disadvantaged position despite the fact that the country's and innovation

capacities are concentrated in the CH region. In order to resolve the problem, a new financing model was developed on the basis of the National Research, Development and Innovation Strategy. The most important means of that model is that the important objective of reducing the disadvantaged situation of the CH region was expressly stated as an objective of the utilisation of the RTIF (Research and Technology Innovation Fund).

The R&D preferences available under the corporation tax and dividend tax can also be mentioned although in their current form they are used by relatively few taxpayers (approximately five hundred a year). The amount actually deducted from the tax base is approximately HUF 150 billion a year and their incentive impact always depends on the currently effective tax rate (greater when the tax rate is higher and smaller when the tax rate is lower).

Industrial enterprises eligible to a large amount of non-repayable funds made available under the 2nd priority of EDIOP to support R&D&I activities. The most important support scheme in this category relates to the R&D&I activities of companies and prototype product technology and service development. The priority encourages the purchase of innovation services, focusing primarily on the promotion of knowledge centres and knowledge transfer between small enterprises with the help of innovation vouchers; the industrial right protection scheme is also available under which support is provided for activities relating to the acquisition and maintenance of industrial right protection, innovative research services and intellectual asset valuation and audit services. The total amount of EU support available under the priority is HUF 750 billion.

Within the framework of the priority axis 2 of CCHOP, HUF 58.7 billion worth projects may be financed in the region (with 50% Hungarian co-financing also including own funds) between 2014 and 2020.

#### **5.4 Energy and material efficient production**

**Apart from the fundamental goal of increasing international competitiveness, energy and material efficient production is extremely important partly because, according to the projections, energy and material prices will increase faster than wages.** A particular criterion for the shift to a low-carbon economy is development in harmony with the environment. Currently, energy consciousness is only a secondary consideration for nearly one-third of Hungarian businesses, which consume 40 per cent more energy in their operation on average compared to their Western European competitors. In line with the Hungarian specificities, we intend to encourage energy savings, energy efficiency and the use of renewable energy sources. The main goal is to make sure that the reindustrialisation of the country should not increase our energy dependence.

In the territory of CH, enterprises can obtain funds from measure 1 of priority 5 of the CCHOP (HUF 11.8 billion for development). Under TOP, the switch to low-carbon economy can be supported from priority 3 (HUF 201 billion) for development and from measure 5 under priority 6 (HUF 61.3 billion for development). Companies can implement projects improving their energy efficiency and utilisation of renewable energy sources under priority 4, measure 1 of the EDIOP in the amount of HUF 69.9 billion.

## 5.5 Employment and vocational training

**The Government is still committed to increasing employment.** The stimulation of employment also requires measures that provide services and support available to the unemployed, enterprises and training participants across the whole country. The development of labour market services, stimulation of lawful employment and the improvement of the quality of vocational training and adult training will be implemented within the framework of a national measure. Increasing employment in industry will contribute a great deal to sustainability of the general high employment ratio. The new jobs introduced in industrial production must complement the general employment policy objectives. The industrial development policy and the implementation of EDIOP priority 5 must be synchronised with the Government's objective to help more and more individuals leave the system of public employment and enter the primary labour market. The workforce demand arising from industrial projects supported from public funds (either national or EU) must be satisfied primarily with the help of the public employment service.

Increasing employment is among the primary objectives of TOP. It is indirectly assisted by measure 4 under priority 1 and measure 2 under priority 6 (family friendly institutions assisting employment and development of public services) which provide funds for development in the amount of HUF 61.6 and HUF 30 billion, respectively. The employment objective is directly supported from all three measures under priority 5 and measure 8 under priority 6 (local employment co-operation) (pacts), local community programmes and local complex programmes aimed at strengthening co-operation within society contributing HUF 89.7 billion and HUF 32.3 billion to development projects, respectively.

In the territory of CH, the increase of employment and vocational training development are supported from priority 8 of CCHOP.

## 5.6 Financial instruments serving industry development objectives

Apart from non-repayable support, repayable support and other financial instruments will have a greater role in the new development cycle. The priority axis 8 of EDIOP contains such financial instruments (with a framework of HUF 693 billion) and funds that support the achievement of the previously listed thematic objectives.

Financial instruments promote the access to funding of SMEs not financed currently by the financial mediation system, but capable of growth and development. Financial instruments expand the resources of enterprises that could be financed already if the development/expansion is justified in the business sense, but the financial intermediaries in the market are not sufficiently motivated to further increase the funding provided to small and medium-sized enterprises. Finally, they have a certain product and service development function and develop the Hungarian capital market; in addition, they also contribute to finding a remedy to market failures or inadequacies in SME financing.

**There are three factors explaining the increased use of financial instruments.** First, the reduction of foreign currency based financing and interest rates, **also affordable to SMEs simultaneously call for the revision of corporate lending too.** Active and abundant financing made available to the SME and corporate sector is a clear objective, a healthy economy cannot function with only non-repayable support. It is also important to highlight the withholding, multiplication effect of financial instruments, through which they will have an obvious additional impact on private and public investments.

The second advantage of the financial instruments, that they develop **the financial approach and thinking of micro, small and medium-sized enterprises and thereby develop the financial culture of enterprises.** They develop an entrepreneurial attitude where the funds are used more effectively and more in the interest of productivity and profitability as well as product and service development of the enterprise, as they are all repayable. The financial instruments without state subsidies represent **one of the important steps on the road towards long-term entrepreneurial competitiveness.** That is why the EU enterprise development policy relies a great deal on financial instruments.

The third factor means that **the financial instruments play an outstanding role in the achievement of the EU support policy objectives. The Commission envisages the financial instruments to become more important than non-repayable support in the long term** and Member States would lend more and more funds by using a broader scale of such instruments.

As the EU support policy clearly indicates that support will be provided in the form of financial instruments in the future, the Hungarian SME sector, which is used to non-repayable support, is not prepared for it. Consequently, enterprises need to be trained making them accept the use of these instruments and shape their attitude even in this programming period.

In the case of CCHOP, the non-repayable funds are supplemented by financial instruments (with a support framework of HUF 13.5 billion). The reasons for the increased use of financial instruments with the support intensity of the region are the same as listed in the case of EDIOP.

#### 5.6.1 Funding for Growth Scheme

The Funding for Growth Scheme announced by National Bank of Hungary in April 2013 (FGS) gave a significant boost to the low bank lending and corporate investment activities. All in all, the programme reduced the financing barriers impeding the investments of the SME sector. The preferential central bank financing available under the FGS also allows for the implementation of projects, the launch of which has been impeded so far by the high cost of financing. As the debt service is lower, the quality of the banking loan portfolio deteriorates more slowly and therefore the scheme can also improve the lending ability of the credit institutions through their balance sheet position. SMEs can have access to new funds with an interest rate of no more than 2.5% and they can use the new loans to refinance previously taken loans and to finance their investments (also including pre-financing of EU support) and working capital needs.

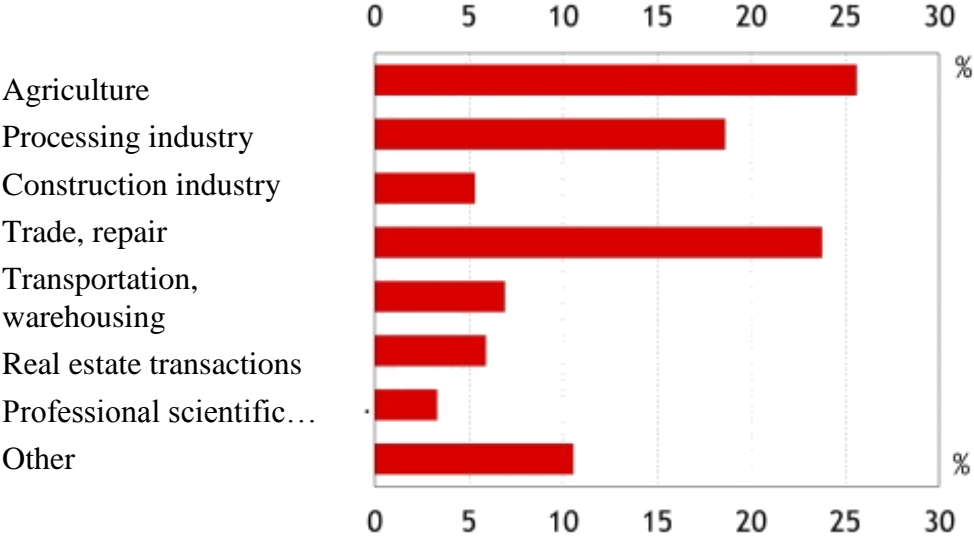
Consequently, owing to the introduction of the FSG:

- enterprises have access to long-term, predictable financing at a fixed and maximised interest rate,
- they can implement new projects which had to be postponed so far due to lack of funding,
- the working capital and pre-financing instruments help increasing the liquidity of the corporate sector,
- refinancing of foreign currency loans will help reducing the interest rates so significantly that will reduce the financial stability risks at the level of the national economy.

Under the 1st pillar of the scheme, the central bank provides refinancing HUF loans to credit institutions under a preferential interest rate in order to boost their SME lending activities and to strengthen financial stability. The credit institutions can use these funds to grant loans to SMEs in the form of HUF denominated loans, financial leasing or factoring with a capped amount of annual costs or could refinance financial enterprises for the same purposes. The purpose of the 2nd pillar of the scheme is to reduce the ratio of currency-based financing and the costs of

financing of enterprises by refinancing their HUF loans or financial lease debts, originally taken for capital investments, working capital financing and pre-financing of EU support. Under pillars I. and II. of the FGS scheme, the NBH provides refinancing loans to the credit institutions involved in the scheme for a term of no more than 10 years at 0 per cent interest rate.

Breakdown of the corporate entities that applied for a loan under the FGS scheme:



**5.7 The development of ICT sector and digital economy**

At the end of 2014, the Government approved the Green Paper on the Development of the Infocommunications Sector in 2014-2020. The purpose of the Green Paper is to describe in detail the steps required for implementing the objectives of the National Infocommunication Strategy. The Strategy and the Green Paper assign instruments for achieving the targets set out, that will enable Hungary to maintain its positions in the indicators where its performance is already greater than the average by the end of the decade and to eliminate all its shortfalls in the areas that are currently lagging behind. The document lists the required instruments, resources and appoints the agencies and institutions responsible for the implementation of the measures. The Strategy lays down the basis of the infocommunication projects for 2014-2020, which are financed primarily from the Information and communication technologies priority of the Economic Development and Innovation Operational Programme with hundreds of billions of HUF.

The development of ICT sector determines the development of the Hungarian industry. Consequently, the ICT priority 3 of EDIOP deems developments with the following objectives eligible for support:

*ICT sector development programmes:* Encouragement and support of co-operation between educational institutions and ICT companies; targeted support to the marketing of products and services produced by ICT companies; establishment of an expert and mentoring network assisting ICT start-up companies in their entry to the international market; support to the entry to the international markets of micro, small and medium-sized enterprises operating in the IT sector with combined credit products.

*Corporate info-communication programmes:* Infocommunication motivation, attitude building and competence development programme for SMEs;; cloud-based (IaaS, PaaS, SaaS) corporate services, support to the development and introduction to the market of ICT solutions; design and

introduction of cloud-based (IaaS, PaaS, SaaS) and other online corporate services and solutions in the SME sector.

## 5.8 International sources

The lending activities of international institutions, also active in Hungary, connect to the financing of the Hungarian industry (more specifically the SME sector) at several points. Among the international institutions the most important ones are the European Investment Bank, also known as the EU Bank, the European Bank for Reconstruction and Development and the International Investment Bank, which is a regional development institution with a centre in Moscow.

In its Corporate Operational Plan for 2015-2017, the European Investment Bank (EIB) defined four target areas in lending: innovation and human capital development, improving the financial conditions of SMEs and companies with average capital value, establishment of effective EU infrastructure, environment and climate protection. Hungary can obtain funds for the development of the processing industry primarily in relation to the two lending objectives (innovation and human capital development, improving the financial conditions of SMEs and companies with average capital value) from the EIB; in relation to the EIB environment and climate protection objective, companies may also have further opportunities to raise funds to finance their projects dedicated to energy efficiency and renewable energy.

According to the country strategy of the International Investment Bank (IIB), the Bank intends to build a EUR 20-25 million investment portfolio for Hungary by 2016 (partly through lending and partly through capital investments). Their main target areas include the processing industry, agriculture, foreign trade and the SME sector. Especially in terms of SME financing, the IIB intends to lend funds partly alone and partly in co-operation with Hungarian commercial and other international financial institutions, in the form of syndicated financing.

In its draft country strategy, the European Bank for Reconstruction and Development (EBRD) sets a target of financing innovation, R&D technology and productivity development projects of local enterprises. Within the framework of that objective, EBRD also plans to support various options of enterprises to have access to financing from the capital market. At present, financing agreements (loans or capital investment) are being negotiated with the EBRD involving approximately EUR 60 million financing for industrial purposes.

### 5.8.1 European Fund for Strategic Investments (EFSI) - SME financing

EFSI is a EUR 16 billion EU guarantee that increases the financing capacity of the EIB. With the help of the leverage, envisaged with the EU guarantee and the related EUR 5 billion additional EIB funds, it plans to mobilise approximately EUR 315 billion with approximately EUR 60.8 billion loans over the next three years at EU level in order to encourage investments.

Of that amount, EUR 75 billion would be dedicated to financing SMEs. The EFSI SME financing activities will be managed by the European Investment Fund (EIF), whereby, in the first round, the volume of the already available financial products (e.g., COSME, products available under H2020 programmes) would be extended (frontloading) and new financial products would be designed.



## 5.9 Export promotion

In order to promote the export activities of Hungarian enterprises, Hungarian Export-Import Bank (Eximbank) satisfies the financing needs of Hungarian exporters and their suppliers as well as foreign customers of Hungarian goods and services directly and with refinancing products offered indirectly through the Hungarian credit institutions.

Eximbank announced a refinancing credit scheme with a favourable fixed interest rate (EHP - Export promoting credit program), which is available in EUR, USD and, if required, also in HUF. Within the framework of the program, Eximbank has signed refinancing agreements with 18 commercial banks and 3 savings co-operatives. Products available under the EHP:

- Export refinancing for more than 2 years,
- Export refinancing for less than 2 years,
- Export post-financing,
- Investment loan for export purposes,
- Leasing for export purposes,
- Factoring for export purposes,
- Risk assumptions (guarantee, insurance).

Share of motor manufacturing in borrowing in the largest processing industry sub-sector (HUF million)						
	2010	2011	2012	2013	2014	2010-2014
Loans (total)	71,242.84	84,259.42	131,974.72	193,090.98	332,483.41	813,051.37
Loans (motor manufacturing)	7,012.57	7,876.29	8,289.70	15,896.56	5,786.85	44,861.97
Ratio	9.8%	9.3%	6.3%	8.2%	1.7%	5.5%

## II. SELECTION OF SECTORS TO BE DEVELOPED SPECIFICALLY

In our opinion, the objectives laid down in the Irinyi Plan can be achieved by supporting various industrial segments. To select the sectors, a set of criteria must be established which take into account the geopolitical situation of our country, the opportunities involved in our foreign trade relations and the strength of Hungary's regions.

The following sub-chapters summarise the priorities along which the sectors intended to be developed specifically can be identified.

### 1. Trends of global industry development

In the course of developing the industry of Hungary as an export oriented economy, it is indispensable to take into account the expected trends in order to select sectors and development directions to be supported that can best satisfy the expected needs. The KPMG analysis prepared in 2014<sup>2</sup> identifies **changes in the economic powers, climate change and shortage of resources, acceleration of urbanisation, growing population and the need for technological development as such trends.**

The changes of economic powers means that countries, previously considered developing, such as China, India, Indonesia and Brazil, will gradually take over the leading role not only in terms of production power but also in consumption (huge consumption market). As the population is growing, new solvent consumer groups appear on the global market continuously; the previous overproduction crises are replaced by constant and durable rise in demand for good-quality products. There is increasing demand for **customised, small-series or individual products**, which entails specialisation within the individual sectors. The individualised good-quality raw materials and quality components manufactured at various levels of the production chain can guarantee a higher-quality end product. **With an increased demand for social and health protection, the sectors supplying them** also come to the forefront.

The needs outlined above must be satisfied in a liveable environment. Climate change and shortage of resources call for an increasing role of renewable energy, as well as **energy and material effective production.**

The continuity of technical development can also ensure the satisfaction of various needs as well as co-ordinated development of individual countries and regions. The process of the human environment becoming smarter is irreversible. **Industry digitisation** and support to industrial sectors which, through their multiplier effects, make production simpler and more effective, the environment more liveable and the related services more enjoyable must be connected to it.

The development of industrial production also entails an increasing need for a trained workforce. A considerable part of industrial production is supported by the activities of engineers, and therefore **vocational training must be adjusted to the current and future industrial needs.**

Consequently, the key and specifically supported sectors must rely on advanced technology, and must be capable of satisfying the increased needs with high-level production. Finally, last but not least, they should do that in an energy effective, environmentally friendly manner, simplifying the life of consumers and also taking into account the aspect that relates to the reduction in the number of former industrial jobs, i.e., they need to aim at purposeful changes in education and vocational training.

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<sup>2</sup> KPMG International (2014), "Future State 2030: The Global Megatrends Shaping Governments"

## 2. Exportability

The Hungarian trade continues to be heavily concentrated in terms of its target countries. In 2015, within our total exports, 88% were directed at EU Member States. The most important partner of Hungarian foreign trade is Germany, which purchases 27.6% of our exports. Our second largest export partner is Romania (27.6%) and the Austrian and Slovak relations also stand out. In view of that concentrated, the sectors, competitive in relation to the export to Germany must be taken into account strongly when the key sectors are defined.

In the first 11 months of 2015, **machines and means of transport** made up 57.1% of the exports. The figure was 12.6% higher than in 2014. This growth primarily related to the chapter of road vehicles, where exports expanded by 22.7% since 2014. The trade in electric machines, electric appliances and instruments relating to the manufacturing of motor industry products and the trade of industrial machines for general purposes have also grown significantly.

The trade in professional **scientific control instruments used in the motor vehicle manufacturing and the trade of medicinal and medical products** were the major factors in the increase of exports; at the same time, the iron and steel as well as rubber goods imports and the trade of metal products both ways were also considerable. At the same time, there was also remarkable growth in the **chemical industry**. The drop in the exports to Russia, which has always been the largest market of chemical industry products, could be offset by exports made to the EU countries. There was a dynamic increase in the trade of essential oils, perfumery products and detergents in both ways.

According to the data of the 10 most important export target countries, Hungary's exports in 2014 are led by the chapter of **electric machines and components**, followed by the export of **mechanic equipment**, and **road vehicles**, as well as **optical and medical devices**.

It is remarkable that within the total annual growth of the export of **machines and equipment** in 2014, three quarters (73%) stemmed from German relations and the share of this chapter within the total export to Germany was more than two percentage points higher than in 2013 and rose to almost 66%. In addition, the most important export products include **road vehicles and electric machines, equipment and their components**. Since 2013, the export of road vehicles picked up by more than 50%, but the export of optical and medical instruments and of Hungarian fruit, seeds and industrial plants also rose significantly.

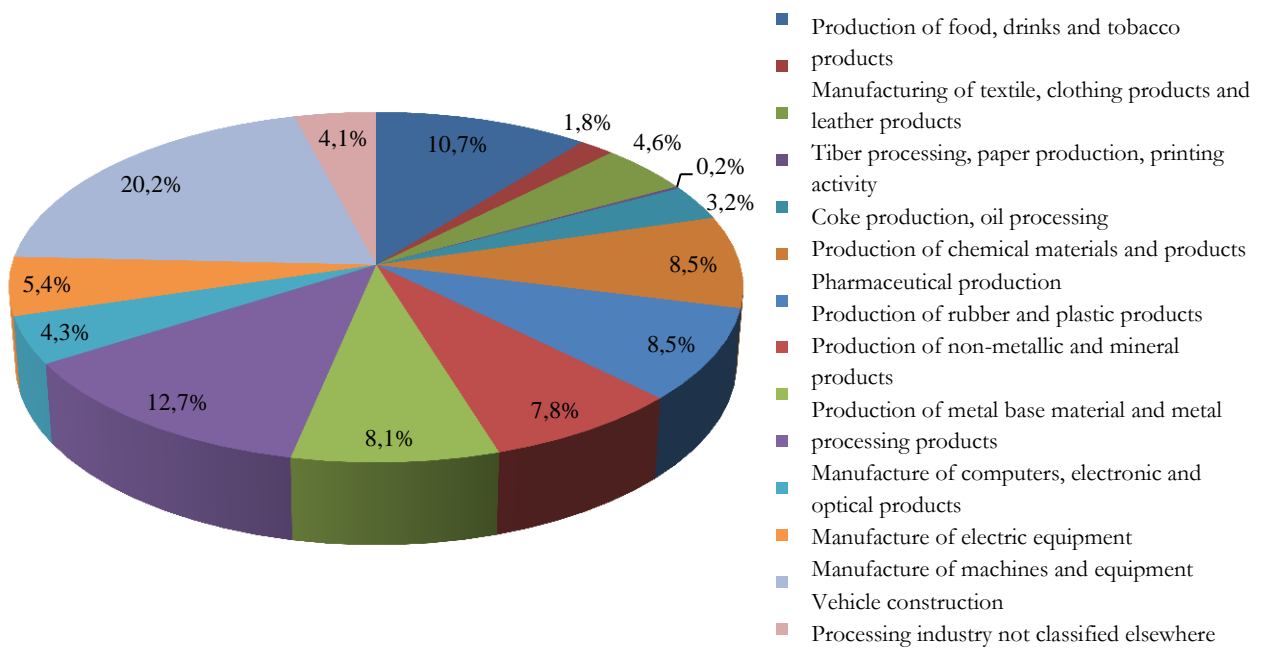
Taking into account the German economic outlook, the Hungarian economic capacity and tendencies, there is a great deal of potential **in the continued increase of our motor vehicle manufacturing exports; in addition, the export of medical instruments, plastic industry and food industry products is also likely to rise in the future too.**

## 3. Attracting FDI

Foreign direct investments (FDI) have always played a significant role in the development of Hungarian industry since the beginning of the 1990s and by now have turned into the engine of technological development. The shift of production of foreign enterprises (delocalisation) to Hungary entailed, among others, job creation and technology modernisation.

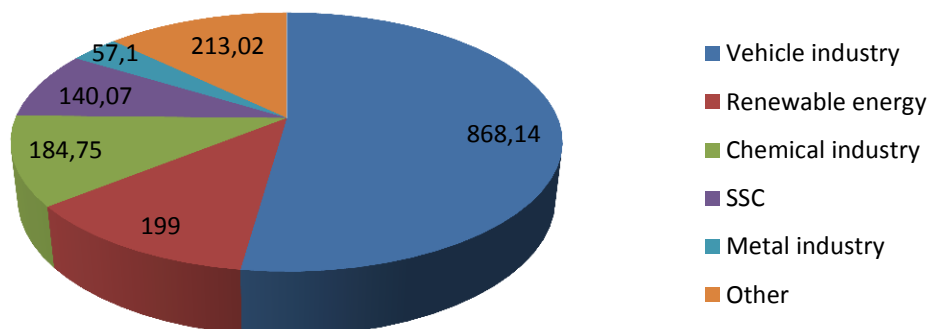
In order to maintain the growing performance of the Hungarian economy, sectors need to be supported to have high FDI attracting capacity.

In 2013, the Hungarian FDI portfolio was EUR 78,616.9 based on the MNB data. The share of FDI in the processing industry made up 21.4% of the total investments in Hungary. Among the processing industry sub-sectors, the largest is **motor vehicle manufacturing**, which attracted 20.2% of the total FDI portfolio of the processing industry with almost EUR 3.4 billion total investment volume. It is followed by the 12.7% share of the **manufacturing of computers, electronic and optical products** sub-sector, while the third largest processing industry sub-sector was **food, drink and tobacco production** with 10.7% share. Pharmaceutical production, the production of rubber and plastic products, manufacturing of metal raw materials, metal processing products and manufacturing of non-metal mineral products each have an investment portfolio of more than EUR 1 billion. Breakdown of the FDI portfolio in the Hungarian processing industry in 2013:



According to HIPA, in 2014, similarly to former years, **motor vehicle** manufacturing dominated the industry, as 52.2% of the investments were realised in this sub-sector. The second sector attracting the highest total amount of investments was the **renewable energy industry**, absorbing EUR 199 million of investments, followed by the **chemical industry** with a total investment of EUR 184.75 million.

### Breakdown of the volume of positive capital investment decisions in 2014 according to sectors (EUR million)



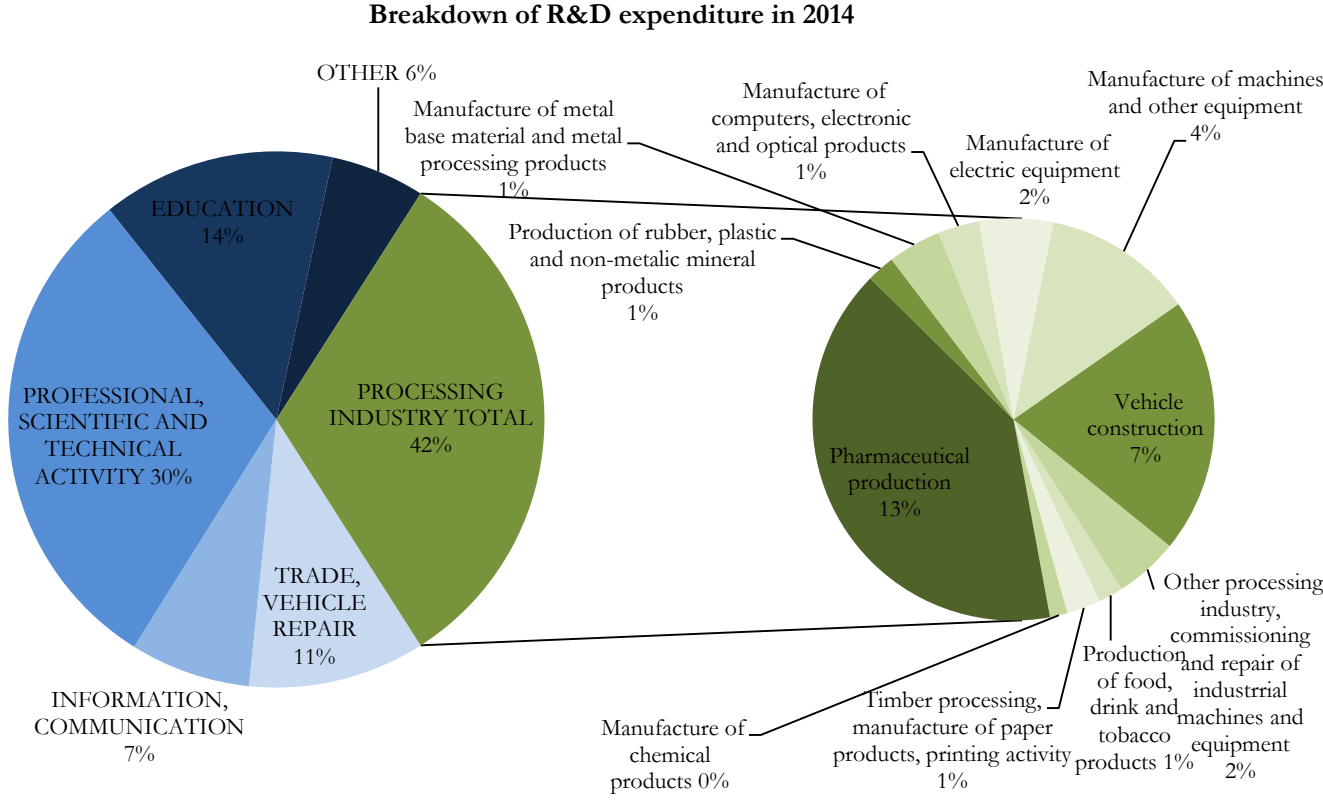
According to the breakdown by industry, in 2014 the largest number of new **jobs** (3,595) were established in the service sector (SSC), followed by the motor vehicle manufacturing where 3,500 new jobs were created. The dominance of the two sectors is illustrated by the fact that they created approximately two thirds of all new jobs. The electronics industry is in 3rd place with

1,089 jobs, followed by the machinery sector in 4th place with 375 jobs and the food industry in 5th place by 358 jobs.

**4. Low delocalisation risk - high added value production**

Delocalisation (which involves the termination of a particular business activity in full or in part and its re-start in a different country through a direct investment) practically affects most industrial sectors but has a greater role in certain sectors. In order to minimise the risks, the industries with low delocalisation exposure must be identified. Traditionally the labour and less technology intensive technologies belong to the delocalised sectors, but these days the delocalisation risk of industries with greater technology content and better qualified workforce demand, generally requiring greater added value and a higher capital investment, such as the motor vehicle manufacturing, has also increased. The long investment cycle is a specific feature of the industries that are difficult to be relocated. The best example is the pharmaceutical industry, where the manufacturing of a particular pharmaceutical product is preceded by a long development phase of several years. This sub-chapter looks at the sectors where production has the highest technology content, a high added value and higher R&D&I expenditure.

According to the latest European Commission survey published in 2012, Hungary is especially successful in generating income from abroad from the sale of novelties, from patent and from licences. In 2013, the share of R&D investments in the investments in the national economy reached 1.63%, which is more than twice as high as it was ten years ago. This improvement was mostly related to enterprises whose **research and development activities** had been developing above average for years and were related to the processing industry. Within the processing industry, the highest figures may be observed in **the pharmaceutical industry**, whereby even the total R&D expenditure of the **motor vehicle manufacturing, electronic industry and machine construction** were lower than in the pharmaceutical industry.

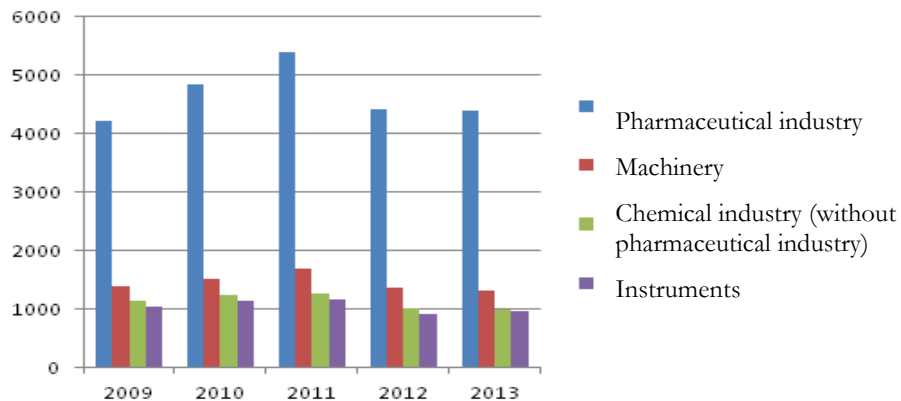


Source: HCSO

The **R&D expenditure** of the various sectors varies a great deal (primarily depending on the technology, the sectoral specificities, the value of infrastructure, the assets required for the activities pursued by the researcher and other factors). The R&D expenditure per researcher is by far the highest in the pharmaceutical industry; it is two and a half times the national economy average. However, the per capita expenditure of sectors having a higher share in the GDP (e.g., vehicle manufacturing) is lower than the national economy average.

The **sectoral breakdown of the added value** of the processing industry has transformed a great deal over the past few years: the importance of **motor vehicle manufacturing, machine construction and the pharmaceutical industry** has grown significantly. The statistical data reveal that over the past few years industries with more advanced technology and demanding qualified workforce were able to develop considerably (manufacturing of machines and equipment, vehicle production, manufacturing of computers, electronics, manufacturing of optical products) compared to the more labour intensive industries that demand a lower degree of automation (textile, clothing, leather industry, manufacturing of leather products, manufacturing of foodstuffs, drinks and tobacco products). Among the service sectors, the **companies of the infocommunications sector** stand out, as 48.4% of the businesses of the sector are innovative.

Most of the effective Hungarian **patents** relate to the **pharmaceutical industry, machine industry, chemical industry without the pharmaceutical industry and the instrument industry**.



Source: National Office of Intellectual Property

##### 5. High added value processing of Hungarian raw materials, utilisation of the available knowledge and expertise, favourable tendencies of the recent years

A few sub-sectors in the industry were able to achieve significantly greater development over the past few years than other sub-sectors. This was partly due to traditional and “inherited” features and was partly the result of regional investment activities relying on these specificities. There is a good reason to assume that industry will have better options in areas where the country has production traditions and expertise in the future too.

Hungary is relatively poor in raw materials (in ores and energy carriers) due to the geological structure of its territory. There are also limited opportunities associated with raw materials that can be used in the industry, yet agricultural and forestry raw materials are available in larger quantities. Consequently, primarily this area must be taken into account in any higher-level processing of the Hungarian raw materials.

In the case of the Hungarian **timber**, the targeted development of the timber industry, manufacturing products with a higher degree of processing instead of producing raw sown goods (manufacturing of sheets, furniture sheets, construction material industry products, window and door frames, etc.) could contribute to economic growth. In terms of the utilisation of raw materials, the **herbs industry**, which has one of the highest workforce demands in the employment people with low qualifications and the demand for the high added value products of which is increasing by 7-10% every year, also has very good prospects in terms of raw material consumption.

The maintenance of the comparative advantage of the **pharmaceutical industry** is outstandingly important because both the industry and the related higher education and training have internationally recognised traditions. Being an innovative sector, it is a major value creator and employer. The expansion of innovative and generic pharmaceutical production is an equally good opportunity.

The **motor vehicle manufacturing** also has long traditions in Hungary, where the manufacturing and development of **components of electric vehicles** emerged as a new sector. As it is a novelty, this market segment gives more opportunities to Hungarian companies than in relation to the traditional products. The development of electronics and the ICT sector is also expected in that regard.

The workforce, currently available and the individuals being trained as the future potential workforce also represent significant Hungarian resources. The currently identifiable missing occupations can be revived by increasing the volume of secondary and higher-level dual education and with retraining programmes.

## 6. Increasing energy consumption in the low off-peak period

The Hungarian electricity generation, storage and transmission system will change significantly over the next few decades. Changes in industrial and residential consumption (demand) may be projected, and therefore it is absolutely necessary to make preparations in time. In order to effectively regulate the electricity system and better utilise the power plant capacities, international experience suggests that attempts must be made to make the load more evenly distributed even during days as well as during weeks and to shift part of the peak period consumption to the off-peak and even more into the low off-peak period. Hungary is highly exposed to natural gas imports which may be reduced, as an alternative, by replacing natural gas with electricity in certain territories if it is economically confirmed by the long-term projections for the price proportions of the energy carriers.

According to the MAVIR projections and the government decisions made on nuclear projects, two new 1,200 MW capacity nuclear power plant blocks will be commissioned in the middle of the 2020s, generating approximately 15-18 TWh p.a. In the consumption structure, the ratio of more even and continuous power consumption can be increased partly by enterprises operating



with a constant work schedule (with a high degree of automation) and partly by encouraging the settlement and expansion of industries that by nature consume a great deal of electricity and require continuous operation.

Of the industrial technologies adapted to electricity generation, the **machine construction, chemical industry and pharmaceutical industry** as well as the motor vehicle manufacturing have an outstanding role. Furthermore, the manufacturing of components for finished vehicles and electronic goods is also an energy intensive activity. In addition, **motor vehicle manufacturing** uses a lot of raw materials manufactured with the consumption of energy (e.g., steel, aluminium). Apart from the above, electrification of the road and track based transport (and goods transportation) also requires special attention considering that this field will be extremely important in the future in terms of electricity consumption.

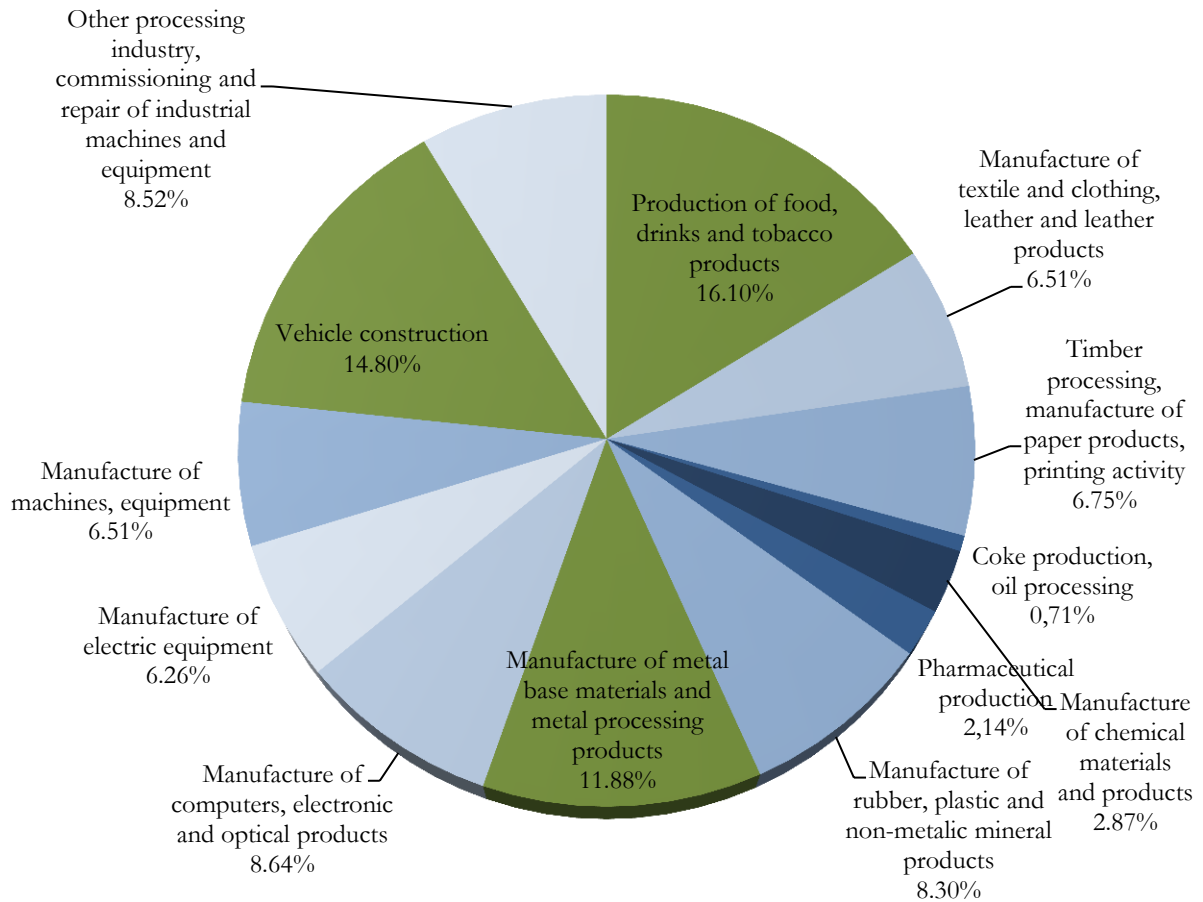
In the transport sector, the dissemination of electric passenger cars can significantly increase electricity consumption if a sufficient number of vehicles have sufficient capacity. The implementation of the Jedlik Ányos Plan, dedicated to the promotion of electro mobility, would entail 232 GWh / year electricity consumption. If, with the help of regulations, vehicles could be charged in the off-peak period, it would lead to a positive result of shifting any consumption increase to the off-peak period. The latest amendment of Act LXXXVI of 2007 on Electricity already provides an opportunity for it. The battery capacity of electric vehicles may also be excellent instruments to regulate the differing energy demands that occur during the peak and off-peak periods.

## 7. Reduction of territorial disparities, job creating and job retaining

Looking at the ability of the various industrial sub-sectors to resolve territorial disparities, we used the processing industry figures of the four counties that have the worst employment indicators (Borsod-Abaúj-Zemplén, Hajdú-Bihar, Somogy, Szabolcs-Szatmár-Bereg) in Q1 2015 in order to define the sub-sectors that would be able to absorb the available, generally less qualified workforce in the areas that have relatively lower employment indicators. In the counties that have the worst employment ratios, the activities of the following processing industry sub-sectors stands out: **manufacturing of chemical materials and goods, manufacture of computers, electronic and optical goods, machine industry, food industry, production of drinks and tobacco products.**

These days the largest processing industry employers operate in the **food industry, motor vehicle manufacturing and the metal industry:**

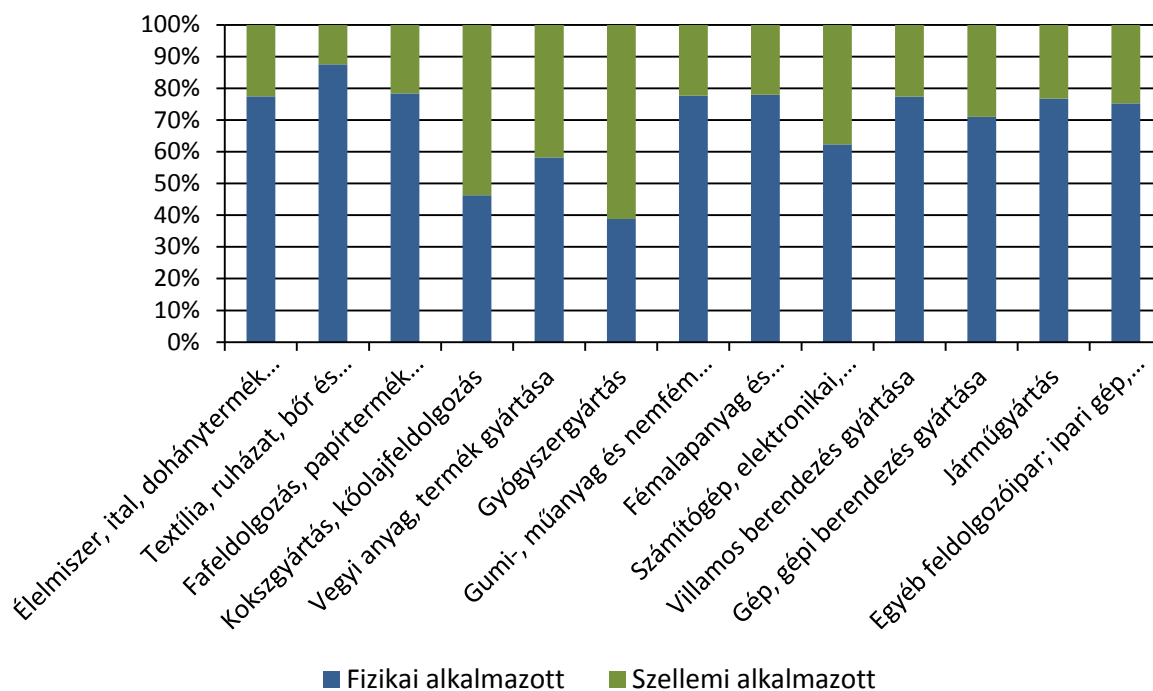
## Breakdown of employees in the processing industry in 2014



Source: HCSO

The food industry, textile industry, timber industry and construction industry are traditionally considered labour and less knowledge intensive sectors, while the ICT sector, pharmaceutical industry or, in the broad sense, chemical industry employs more highly qualified people. The first group would be able to resolve the territorial disparities but strongly in the short term, while in the long term the second group, with a smaller delocalisation risk, would have the same capability, and therefore the second group has a better job preserving ability.

The employment of physical and intellectual employees by sector in 2014 (at least 60 working hours a week) in the case of not full-time employees) is illustrated in the figure below:



Élelmiszer, ital, dohánytermék gyártása	Manufacture of food, drinks, tobacco products
Textília, ruházat, bőr és bőrtermék gyártása	Manufacture of textile, clothing, leather and leather products
Fafeldolgozás, papírtermék gyártása, nyomdai tevékenység	Timber processing, manufacture of paper products, printing activity
Kokszgyártás, kőolaj feldolgozás	Coke production, oil processing
Vegyí anyag, termék gyártása	Production of chemical materials and products
Gyógyszergyártás	Pharmaceutical production
Gumi-, műanyag és nemfém ásványi termékek gyártása	Manufacture of rubber, plastic and non-metallic mineral products
Fém- alapanyag és fém- feldolgozási termék gyártása	Manufacture of metal base material and metal processing products
Számítógép, elektronikai, optikai termék gyártása	Manufacture of computers, electronic and optical products
Villamos berendezés gyártása	Manufacture of electric equipment
Gép, gépi berendezés gyártása	Manufacture of machines and equipment
Járműgyártás	Vehicle construction
Egyéb feldolgozóipar; ipari gép, berendezés üzembe hely., jav.	Other processing industry; commissioning and repair of industrial machines and equipment
Fizikai alkalmazott	Physical employees
Szellemi alkalmazott	Intellectual employees

## 8. High share of Hungarian-owned businesses in the sector

While defining the development prospects of the various sub-sectors, it is indispensable to analyse where a Hungarian-owned company could become a large company or a medium-sized company with such opportunities. The categorisation of the 120 largest Hungarian, privately owned companies, selected on the basis of the net sales revenues, invested assets and average headcount figure leads to the following conclusions.

Concerning the core activity of the selected companies, the food industry **sector** dominates. Of the 120 companies, 50 operate in the food industry. Within the food industry, the **meat industry** stands out, **but** the dairy industry and fruit and vegetable processing also have a considerable share.

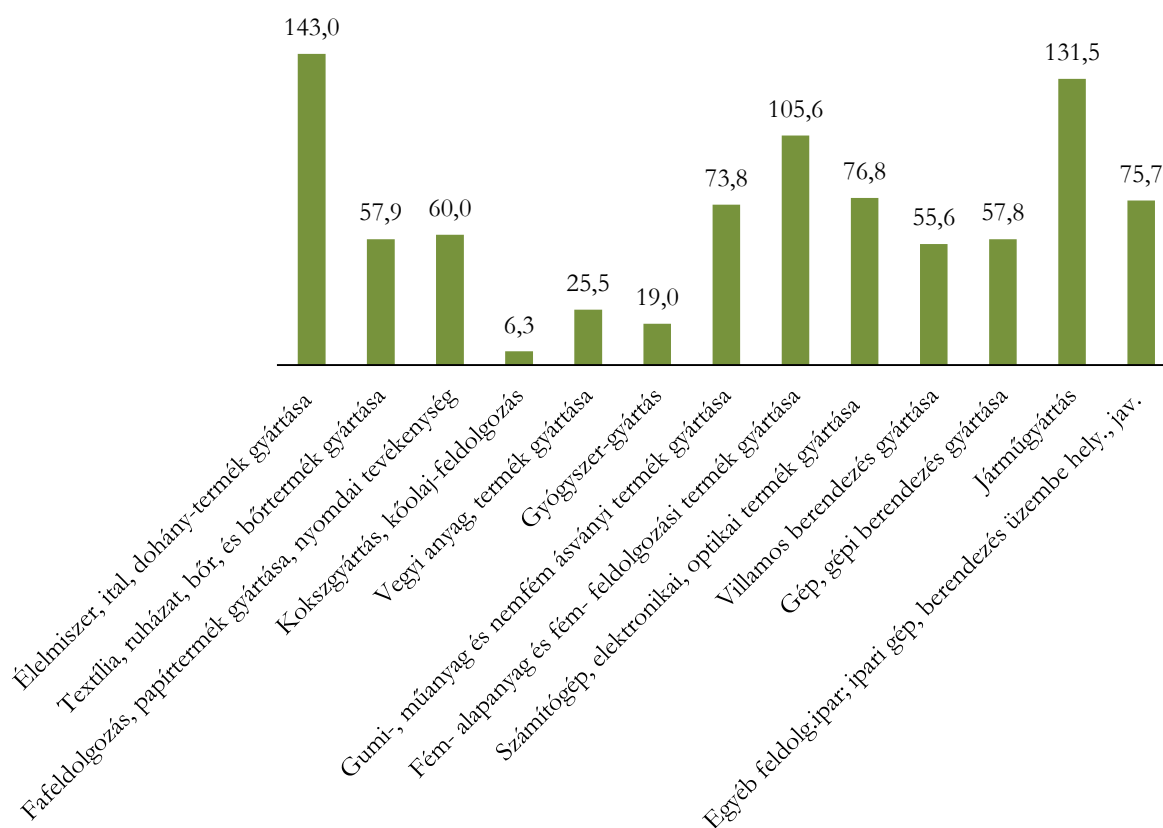
18 companies are engaged in the **manufacturing of basic metals and fabricated metal products**. In general, it may be concluded that this sector has a considerable demand for workforce. The most prominent sub-sectors of this sector are light metal casing and metal processing.

The **motor vehicle manufacturing** is the dominant branch of the Hungarian processing industry in every aspect. This sector is represented by 6 companies in manufacturing of electrical and electronic equipment for motor vehicles, manufacturing of components for road vehicles and engines, vehicle chassis and trailer manufacturing. The VT group stands out in this category.

5 companies operate in the **manufacturing of chemical materials and goods**. The largest is Nitrogénművek Vegyipari Zrt.

**Approximately 6% of the processing industry is employed by the 120 Hungarian-owned large companies** referred to above. The employment ratio of the processing industry by sub-sector is illustrated in the figure below:

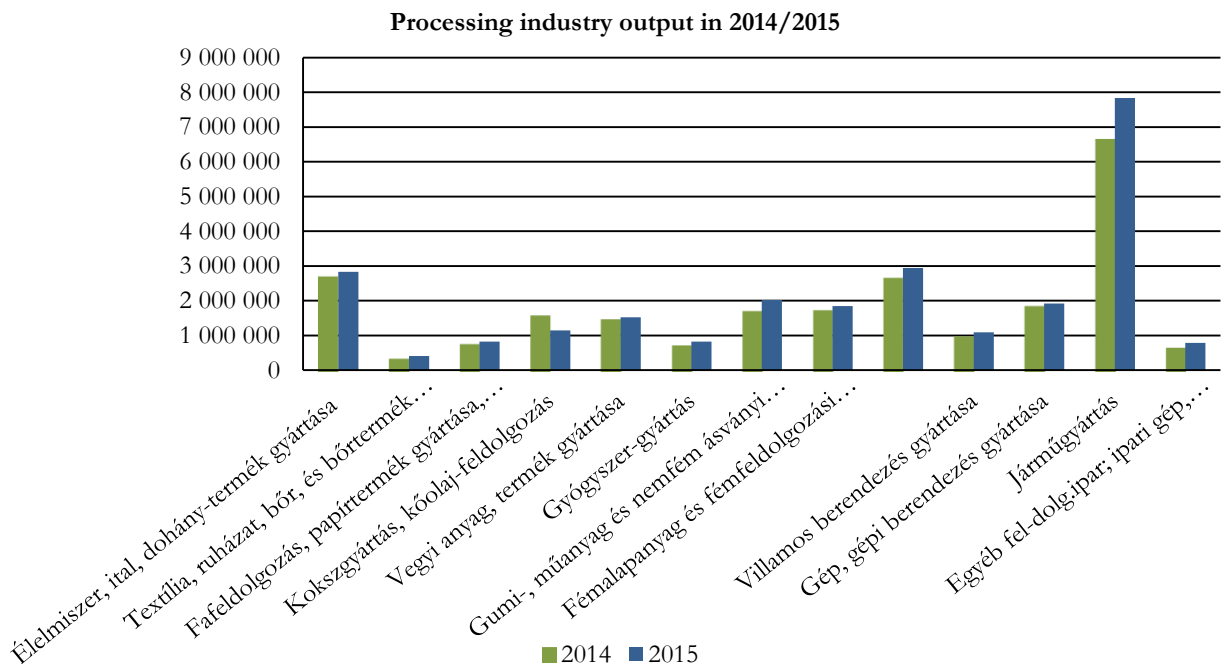
Number of employees in the processing industry in 2014 (thousand)



Élelmiszer, ital, dohánytermék gyártása	Manufacture of food, drinks, tobacco products
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Textília, ruházat, bőr és bőrtermék gyártása	Manufacture of textile, clothing, leather and leather products
Fafeldolgozás, papírt termék gyártása, nyomdai tevékenység	Timber processing, manufacture of paper products, printing activity
Kokszgyártás, kőolaj feldolgozás	Coke production, oil processing
Vegy anyag, termék gyártása	Production of chemical materials and products
Gyógyszergyártás	Pharmaceutical production
Gumi-, műanyag és nemfém ásványi termékek gyártása	Manufacture of rubber, plastic and non-metalic mineral products
Fém- alapanyag és fém- feldolgozási termék gyártása	Manufacture of metal base material and metal processing products
Számítógép, elektronikai, optikai termék gyártása	Manufacture of computers, electronic and optical products
Villamos berendezés gyártása	Manufacture of electric equipment
Gép, gépi berendezés gyártása	Manufacture of machines and equipment
Járműgyártás	Vehicle construction
Egyéb feldolgozóipar; ipari gép, berendezés üzembe hely., jav.	Other processing industry; commissioning and repair of industrial machines and equipment

Concerning the ratio of their performance within the **production value**, the **Hungarian-owned large companies stand out in the food industry**, where 28.9% of the total output is generated by 50 large Hungarian companies.



Élelmiszer, ital, dohánytermék gyártása	Manufacture of food, drinks, tobacco products
Textília, ruházat, bőr és bőrtermék gyártása	Manufacture of textile, clothing, leather and leather products
Fafeldolgozás, papírt termék gyártása, nyomdai tevékenység	Timber processing, manufacture of paper products, printing activity
Kokszgyártás, kőolaj feldolgozás	Coke production, oil processing
Vegy anyag, termék gyártása	Production of chemical materials and products
Gyógyszergyártás	Pharmaceutical production
Gumi-, műanyag és nemfém ásványi termékek	Manufacture of rubber, plastic and non-metalic

gyártása	mineral products
Fém- alapanyag és fém- feldolgozási termék gyártása	Manufacture of metal base material and metal processing products
Számítógép, elektronikai, optikai termék gyártása	Manufacture of computers, electronic and optical products
Villamos berendezés gyártása	Manufacture of electric equipment
Gép, gépi berendezés gyártása	Manufacture of machines and equipment
Járműgyártás	Vehicle construction
Egyéb feldolgozóipar; ipari gép, berendezés üzembe hely., jav.	Other processing industry; commissioning and repair of industrial machines and equipment

## 9. The demand for the products of the sector can be generated effectively with state resources

The state has a dual role in a modern economic environment: apart from establishing the regulations that determine and affect the economic processes and regularly maintaining them, it is also a direct actor on the market. The state appears on the demand side as a customer (the public sector procurements are significant in volume) and indirectly, through state-owned companies, as a seller on the supply side. Furthermore, the volume of government investments is regularly higher than the investments of private sector, among which several projects are of strategic importance (e.g., transportation, education and R&D&I project).

In the future, the role of the state as a client in the development of Hungarian economy may become extremely important. Several international practices have shown that through the government demand for the development of services associated with a welfare state (e.g., health, advanced public transport), infrastructure development and public procurement tenders launched in relation to them, particular industrial sectors can be developed specifically by satisfying the public demand with domestic products. The central infrastructure investments may also have positive effect on territorial disparities. The vehicle modernisation needs of public transport give an outstanding opportunity for the development of **bus manufacturing** in Hungary. With that, Hungarian companies can also enter the export markets. It is a good example of generating often indispensable Hungarian references that the Government provides HUF 3.9 billion non-repayable support for the procurement of the Hungarian “evopro” electric buses. Until 2020, a large amount of resources will also be allocated to the development of the **rolling stock manufacturing**.

The manufacturing of **special vehicles** is another area where public and central procurement has an outstanding role. In Hungary e.g., each year hundreds of vehicles involved in communal waste collection need to be replaced.

The key importance of public orders is also clear in the development of the **defence industry**. An advanced defence industry significantly promotes the development of civilian industry. In aircraft manufacturing e.g., any military development can almost immediately be transferred and used for civilian purposes (e.g., GPS technology). This sector has extremely long traditions in Hungary and there are still a number of companies that have developments and products that are progressive even in a global comparison.

The **construction and construction material industries** can also be developed a great deal with the help of public instruments in the form of preferences targeted for home construction or refurbishment or energy efficiency projects in private and public buildings. The presence of the public sector as a client has been traditionally extensive in this sector. The reduced 5% VAT rate for newly constructed homes, announced in the recent past, and the HUF 10+10 million subsidy

available for large families for the acquisition of a new home are likely to induce a significant growth on the property market.

In the Hungarian health sector, 80% of the demand for **medical devices** is satisfied from imports, and therefore there are a lot of opportunities in that field too.

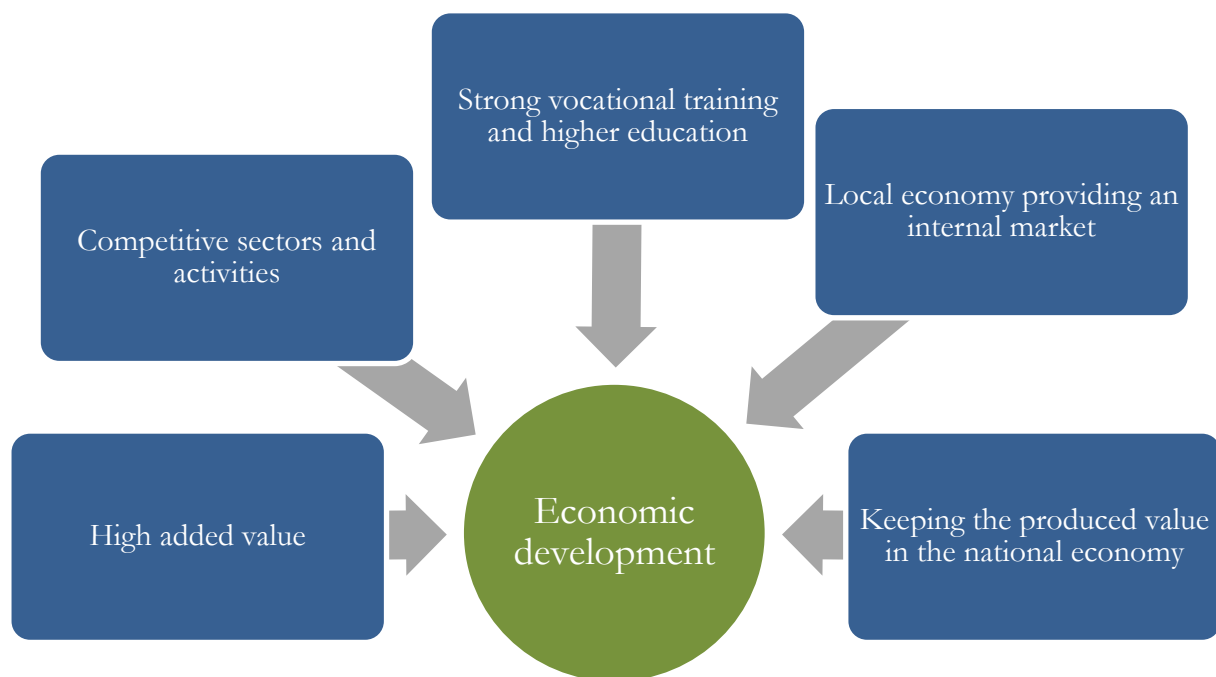
Apart from the above, the importance of the **textile industry** in relation to public procurement also needs to be emphasised. According to the current practice, in 2014 uniforms and other textile industry products were purchased by the organisations of the police for more than HUF 5 billion.

On the basis of the above, it is clear that the state can use various instruments to generate significant demand for the products of the **motor vehicle manufacturing** (public transport), **the defence industry, the construction industry, the textile industry and medical devices.**

### III. AREAS FOR LARGE SCALE DEVELOPMENT

Consequently, Hungary has several resources that can be used as the basis of the development of its economy with well-considered measures with a careful plan: the country's favourable geostrategic location, the innovation potential, the vocational system and higher education that can produce free and well qualified workforce and an existing and active system of financial subsidies.

**A change in the directions of the economic strategy (reindustrialisation efforts, focused development concepts) is a key to our economic development which, in line with the five pillars of industry development, focuses on competitive sectors and activities with a high added value, the vocational training and higher education constituting their basis, the local economy supplying the internal market and keeping the produced value in the national economy.** However, in all these changes the existing competencies must be treated with outstanding attention. Within the processing industry, the motor vehicle manufacturing is the most important sub-sector that is also closely related to a number of other Hungarian industries: electronics, machine construction and certain segments of the chemical industry.



The regions and towns as locations both compete and co-operate with each other. Those are the most competitive which are capable of adapting to the challenges of globalisation by using their territorial specificities and establishing their functional networks. With co-operation and collaboration, the most competitive settlements of Hungary must be able to integrate into various large regional networks of towns as focus points. The strategic ideas of the global multinational groups relating to our region need to be monitored and the potential points of connection with the Hungarian objectives need to be identified.

That is why Central European and European competitiveness of the regions of large towns was defined as an objective in the National Development and Territorial Development Concept, for which the development and use of special economic zones, i.e., knowledge intensive, innovation oriented investment (growth) zones established around large towns could be one of the possible instruments. In order to have a multi-centred spatial structure, the Budapest-centred country



structure needs to be eased, the investment projects bringing along economy development must be distributed territorially and spatial structure and spatial relations promoting regional competitiveness must be built and strengthened.

Deeper integration of Hungarian-owned companies into the production chain, strengthening of Hungarian-owned companies on the internal market and assistance in the further expansion of Hungarian-owned enterprises generating products that are competitive on foreign markets too are requirements that have existed for a long time. That may be further assisted with networking (cluster building, i.e., active utilisation of the relational net of professional organisations, supplier integrator programmes), which can make it significantly easier for the SMEs to enter international markets, to build brands and improve their efficiency. Apart from the clusters, the role of economic chambers is also important in the mediation towards multinational companies through, e.g., the organisation of supplier fairs.

Among the processing industry sectors reviewed according to the selected criteria, outstanding and targeted support to the sectors listed in this chapter is recommended. (The Government also considers logistics services outstanding and adopted a sectoral development plan for them.)

A few segments of the Hungarian construction industry have grown significantly in the recent past especially compared to its decline observed during the economic crisis. Despite the improving data, the construction industry was not identified as a key sector because it only partially satisfies the established criteria and it is not a processing industry sector.

## 1. Motor vehicle manufacturing<sup>3</sup>

The manufacturing sectors generate more than one third of the gross added value, which is higher than the EU average. Based on its export orientation, the output of this industry, closely related to the economic trends of the EU, increased by 7.5% in 2015 over the previous year. The added value of the processing industry, providing the main chunk of production, increased by 10.2%, in parallel with an increase in external demand. The motor vehicle manufacturing provided 4.6% of the gross added value of the economy in 2014 and had 26.7% share in the total processing industry output in 2015.

The production of the motor vehicle manufacturing and the related supply sub-sectors also expanded significantly: in 2015, the production value was up by 17.8%<sup>4</sup> compared to the same period of the previous year. The Hungarian motor vehicle manufacturing is based primarily on the manufacturing of road vehicles. Its 97.6% share within the total motor vehicle manufacturing output also means that the output of the branch in the sub-sector, i.e., other vehicles,<sup>5</sup> is marginal. In that latter sub-sector, primarily the manufacturing of rolling stock needs to be mentioned, but the share of this sub-sector within the manufacturing of vehicles was only 1.5%.

Central and Eastern Europe, as well as Hungary, have become important centres of **vehicle manufacturing** in Europe over the recent period. The cost and competitive advantage of the region within Europe stems primarily from the cheap, flexibly employable, motivated and effective workforce and the fast and cheap access of the main markets. Our objective is to

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<sup>3</sup> The motor vehicle manufacturing refers to the activities classified under the KSH CL - Vehicle manufacturing sub-sector according to the HCSO's TEÁOR/NACE'08 statistical classification, more specifically, 29 - Manufacturing of road vehicles and 30 - Manufacturing of other vehicles sub-sectors of the processing industry.

<sup>4</sup> source: HCSO - Industrial output values by sub-sector

<sup>5</sup> The manufacturing of water, air, rail and military vehicles belongs to this sector, market under number 30.

increase the volume of manufacturing of passenger cars as well as other vehicles suitable for public transport in Hungary. Naturally, this is an important aspect of employment and will also increase Hungarian exports.

Hungary's was Europe's largest bus manufacturing country for a long time. It still has **bus manufacturing capabilities**, which represent significant intellectual and physical values. Considering the technical condition of the fleets of the transport companies, the domestic demand would involve a large amount of vehicles: over the next few years, the Hungarian market could absorb even 1,000-1,200 buses each year. That demand could be satisfied from domestic manufacturing and that volume could also be the basis of the launch of successful bus manufacturing. These days there are suppliers for each component of the Hungarian bus industry with a few exceptions (e.g., engine), yet the majority of such companies do not focus on the bus industry because, due to lack of orders, they would not be able to survive focusing only on this sub-sector.

The **rolling stock fleets** of the Hungarian local and long-distance public transport companies (MÁV, BKK etc.) (trams, railway transport) are also very old and require replacement. It is in the interest of our national economy to satisfy that need from Hungarian manufacturing as much as possible.

In order to launch the electro mobility programme, the Government approved the Jedlik Ányos Plan which, among others, sets an objective of introducing a legal environment which provides direct and indirect incentives to the dissemination of environmentally friendly vehicles as well as to research and development activities aimed at the design of such vehicles and Hungarian manufacturing.

By now Hungary has become a regional centre not only in terms of finished products, but also automotive industry components. **The vehicle manufacturing can also stabilise other industries** (iron and metal industry, machine construction). It also has very strong links to the electronic industry. Consequently, the manufacturing phases prior to the manufacturing and assembly of the final product should be supported. That is how the largest job preserving capacity could be achieved and the opportunities inherent in the increase of the manufacturing of vehicles and the positive effects of this driving sector could also have a knock-on effect in other sectors. The production value of our vehicle manufacturing could be increased most by broadening and raising the number of **Hungarian suppliers**. It is a medium-term objective to make sure that the products manufactured by Hungarian companies should have a high added value, that companies should be engaged in complex activities also including development instead of concentrating simply on contract work and thereby reach a higher level in the hierarchy of suppliers. The competitiveness of the SMEs must be improved; supplier development programmes are needed, enabling the ambitious enterprises intending to become suppliers could more easily satisfy the requirements of companies at higher levels within the hierarchy of suppliers.

The expansion of manufacturing capacities and the attraction of companies manufacturing new high-level components and parts are significantly impeded by the availability of the duly qualified workforce. The most important bottleneck of the industry is the short-term lack of skilled workers and highly qualified technical experts in the motor vehicle manufacturing. The signs of that can already be observed regionally. The situation creates new challenges to higher education institutions. It is an economic policy objective to turn Hungary into one of the main actors of the training of engineers for the motor vehicle manufacturing in the Central and Eastern Europe region and within R&D activities. The country set a goal of establishing dual training, where the

state finances the vocational training schools and theoretical training, and the companies finance the practical training. At present, approximately 50,000 students study in such programmes.

On the basis of the above it is obvious that increasing the capacity of the industry is a primary interest of the national economy in order to make sure that Hungary can integrate more intensively into the main motor vehicle manufacturing supply chain by relying on its already achieved considerable results. In that regard, the focus of attention should be on the following priorities:

- extension of the manufacturing capacities and supplier groups in motor vehicle manufacturing, which is the driving sector of the national economy,
- expanding the products manufacturing with the related technologies,
- increase in the sectoral R&D&I, for which new research and development funds can be obtained,
- increase in employment, where the continuation of dual education will be indispensable in order to satisfy the demand for employees,
- strengthening the international relations of the industrial actors.

## 2. Manufacturing of specialised machinery

Apart from mass manufacturing, there is an increasing global demand, not only on Western European markets, but also on the markets of the countries of Central Asia, Turkey, Russia and the emerging markets, for customised, limited series or individual machine industry products (partly special purpose machinery). The design, manufacturing, commissioning and maintenance satisfy special customer demands and combine high added value activities. The spread of certain bridging enabling technologies (3D printing, new CAD/CAM solutions, nanotechnology, new materials, etc.) is likely to significantly improve the opportunities of **mass “customisation”**. This also makes evenly distributed industrial development designed for smaller plant size easier

The number of enterprises engaged in manufacturing of specialised machinery is also rising in Hungary. Some of them are owned by foreigners, but an increasing number of them are owned by Hungarians. The high added value products of the manufacturing of specialised machinery do not have a high demand for raw materials and, compared to the Hungarian conditions, their capital demand is not outstandingly high either. In this segment, manufacturing is not impeded by the problems of large series and, with sufficient background support, numerous existing or recently founded Hungarian industrial companies engaged in this activity could become internationally competitive; in addition, the activity also provides an opportunity to employ qualified workforce for high wages and to keep the employees in the country.

**According to expert projections, a major transformation wave is likely to take place in vehicle construction within the next 10-15 years**, which is likely to entail a reduction in the labour demand and stronger automation with a significant increase in the importance of individual components in the supply systems, although this sector may be maintained in Hungary for a longer term. The job creating capacity of the SMEs, strengthening their position in manufacturing of specialised machinery could be significant and a number of them could also integrate into the value chains of the vehicle industry.

As indicated above, it is indisputable that the vehicle industry is a driving sector, and therefore the targeted development need does not occur in relation to traditionally driven passenger cars, but **in specialised vehicle production where there already is a Hungarian design and**

**manufacturing base suitable for development in the construction of modular buses, refuse collection vehicles as well as fire engines.**

**Electro mobility**, which refers to an interconnected mobility network that extends from railways through electric buses, commercial vehicles, passenger cars and motorcycles through the electric bicycles, also belongs to specialised vehicle production. No ground breaking development ensuring the long-term future of the industry has occurred yet in the infrastructure or the vehicles supplying it, and therefore market entry is a reasonable opportunity for Hungarian companies as well. Apart from environmental protection issues, electro mobility can also use some of the electricity surplus in Hungary during the low off-peak period by using intelligent solutions.

### **3. “Health industry”**

On the basis of the reviewed criteria, the pharmaceutical industry stands out due to its low delocalisation risk, adaptation to global and regional trends and its especially high added value production. However, in terms of development the pharmaceutical industry cannot be managed separately or taken apart from the “health industry”, which is the development unit. The health industry includes the pharmaceutical industry, manufacturing of medical equipment and devices, the herbs industry, health tourism, nanotechnology, bionics, bio technology, medical IT technology, genetics, complex utilisation of thermal, medicinal and mineral waters, related education, R&D&I and special construction industry.

The total sales of the global health industry are estimated around USD 5.5 billion by the experts. In 2010, the expenditure related to health sector reached 17.6% of the GDP in the USA (OECD average: 9%). By 2020, even the OECD average is projected to reach 16% of the GDP in expenditure. The job creating ability of health industry is outstanding. Apart from health experts, this sector requires expert services, clinical and research laboratory work, information technology, sales and marketing staff and health insurance experts.

The **pharmaceutical industry** is the flagship of the Hungarian national economy. The growth rate of the Hungarian pharmaceutical industry was more or less identical with the EU average in 2013. Also including HUF 5-6 billion sales at consumer prices outside pharmacies and the drug turnover in hospitals, calculated at HUF 144-146 billion producer prices, the pharmaceutical sales were close to HUF 703 billion. According to the data of Századvég, 4.5% of the Hungarian GDP is generated by the four Hungarian pharmaceutical companies that have the largest manufacturing base (Richter, Egis, Teva, Sanofi-Avensis). The budget makes a profit of HUF 90 billion p.a. from the clinical trials. With the MAGYOSZ SME section, the companies of the Generic Association and the 24 member companies of the Association of Innovative Pharmaceutical Manufacturers, the pharmaceutical industry produces 8% of the GDP according to the analysis of Századvég.<sup>6</sup> Within the total Hungarian industrial R&D activity, 40-45% is associated with the pharmaceutical industry. On average, 40% of the employees of the industry have higher qualifications and the number of employees of the sector grew even during the crisis. The pharmaceutical industry grows by approximately 3% globally.

The **manufacturing of medical equipment and devices** is a traditional sector of the Hungarian industry and is also the last sector where all the SMEs are exclusively Hungarian owned. The characteristics of this sector include flexibility, innovation, strong export capability and high supply demand. Last year certain member companies increased their exports by 20-30%.

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<sup>6</sup> The HCSO does not analyse the total sector on the basis of the TEÁOR/NACE numbers – that is the reason for the difference in the data indicated on pages 9 and 11 of the Report.

With an adequate support system, the manufacturing of medical equipment and devices can soon regain its role of being the leading industry of Hungary.

In Hungary there are almost 1,870 companies manufacturing medical equipment and devices, of which approximately 200 manufacturers produce the largest share in the volume of this sectoral output and more than 150 exporters are registered. The export development devices are designed to suit the requirements of the target markets. The traditional markets of the Hungarian medical technology companies include primarily Russia and the EU 27. In addition to the Middle East, the companies also see opportunities in China; they are present in the US, Central America and on other advanced markets (e.g., Israel). In 2010, the global market size was USD 694 million, but currently it is close to USD 800 million. The Hungarian health sector satisfies 80% of its demand from imports. The majority of the supplies to Hungary are made from the EU, more specifically, from Germany. The Hungarian manufacturers produce mainly for export, while their share on the domestic market is less than 20%.

Until the 1990s, Hungary was one of Europe's leading **herbs** processing and exporting countries (Hungary produced 35,000-40,000 tonnes of herb drugs and 100 tonnes of essential oils on 37,000-42,000 hectares; these days, the total production is less than 30,000 tonnes on 25,000 hectares). The aggregated production value of herbs collection, growing and processing is HUF 30 billion/year, the total retail sales of products with medicinal effects amount to HUF 10 billion/year, while the total turnover of herb teas and other herb-based products is HUF 40 billion/year. In total, the sector employs approximately 30,000-35,000 people. The Hungarian herb industry produces approximately HUF 40 billion worth of goods. As a general feature, in the EU economies that are the leaders of this sector the market growth is greater than 7% p.a. Hungary has exceptional opportunities in the herb industry given its features and traditions. The herb industry strategy prepared by the Ministry for National Economy (currently in the process of approval) identified the factors that impede the growth of the sector and specified the growth opportunities and instruments.

In order to facilitate steady development of medical service-based **health tourism** in Hungary, it is very important to look at the health economy with a complex approach, allowing for the consistent use of our assets, the development of the therapeutic base and exploitation of the hydrogeological features. In order to develop health and medicinal tourism, the required quantity of services of homogeneous quality must be designed in co-ordinated projects. That would mean the extension of the Hungarian tourism strategy towards new areas, also requiring private investments. With easily marketable health economy services, new health tourism development and supply co-operation needs to be built among clinics, medicinal hotels and thermal baths easing the seasonal concentration of the tourism service facilities and creating the basis of such services throughout the year.

Thousands of private surgeries operate in Hungary in various disciplines and provide services to foreign patients. Hungary is the market leader in Europe in the cross-border dental services. Our country also has a good position in artificial insemination schemes, plastic surgery, operations related to special diseases, examination of metabolic diseases and neural surgery. The orthopaedic-traumatology services could also be built easily, the Pető method is an 'intellectual Hungarikum', there are high-quality paediatric and adult rehabilitation services and good-quality treatment spas provide venues for balneology and rheumatology services. The market for ophthalmology operations, which can be conducted within the framework of one-day surgery, is also growing. The treatment spas are trying to offer services to patients in the form of high-quality and important psycho-somatic preparations for any clinical intervention and early rehabilitation after any intervention.

### 3.1 Tourism

Tourism is one of the largest service sectors in Hungary with a major multiplication effect. Its outstanding role in employment is justified not only by the approximately 500,000 employees associated with it, but also by the fact that it can use workforce with different levels of qualifications. Tourism can generate demand even in areas which cannot attract any other economic activity based on their characteristics. With the help of tourism the sector helps the rural population to find jobs locally. The **user and value-based approach of quality** can also be applied in tourism, i.e., the service providers can satisfy the needs expectations and requirements of customers at an acceptable cost or affordable price for consumers.

In line with what is stated in the health economy chapter, the Government's objective is to turn Hungary into Europe's most popular health tourism destination. Apart from the mainly thermal water-based **health tourism**, the **health tourism based on medical services** is equally popular and known. The marketing of these services should be supported with effective and well organised country marketing to make the health tourism as **country brand** well known abroad too. Apart from the health tourism attractions and services, Hungary should also be able to offer our versatile natural assets and built and intellectual heritage to visitors as a **creatively** presented tourist product in a **quality** that satisfies the trends of the demand.

Easing seasonal and territorial concentration is a primary aspect.

- Thematically focused product structure development
  - **Health, heritage, cultural and professional tourism** are Hungary's extremely important products with individual potentials. All these products share a feature of being a primary motivation in trips for Hungarian and foreign guests alike.
  - **Festival, gastronomy and religious tourism** are tourist products with a great deal of attraction. They have a common feature of being attractive to those who choose Hungary as their travel destination.
  - **Eco, active, rural and agro tourism** are additional products that are suitable for extending the stay of visitors. On their own, they are not enough to motivate a trip, but they can be sold as supplementary services during the stay.
  - The products based on target group segmentation include **youth tourism and senior tourism**. The programme package that can be built from cheap components of the various product types to suit the income of the target groups is a special area of product development.

The stressed presence of the aspects of tourism in the 2024 Olympic bid will contribute to the organisation of high-standard Olympic Games through the development of tourist attractions and services in case Hungary is granted the right to host the games.

The institutional system of tourism is based on a **local and regional destination management organisation**, which, in co-operation with local governments, tourist enterprises and civil organisations, contributes to the development of the domestic services. Our objective is to present our **versatile natural values, built and intellectual heritage** as adequate quality tourist products besides the health tourism attractions and services. In addition, another objective is to be able to offer a package built from the components of the tourist products of the **destinations** to the visitors. As a result, Miskolc and Tokaj-Hegyalja, Eger-Egerszalók, Debrecen-Hortobágy-Hajdúszoboszló, Szeged and its surrounding area, Pécs-Harkány-Villány, and Sopron and its area could be turned into international tourist destinations.

The increase in the number of employees in tourism and related areas may contribute to the success of the sector. Furthermore, the measures aimed at creating a **predictable legal and economic environment** for tourism enterprises can also help reducing the black and grey economy.

The strategic objective related to the **domestic tourism incentive system, also known as SZÉP Card**, is to continue the role of the cafeteria system on the market and even expand it with various measures (e.g., in terms of taxation and utilisation); the cards could encourage employees to spend an increasing portion of their remuneration directly to the services of the domestic tourist industry. In terms of taxation, currently **business representation and gifts** belong to a preferential category known as certain specific benefit. Our long-term objective is to re-direct this spending, at favourable taxation, to the network accepting the SZÉP Card, i.e., to the Hungarian tourist and catering enterprises.

#### 4. Food industry

With the increase in population, new solvent consumer groups appear on the global market; the former overproduction crises have been replaced by constant and durable increase in demand for good-quality food products. The quality and good reputation of food industry products is a competitive advantage. The role of the industry is significant especially in regions where the foreign direct investments have not yet occurred extensively; in such areas the food industry is the driving sector in the development of the enterprises, in production as well as in employment.

At the time of political transition, Hungary was the leading food exporter in Central Europe: this advantage has been reduced and in the meantime other countries of the region, which earlier had difficulties even in self-sufficiency, have turned into strong competitors (Poland and Romania). **Hungary's site conditions and its traditions in production represent a good potential for quality mass production as well as for high-quality niche products and also facilitates the re-integration of the economic activities of rural areas and small town centres.**

The Government declared the **food processing sector a strategic sector**. A **medium and long-term food industry development strategy has been prepared for Hungary** with an objective of restoring and improving the competitiveness of food industry reflecting the local conditions and traditions and the diversity of agricultural raw materials. The strategy intends to promote the balanced development of the sector, with special attention to the food processing activities of agricultural producers, family farms and small producers, the improvement of the technical, technological and quality standards of micro, small and medium-sized food industry enterprises and the operation of large companies with sustainable development and capability of producing safe and competitive mass food products. The fundamental objectives of the strategy for all types of enterprises include the improvement of competitiveness, an increase in the number of employees in the food industry and the preservation and increase of the rural jobs directly linked to agricultural raw material production in Hungary. During the course of the planning of programmes co-financed by the European Union between 2014 and 2020, the Government pays special attention and allocates large amounts to the food industry.

**Good quality raw material production** is the key to development; instead of raw material exports, attention must be paid to the sale of highly processed food products. **Product development**, compliance with the criteria of authentic certificates of excellence and geographic origin protection, and design of corporate and regional brands are extremely important. Apart from supporting competitive small enterprises, the conditions required for the survival of micro

and small enterprises not capable for development but capable for keeping themselves and their direct environment should also be put in place. The growth of medium-sized enterprises must be supported, helping them become competitive and rationalise their product range as well as produce higher-quality products that can cover special needs. Apart from diversification, the encouragement of networking among plants (cluster building) is also very important in order to better organise production.

The establishment and development of **horticulture relying on the consumption of geothermal energy** could be a good breakthrough point in employment and the production of healthy foodstuffs in several large regions of Hungary. The glasshouses and polytunnels require cheap heating because 50% of the operating costs relate to energy consumption. It is an important aspect in the development to strengthen this line of production and to push out from the Hungarian market e.g., the paprika coming from Mediterranean countries (Spain, Morocco, etc.) and the tomatoes imported from Holland, Austria and Italy. Compared to open-air gardening, the opportunities for automation are limited, and therefore the average number of employees by hectare is 12 people. That is why at present 38,000 people are employed in this segment. The objective is to increase thermal gardening by 25-30% over the next few years with the creation of 10,000 jobs. Apart from the healthy nutrition of the Hungarian population, the restoration of the Hungarian vegetable and fruit exports is an important objective associated with the Eastern Opening programme.

## 5. “Green economy” development

The global trends and the industry development strategies of the key export partners point towards the development of green economy. The development of networks promoting the dissemination of weather dependent renewable energies and storage capacities, R&D&I support associated with renewable energy technologies, promotion of the use of renewable technologies, development of “intelligent” networks, “smart” public lighting, support to the introduction of “smart” metering all reflect development actions that will reduce Hungary’s energy dependence and will have a major multiplication effect.

The expansion of electro mobility referred to above is the main responsibility in environmental friendly transport. The environmental friendly transport also involves an increase in **the production of second generation bio fuels**. Apart from the fact that there is also an EU obligation to apply a mandatory minimum in the consumption of such fuels, the activity is also suitable for e.g., reducing the dependence on fossil energy and restoring the traditionally important role of agriculture (and thereby creating jobs) as well as increasing the added value of agricultural products exported without any processing. The development of cost effective renewable energy based production technologies and the promotion of their dissemination are required for reducing fossil energy consumption. The development of green economy (renewable, energy efficiency) also contributes to the achievement of our 2020 objectives.

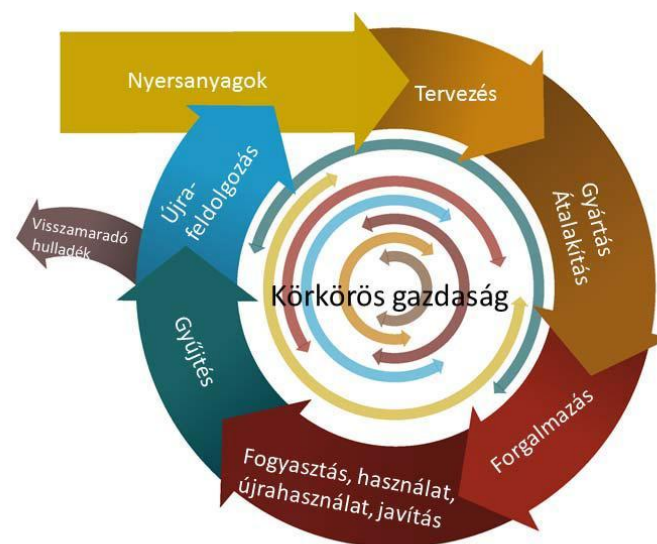
**Extensive bio mass utilisation** should be considered for the achievement of the renewable energy, energy efficiency and CO<sub>2</sub> emission plans. The bio mass resulting as a side product can be used for (a network of) bio gas plants. There is a great demand for the utilisation of bio mass for heating purposes or for other purposes satisfying technological heat demand, and therefore the requirements of individual homes heated with central and district heating as well as of the business sector can be granted with clean and cheap energy. Looking at the bio mass consumption, it is clear that Hungary has excellent supply of the types of trees that are ideal for energy purposes and that there are also Hungarian companies producing boilers for energy purposes that provide technical safety and comfortable operation at affordable prices. In that



respect, the sustainable utilisation of the bio mass must be developed e.g., through the development of the **forestry sector**, which requires a supportive regulatory environment (review of the regulatory environment to promote forestry, timber mobilisation in compliance with the EU and nature preservation general requirements for incentive purposes). Apart from the need for a supportive regulatory requirement, the 2014-2020 Rural Development Programme also provides financing for the development of this sector (e.g., afforestation). Any shift towards higher added value activities can be promoted with the implementation of the technological projects.

The **waste industry** also has a number of opportunities in resource efficiency and innovation. The Hungarian development projects implemented over the recent period allow for the utilisation of different types of wastes and hazardous wastes at the place of their origin, as a result of which valuable products can be generated (e.g., granulate from plastic packaging material, which can be used for plastic floor tiles, saving considerable transportation costs, depositing and handling procedures). With the help of the pyrolysis technology available in waste utilisation, apart from the quantities used for bio gas generation and in composting, the food industry and animal farming waste can be neutralised or used for energy purposes. The utilisation of waste for energy purposes apart from material recovery could be a major development area in order to use combustion and gasification procedures to generate cheap and easily processable materials and to contribute to the reduction of industrial energy prices.

Development towards a circular economy is an important goal of national economy and in environmental protection: attempts must be made to production with zero waste, effective utilisation of waste, and development of the recovery of materials from waste. The metabolic processes of the economic system form a closed system, where waste and side products are recycled at high level.

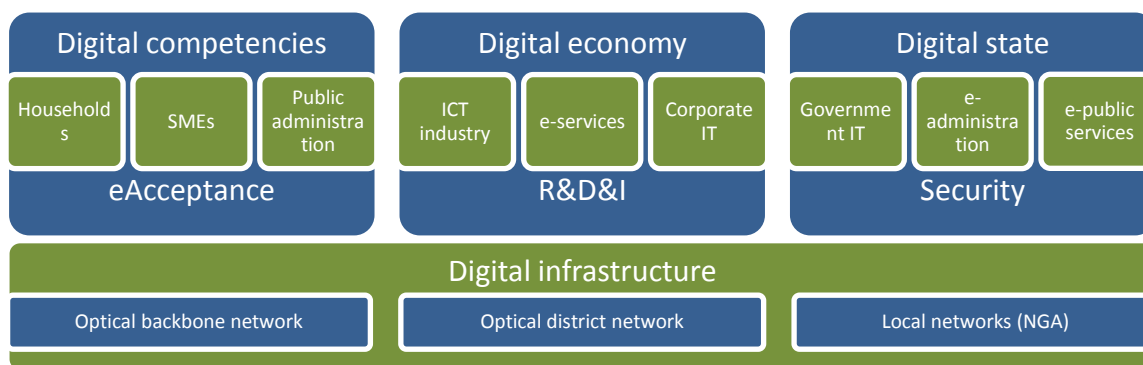


Körkörös gazdaság	Circular economy
Nyersanyagok	Raw materials
Tervezés	Design
Gyártás Átalakítás	Manufacturing Transformation
Forgalmazás	Distribution
Fogyasztás, használat, újrahasználat, javítás	Consumption, use, reuse, repair
Gyűjtés	Collection
Újrafeldolgozás	Reprocessing

Finally, as explained in the “Health economy” chapter, **the cheap heat energy (primarily geothermal energy)** and the related emission free irrigation technology as well as covered plant production areas can result in an agricultural sector that is independent from the weather and operates in an extended season. The supply of the irrigation system of glasshouses may be stabilised with pumps, the permanent micro climate may be maintained with local energy generation or combined utilisation of waste heat.

## 6. ICT sector

The Ministry of National Development prepared and the Government approved the National Infocommunication Strategy (NIS) in 2014 which states that the ICT sector, comprising the infocommunications and IT industries, generates approximately 12% of the Hungarian GDP, and the number of the employees of this sector is extremely high in Hungary in comparison to the majority of the OECD countries. That position is a good basis for establishing jobs and producing export products with high added value with adequate development policy instruments in Hungary and that the ICT sector to remain one of the breakthrough sectors of the Hungarian economy. Pillars of the National Infocommunication Strategy:



Among others, the NIS explains that effective arrangements are required to ensure the development of the digital economy in line with international trends including the maximum use of the R&D&I potential of the Hungarian ICT enterprises and strengthening the infocommunications presence of SMEs operating in other sectors. To achieve that goal, the number of experts trained must be doubled. Highly trained professionals could attract further development centres to Hungary; Hungary intends to target the acquisition of 30-50,000 new jobs out of the 750,000 IT jobs forecast by the European Union. New ICT jobs can be generated not only in the development centres of large companies but also with new companies, start-ups. By generating new jobs, ICT may become the industry exporting the highest added value.

This industry is very flexible (easily adaptable with new conditions) and functions as a basic technology: its results can be used by the industry, services and content production to strengthen its competitiveness. It has numerous definable and protectable niche markets; the market may be segmented especially well.

Programmes aimed at developing the industry were also launched in the Central European region (Brno, Ostrava and Kassa [Kosice]), and existing technical training facilities also launched new programmes with the involvement of a large amount of EU funds. The ICT sector is especially strong in two types of areas: around capital cities and former (heavy) industrial centres. In the first case, the main aspect was the global integration of capital cities, while in the second case the main driving force was industrial restructuring and modernisation of local and regional

knowledge bases and technical training facilities. The industry often plays a role in the revival and structural diversification of the industrial crisis areas. The capital requirement of the industry and the barriers of market entry are lower, small enterprises are also capable of entering the global market.

It is a risk that although the market positions of the industry are good, in Hungary the excessive territorial concentration of this sector relies on the start-up companies of Budapest, the medium category is for the time being smaller than expected and the investment attraction of technological start-ups is lower than the average of the neighbouring countries.

In theory, the training of highly-qualified workforce is in place and, with the help of knowledge transfer and incubation organisations, the sector can start developing in a number of towns. However, according to the data of The ICT Association of Hungary (IVSZ), at present there are more than 20,000 vacant IT jobs in Hungary.

## 6.1. SSC

Although it is not an industrial sector, but the development prospect of **shared service centres (SSC)** cannot be ignored either. The service centres providing standardised services represent a globally important form of offshoring. They are present in the emerging countries and Central Europe and generally look for highly qualified workforce with good language skills but without any specific professional knowledge. It is a risk in this sector that as wages increase, the activities may fall victim to external relocation challenges, and therefore they represent a prospect in the short and medium term, but in this period they can help young people with a degree find a job in Hungary and in the countryside.

## 7. Defence industry (production of arms)

In the selection of the key sectors, it was an important aspect to make sure that the state as a party generating demand should be able to take effective measures for the development of the sector. In this respect the defence industry stands out because the Hungarian army and the police organisations may generate a large amount of revenues for Hungarian defence companies with their orders and, as a sector with one of the highest rate of return, can also strengthen the national economy.

The significantly increased security policy risks that are likely to prevail in the long term especially justify the complex development of the Hungarian defence industry because in this way the dependence of Hungarian Defence Forces and law enforcement authorities from foreign suppliers can be reduced significantly and the security of supply may be improved in the most critical areas.

The formulation of a complex industrial development strategy for the defence sector that creates a satisfactory climate for the reintroduction, development and expansion of the Hungarian small arms industry is absolutely necessary for the intensive development of the capabilities of Hungarian Defence Forces.

The development of the capabilities of defence industry must be defined by taking into account the high return on the taxpayers' funds used for defence and by connecting to the Government's social policy objectives, job creation, boost research and development, the preservation of technology transfer, i.e., the efforts to boost the growth of the national economy.

Consequently, apart from the extensive extension of strategic capacities, the complex development of defence industry must cover all areas where the Hungarian defence industry has been traditionally strong and where the scientific, R&D as well as technical background is available which, apart from supplying the Hungarian Defence Forces and law enforcement authorities with advanced devices and equipment, will also provide a reasonable chance for selling the products on external markets, too.

In order to prepare a strategy for the development of defence industry, an Inter-Ministerial Defence Industry Task Force was formed for the purpose of defining the Hungarian defence industry capabilities, designating the potential development trends and elaborating the incentives based on the above-mentioned fundamental criteria.

#### IV. PILLARS AND INSTRUMENTS OF INDUSTRIAL DEVELOPMENT

The main components of the destination, i.e., of the vision we can achieve with the development of Hungarian industry, along the pillars outlined in the strategy: :

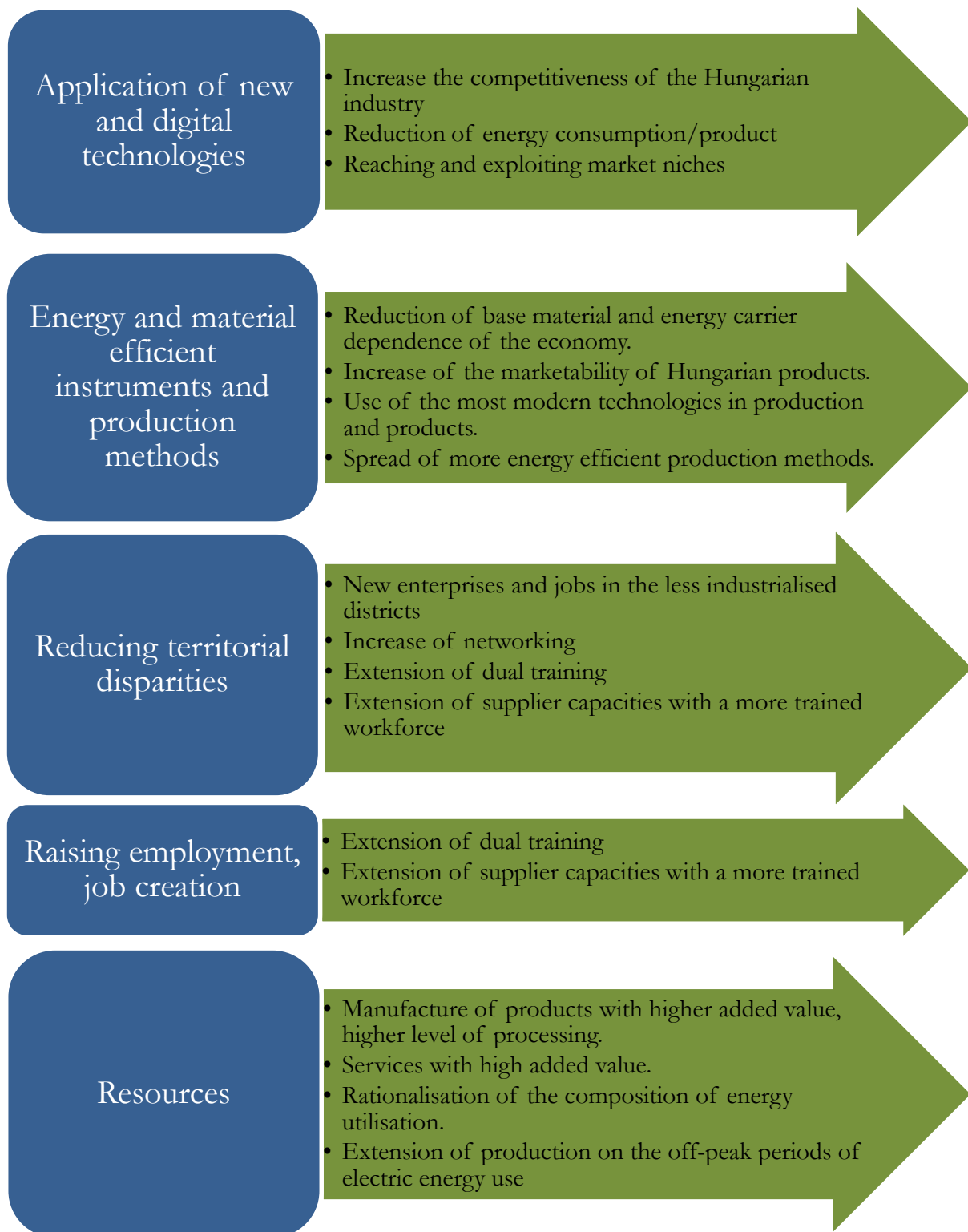
1. **At corporate (micro) level:** A higher number and proportion of Hungarian-owned enterprises will be able to manufacture goods with average or high level of processing. The number of enterprises capable of supplying large international companies will increase. The R&D&I willingness and capability of the companies will improve, as a result of which an increasing portion of the products manufactured by them as suppliers will be the result of their own development.
2. **At national economy (macro) level:** the country's demand for energy carriers and raw materials will reduce. Energy consumption will be shifted from the fossil energy carriers to electricity. The ratio of raw materials will decrease in the exported goods and the degree of processing will be higher in exports. There will be a larger proportion of Hungarian-owned enterprises among the companies capable of exporting goods.

All in all, the **complex objective** of the development of the Hungarian industry is to build an industry in Hungary by 2020 which can make the highest contribution to the GDP increase and to the improvement of the competitiveness of the companies and the entire national economy within the framework of the available energy, raw material and human resources and with their maximum utilisation.

As presented in detail above, the development of the Hungarian industry must be based on **five pillars**, which can also be considered **horizontal instruments**:

- use of **new technologies** and **digital technologies**
- encouragement of **energy and material efficiency and smart and economic use of land according to local assets** – use of renewable energy and manufacturing of equipment that supports energy efficiency (e.g., in the engineering of technical building systems)
- endeavours to **reduce territorial disparities**
- support to the sectors that (also) **use electricity during the low off-peak period**
- **encouraging material efficient manufacturing** (processing in Hungary of Hungarian raw materials with high added value)

In order to achieve the complex objective, specific objectives can also be added to the pillars, as summarised in the figure below:



Finally, in order to achieve the complex and specific objectives, the following instruments are available:

Pillars	Instruments
Use of new and digital technologies	Incentives with the R&D&I support system
	Assistance in co-operation among R&D&I educational and business sector
	Launch of training programmes for Hungarian SMEs
	Priority axis 2 and 3 of EDIOP and 2 of CCHOP
	National Research, Development and Innovation Fund
Energy and material efficient instruments and production methods	Incentives to energy consumption in the off-peak period
	Shift to a low-carbon economy, development in harmony with the environment.
	In the territory of CHR, enterprises can obtain funds from measure 1 of priority 5 of the CCHOP.
	Under TOP, the switch to low-carbon economy can be supported from priority 3 for development and from measure 5 under priority 6.
	Priority 4 of EDIOP supports development projects aimed at increasing the energy efficiency of companies and utilisation of renewable energy.
Reduction of territorial disparities	Strengthening of the FDI orientation tasks of HIPA
	Further easing of the Budapest centred structure.
	Support to industrial parks and networking in industrially less developed regions, organisation of central information and training events to assist the process.
	Incentive to capacity extension through targeted support: EDIOP Priority axis 1
	Raising employment, job creation
Co-ordination of the industry development policy and implementation of the projects under priority 5 of EDIOP with the endeavours of the Government to help employees leave the system of public employment system and enter the primary labour market.	
TOP priority 1, measure 4 and priority 6, measure 2: development of family friendly institutions assisting employment and public services.	
TOP priority 5 all three measures and priority 6 measure 8: local employment co-operation) (pacts), local community programmes and local complex programmes strengthening co-operation within society.	
More efficient use of resources	Support of the adaptation of international innovative practices to be applied
	Encouraging co-operation among occupational cultures
	Support to the processing of Hungarian basic raw materials
	Encouraging traditional high added value special products, e.g., in the food industry, that cover special consumer demands and comply with the national characteristics.

## 1. Proposed measures to support the key sectors

### 1.1 Competitive tenders

Commission Delegated Regulation (EU) No 1268/2012 on the rules of application of Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council on the financial rules applicable to the general budget of the Union allows each Member State to use EU funds for competitive tenders. The best known area of competitive tenders is a design contest in the construction industry, where the party issuing the contest defines a requirement (e.g., construction of new museum buildings in the City Park) and any Hungarian or international market actor can submit their own solution to satisfy that requirement.

The development of the food industry does not closely belong to the scope of competence of the Ministry for National Economy, the “health industry development”, with special regard to the time horizon of a drug development is much greater than can be managed in a tender. However, in relation to both sectors it must be noted that they are high added value activities which may also entail a significant volume of R&D activity.

Support to the development of SSC services is also important in terms of the national economy, but the R&D activities are not very intensive in this field (however, the innovation processes are more significant).

*Manufacturing of specialised machinery, ICT sector, defence industry and green economy*

In relation to these sectors, there is an identifiable common feature, i.e., considerable government demand for the products of the companies operating in those sectors (industrial development to suit government demand has already been defined above). The schedule of the demand for certain special vehicles, software, equipment and devices using renewable energy and firearms can be predicted for the next few years. One of the key steps of industrial development is to satisfy the actual demand with goods that have high Hungarian added value to the highest possible extent (naturally, in compliance with the requirements of the EU competition law).

Consequently, EU funds can be specifically allocated to the sectors referred to above in order to satisfy clearly defined government requirements. Such government requirements can include e.g., the following:

- 50% of the currently used vehicle fleet should be replaced by electrically propelled municipal refuse collection vehicles with the highest possible Hungarian added value,
- supply of industrial parks with broadband internet connections,
- high efficiency utilisation of Hungarian geothermal energy (with equipment that have high Hungarian added value), for the purposes of heating industrial properties, modernising district heating and to be used in agriculture (e.g., maintaining the temperature in foil tents).

The HORIZON 2020 scheme is a good basis for the launch and scheduling of competitive tenders i.e., the tender should be divided into three rounds:

- The organisations/consortia applying to take part in the competition submit a detailed feasibility study for the contract notice in the first round. The received documents are evaluated by an independent expert evaluation committee (there is no need to use EU and/or Hungarian funds in this phase).



- The applicants selected in the first round implement the experimental development by using EU funds in the second round.
- The final result of the tender is based on the evaluation of the results of second round (with a financial reward, similarly to design contests in the construction industry). The market access of the solution/solutions deemed the best can be funded with venture capital from priority 8 of the EDIOP.

The arrangement described in this chapter contains a great deal of innovation in comparison to classic contract notices. The procedures need to be developed, the involvement of the individual implementing units must be defined and further resources required for the implementation of the procedures must be provided.

## 1.2 Complex tender

The economy development endeavours reflected in the EDIOP priorities and the innovation-driven economy must simultaneously renew the complete economic and business environment in order to be simultaneously able to face up the challenges in competitiveness and employment. In the current phase of industry and technological development, the Government regulations must be developed to enable the market actors to adapt to changing market conditions in order to encourage innovation. These endeavours can be implemented in complex, multi-purpose sectoral programmes and development activities, where technology, infrastructure, human resources, competence development and the need for diversification exist side by side in product and market development.

Consequently, the complex programmes must be able to manage at least the following development objectives in an integrated way:

1. simultaneous capacity expansion and technological modernisation, performance of high added value activities (even within the framework of co-operation in economic networks),
2. differentiated increase in employment (also including the development of high competencies),
3. configuration of research and development potentials, product and technology R&D co-operation, prototype development derived from real economic needs.

They may be complemented by further development objectives, such as

4. market development, international co-operation, development of market presence and network synergies,
5. process automation, introduction of advanced corporate IT solutions,
6. improving resource efficiency with the introduction of energy efficient production methods.

The international and Hungarian practice shows that programmes are likely to be successful when the funds relevant for the scheme are not fragmented among operational programmes and priorities and the implementation of the programme does not depend on several independently operating institutional actors. That is why we make a proposal for a tender notice that can manage multi-component projects in a co-ordinated fashion in which the resources available under various priorities of EDIOP can be integrated and made accessible with a single support application. With an integrated contract notice, the synergies between the priorities of EDIOP could be enforced more strongly and the multi-purpose development projects could be supported by maintaining the borderlines between priorities.

The proposed complex instrument would be made available for a specified target group, i.e., the most competitive portion of small and medium-sized enterprises of the key industrial sectors (great development potential and suitable for complex development). The target group can be efficiently filtered by e.g. defining a revenue limit, but geographic preferences can also be used.

The feasibility of this proposal is primarily a procedural issue, which may call for the modification of Government Decree 272/2014 (XI. 5) on the procedures of the use of European Union funds in the 2014–2020 programming period. The institutional system capacities must also be made available for implementation. In order to manage the integrated contract notices, an officer responsible for policy must be appointed and managing authority capacities must be allocated to the programme.

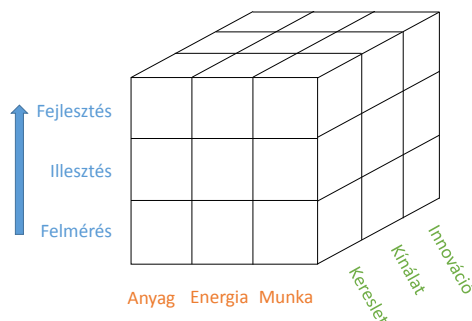
### 1.3 Establishing an indicative target for the “key sectors”

Apart from what is described in Chapter I./5, several sources from the central budget can also be made available to finance economic development. These sources include the indicative target for economic development managed by the Ministry of National Development, the national economy support appropriation managed by the Ministry for National Economy and the investment indicative target managed by the MFAT.

Extending the existing opportunities, a new appropriation should be introduced to finance the development programmes of Hungarian-owned, typically medium-sized companies primarily operating in the key sectors, naturally in line with the EU competition law and support regulations.

### 1.4 Introduction of an ecosystem based economic development model

There are numerous research and development results, innovative solutions, patents and prototypes as well as capacity to create these among the Hungarian SMEs on the supply side. In addition, there is also a considerable demand at national economy level for such products, services and activities. However, it is a well-known fact that the two sides are only rarely in balance. In order to improve efficiency, the fragmented demand and supply information must be collected and, based on it, integrated development programmes (interconnected, multi-phased tender instruments) need to be elaborated and implemented.



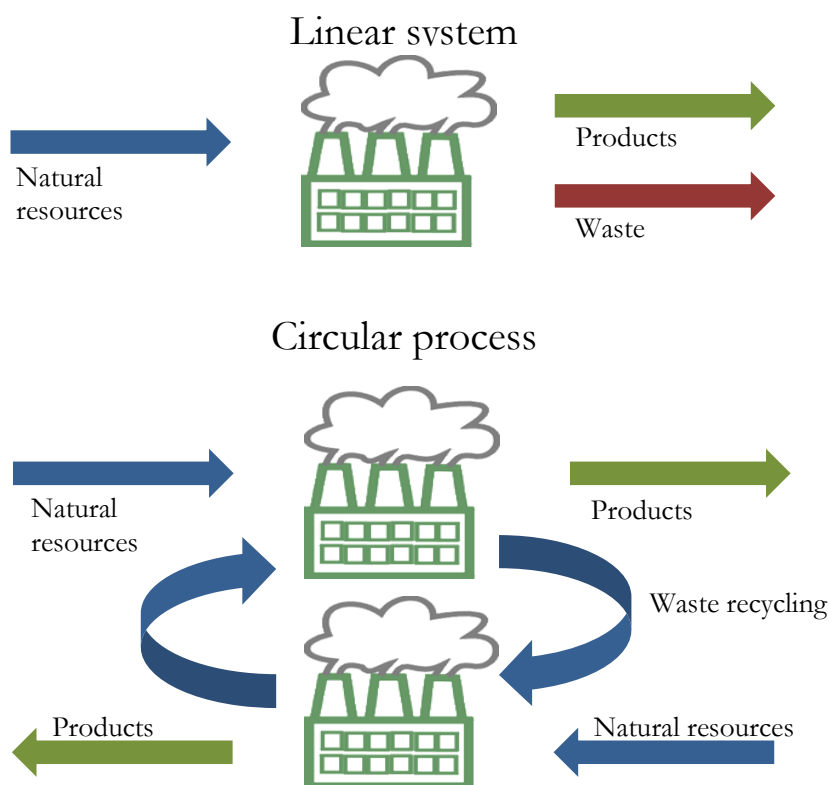
Ecosystem based model (source: IFKA NKft.)

fejlesztés	development
illesztés	matching
felmérés	survey

anyag	material
energia	energy
munka	work
innováció	innovation
kínálat	supply
kereslet	demand

## 1.5 Extension of National Industrial Symbiosis Programme / Circular economy

Industrial symbiosis has been recognised as one of the most important driving forces of job creation, green economy, eco innovation and resource efficiency. It is one of the features of this symbiosis that it transforms production system by making them similar to biological systems. In these systems, there is generally no waste and each material and resource has their own place. Traditional industrial production generates a large amount of waste, but the side products and waste of the companies involved in such symbiotic systems are all utilised. That is why the resource and energy efficiency of production increases.



The model of industrial symbiosis (source: IFKA Nkft.)

The synergies created with the principles of industrial symbiosis lead to easily detectable environmental results. The reducing CO<sub>2</sub> emission contributes to the achievement of EU and national objectives undertaken in environmental protection. The state must serve as a catalyst in the development of an industrial symbiosis.

## **1.6 Development of the regulatory environment**

In terms of the development of the industry, a predictable regulatory environment that facilitates competitiveness even in an EU comparison is of primary importance. Thus an especially great deal of care is required to avoiding the transposition of regulations stricter than those stated in the EU directives or framework regulations into the Hungarian legislation system in the course of complying with the law approximation obligations. The reduction of bureaucratic burden related to the foundation of an enterprise, the simplification of administrative procedures, effective access to financial resources and the development of the business environment must be continued also with regulatory instruments.

