

Diana Kopeva

University of National and World Economy, Sofia, Bulgaria

e-mail: dkopeva@abv.bg

ORCID: 0000-0001-5146-0793

Nikolay Sterev

University of National and World Economy, Sofia, Bulgaria

e-mail: sterew@abv.bg

Dimitar Blagoev

University of National and World Economy, Sofia, Bulgaria

e-mail: dmblagoev@abv.bg

ORCID: 0000-0003-2350-7341

STRATEGY FOR THE RENAISSANCE OF BULGARIAN INDUSTRY: POLICY PLANNING VS IMPLEMENTING MEASURES

STRATEGIA NA RZECZ RENESANSU BUŁGARSKIEGO PRZEMYSŁU: POLITYKA PLANOWANIA KONTRA ŚRODKI WDRAŻANIA

DOI: 10.15611/e21.2018.2.01

JEL Classification: L16, L50, L53, M2, O14

Summary: A wide range of strategic documents outlines the “road map” of development of the existing industry to “Industry 4.0” in Bulgaria. Despite efforts at European and national level, the implementation of the “road map” for the reindustrialization of the economy meets a basic problem of how to plan without evolution to achieve a revolution in the industry. As a result of the realization of this problem, there is an absence of a clear European or national plan to implement the “revival of industry” with the available economic, social, and political contexts, but at the same time, a realization of short-term plans is observed, aimed primarily at using investment measures to change the industry from the “inside”. This report emphasizes the main challenges facing a strategic plan for the reindustrialization of the Bulgarian economy as well as structurally addresses the following questions: 1. What are the Bulgarian strategic and operational documents related to the implementation of a common European plan for revival of the industry to “Industry 4.0”? 2. What short-term measures should be implemented as the first steps in Bulgaria in this direction? Summary and conclusions end the article.

Keywords: industrial renaissance, reindustrialization, Bulgarian economy, strategic planning, policy measures.

Streszczenie: Szeroka gama dokumentów strategicznych przedstawia „mapę drogową” rozwoju istniejącego przemysłu zmierzającą do przemysłu 4.0 w Bułgarii. Pomimo wysiłków na poziomie europejskim i krajowym, realizacja „mapy drogowej” dla reindustrializacji gospodarki napotyka podstawowy problem: jak planować bez ewolucji, aby dokonać rewolucji w branży. Brak jest jasnego europejskiego lub krajowego planu wdrożenia „odrodzenia przemysłu” z dostępnymi kontekstami ekonomicznymi, społecznymi i politycznymi, ale jednocześnie przewidziana jest realizacja krótkich planów, których celem jest przede wszystkim zastosowanie środków inwestycyjnych mających na celu zmianę branży wewnątrz”. W niniejszym artykule kładzie się nacisk na główne wyzwania stojące przed strategicznym planem reindustrializacji bułgarskiej gospodarki, a także strukturalnie odpowiada na następujące pytania: 1. Jakie są podstawy (tzn. dokumenty strategiczne, wskazujące na „mapę drogową”) dla renesansu przemysłu?; 2. Jakie są bułgarskie dokumenty strategiczne i operacyjne związane z wdrożeniem wspólnego europejskiego planu odrodzenia przemysłu do „Industrii 4.0”?; 3. Jakie środki krótkoterminowe powinny zostać wdrożone jako pierwsze kroki w Bułgarii w tym kierunku? Podsumowanie i wnioski kończą artykuł.

Słowa kluczowe: renesans przemysłowy, reindustrializacja, gospodarka bułgarska, planowanie strategiczne, środki polityczne.

1. The road map for renaissance of Bulgarian industry

1.1. Common concepts for Industry 4.0 and EU strategic documents

The current dynamic trends in the change of principles and concepts for the next generation of industrial society impose a concept that is known in the scientific and public domain as “Industry 4.0”. Its origins are dictated by the pan-European tendency to revive the industrial society and trigger a general renaissance of the industries of the EU countries. The term “Industry 4.0” represents a modern trend in the development of automation and data exchange in the use of technology in production, and the enforcement of the principles of production of high value added and scientifically resource-intensive production. This includes cyber-physical systems, Internet integration in the use and management of goods, and the extensive use of cloud services to carry out these activities.¹

Industry 4.0 is based on the concept of building so-called “smart business organizations”, mostly of an industrial type. By integrating the global information network into processes, resources for manufacturing, and products and services, cyber-physical systems communicate and coordinate with each other and with people in real time.²

¹ Hermann, Pentek, Otto, 2016, *Design Principles for Industrie 4.0 Scenarios*; J. Jasperneite, *Was hinter Begriffen wie Industrie 4.0 steckt in Computer & Automation*, 19 Dezember 2012.

² H. Kagermann, W. Wahlster, J. Helbig (eds), 2013, *Recommendations for implementing the strategic initiative Industrie 4.0: Final report of the Industrie 4.0 Working Group*.

The main goal of the industrial manufacturing concept of “Industry 4.0” is to combine industrial production with modern information and communication technology. The innovative concept of Industry 4.0 and what stages of development encompass the field of industrial revolutions can be traced in the following figure (Figure 1).

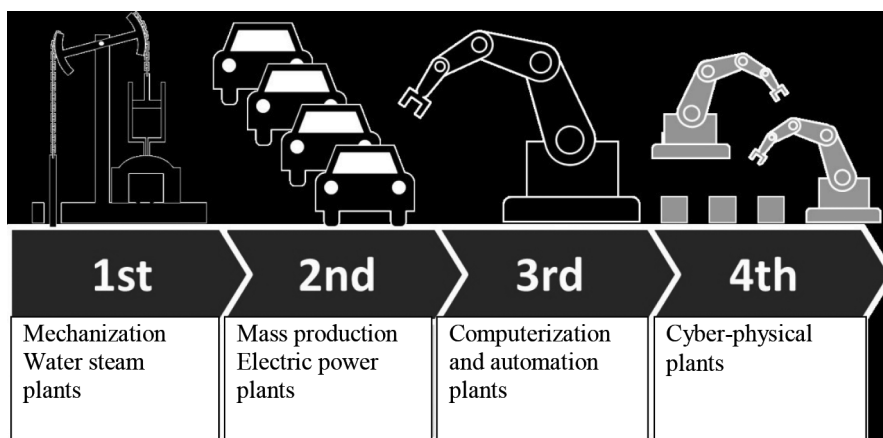


Fig. 1. Industrial revolutions and stages of the development of industrial society

Source: [Marr, Bernard 2016].

The development of industrial production implies the natural conclusion that the concept and principles of Industry 4.0 are in fact the fourth industrial revolution since the invention and introduction of the steam engine for the purposes of industrial production and the mechanization of manual labor. What, however, are the basic principles and concepts underpinning this fourth industrial revolution that has been made public under the name of Industry 4.0?³

- From Big Data to Smart Data.
- Production Managed by Data.
- Faster, More Flexible and Efficient Production.
- Merging Worlds.
- Self-organizing Industrial Business Organizations.

All these principles, concepts, and paradigms are laid out in the strategic documents for the development of industry and national economies at a common European and national level. The overall objective in this direction is to achieve the desired goal (as set out in the Lisbon strategy and previous strategic documents), namely to turn the European economy into the most dynamically developing, highly innovative and most competitive world-wide.

³ Industry 4.0 – future of production, <https://www.expert.bg/Industriq-40---bydeshteto-na-proizvodstvoto-527232.html>.

1.2. “Towards a European Industrial Renaissance” action plan

On the basis of monitoring the crisis in the EU and identifying key factors for the revival of the economies and generating stable and high economic growth in the years to come, it is concluded that a sound industrial base will be key to Europe’s economic recovery and competitiveness. Efforts must, of course, be directed mainly to key sectors of industrial production that have proven their greatest resilience to crisis. Such industrial productions for the EU are mainly from several high and medium-tech sectors: automotive, machinery, equipment, pharmaceuticals, chemicals, aerospace, the space sector, creative industries, and high-quality goods in many other sectors, including the food industry.

On this basis, however, a number of weaknesses of the European economy still remain. Those more significant can be condensed to the following:

- Domestic demand remains weak, shrinking the internal market of European businesses and restricting intra-EU trade.
- Business conditions in the EU as a whole have improved, but progress remains uneven.
- Investment in research and innovation is still insignificant, which limits the necessary modernization of the industrial base and hampers the EU’s competitiveness.
- EU businesses pay higher energy prices than virtually all leading competitors and have difficulty accessing key resources such as raw materials, skilled labor and capital under accessible conditions.

The objectives, tasks, measures and activities, thus formulated in the EU’s strategic planning documents are aimed precisely at building a modern industry of the fourth generation, industry of type 4.0. Whether they will be realized successfully in their entirety and throughout the EU and will not just remain wishful thinking only time will tell. The fact is that a great amount of the EU’s strategic planning documents relating to the overall economic and, in particular, industrial policy over the years have endured a number of refinements and transformations, and have failed to achieve the objectives set out in them, makes us sceptical. The only good thing in this case is that our scepticism will be disproved over time.

2. Status of strategic and operational documents related to the revival of Bulgarian industry to “Industry 4.0”

Over the last three years, a number of strategic and operational documents have been adopted, directly or indirectly related to the revival of Bulgarian industry to Industry 4.0. The main documents at national level are the following:

2.1. Innovative strategy for the smart specialization of the Republic of Bulgaria 2014-2020 and the process of intelligent specialization

Following the decision of the Council of Ministers No. 857 of 03.11.2015, the Bulgarian Innovation Strategy for Intelligent Specialization 2014-2020 (BISIS) was adopted as the basis for the implementation of thematic precondition 1, point 1.1 “Research and Innovation: The existence of a national or regional smart specialization strategy in line with the National Reform Program aimed at mobilizing private funds for research and innovation and in line with the characteristics of properly functioning national or regional systems in research and innovation” under Annex XI to Regulation (EC) No.1303/2013 of the European Parliament and the EU Council. Through the Bulgarian Innovation Strategy for Intelligent Specialization (BISIS, Strategy), Bulgaria declares its vision for policy change and overcoming the existing socio-economic challenges such as: low labor productivity; low share of high-tech production; demographic crisis and prevention of brain drain, attracting successful Bulgarians and youth entrepreneurship; ensuring a better and healthier lifestyle.

2.2. Re-industrialization strategy (project) and re-industrialization program

In 2013 the European Union (the Parliament and the Council of Europe) highlighted the issues of re-industrialization of the community as a whole and the national economies in particular. Regardless of the contradictory views on re-industrialization and especially on the place, the role and the support of the state for a possible long-term reindustrialization program in Bulgaria, preparation for this strategic field has begun. In response to the controversy within the EU regarding “for” or “against” re-industrialization and its effects, in Bulgaria a draft re-industrialization strategy and a re-industrialization program project in 2014 were developed which did not reach the validation stage. These two draft documents present the vision, priorities, objectives, and concrete measures to achieve long-term effects in the industry. The process of the re-industrialization of the national economy and a long-term program, which should ensure the success of the process, require a preliminary response to a number of key issues.

2.3. National SME Promotion Strategy 2014-2020

“National Strategy for Promotion of Small and Medium-Sized Enterprises 2014-2020” was established as implementation of Art. 5, para. 1 of the Small and Medium Enterprises Act. It is a medium-term policy paper through which the Government of the Republic of Bulgaria demonstrates its vision of state policy in support of small and medium-sized enterprises (SMEs) in the country. The strategy has been developed in accordance with both the government’s program for governance, development and justice, and the European Union’s policy in this area. The strategy is targeted at small and medium-sized enterprises in the mining, processing and ser-

vices sectors (non-financial enterprises in sectors B to M according to the Economic Activities Classifier – KID – 2008). The overall strategic goal of the National SME Promotion Strategy is to increase the competitiveness of small businesses by helping start-ups and viable small and medium-sized enterprises in their efforts to be innovative, environmentally friendly and export-oriented, creating favorable conditions for their development, improving their access to finance; encouraging entrepreneurship and enhancing entrepreneurial skills; simplifying administrative and regulatory requirements, especially for small and micro enterprises.

2.4. “Entrepreneurship 2020 – Bulgaria” action plan

The Council of Ministers of the Republic of Bulgaria adopted Protocol 46/11.11.2015 the “Entrepreneurship 2020-Bulgaria” Action Plan with a list of concrete measures in line with the European Commission’s “Entrepreneurship 2020 – Revival of Entrepreneurial Spirit in Europe” action plan (COM/2012/0795 final). With the “Entrepreneurship 2020 – Bulgaria” action plan, our country is committed to pursuing a policy of promoting and creating new businesses in the long-term. With the European plan, the EC invites Member States to take specific actions outlined in a total of 46 recommendations in three key areas.

2.5. Regional development strategies and municipal development plans

Regional development strategies have been developed on the basis of Art. 12 of the Regional Development Act and in line with the strategic orientation of regional policy in the European Union and the national regional development priorities and priorities for 2014-2020. They are in line with the methodological guidelines for the development of Regional Development Strategies (2014-2020) approved by Order No. RD-02-14-2402/22.11.2011 by the Minister of Regional Development and Public Works. The development strategies of the European Union, which are part of the strategy for smart, sustainable and inclusive growth “Europe 2020”, the National Development Program: Bulgaria 2020, the National Regional Development Strategy 2012-2022, have been taken into account in the elaboration of the development strategies, the national spatial development concept for the period 2013-2025, and the Level 2 Regional Development Plans for 2014-2020. The projections, priorities and financial parameters of the European Union’s new cohesion policy have been taken into account.

2.6. Sectoral strategies: tourism, export, etc.

At present, there is a Strategy for Development of Tourism in the Republic of Bulgaria (2014-2030); National Environmental Protection Strategy 2014-2020; National SME Development Strategy in Bulgaria 2014-2020; Export Development and Export Promotion Strategy 2014-2020.

Strategic documents have been developed in the different sectors which refer to other strategic and planning documents at national level. There is a discrepancy between the set priorities and strategic objectives in the sectoral strategies and the strategic documents at national, regional, and municipal level. There is no synergy between the vision and strategies at micro level (business unit level) with sectoral and territorial-administrative ones. This shows that strategic documents at national and lower administrative levels are not recognized by the business community, the targets and priorities set in them do not take into account the needs of business. This leads to the ineffectiveness of the strategic and planning documents.

3. Guidelines for the development of Bulgarian industry in “Industry 4.0”

The analysis carried out reveals essential problems related to the adoption and implementation of the strategic and operational actions regarding the “evolution” of Bulgarian industry to “Industry 4.0”. The analysis reveals two main problems: a horizontal imbalance and a low degree of vertical subordination of the different strategic and operational documents that should “bring” Bulgarian industry to the next evolutionary stage (Figure 2).

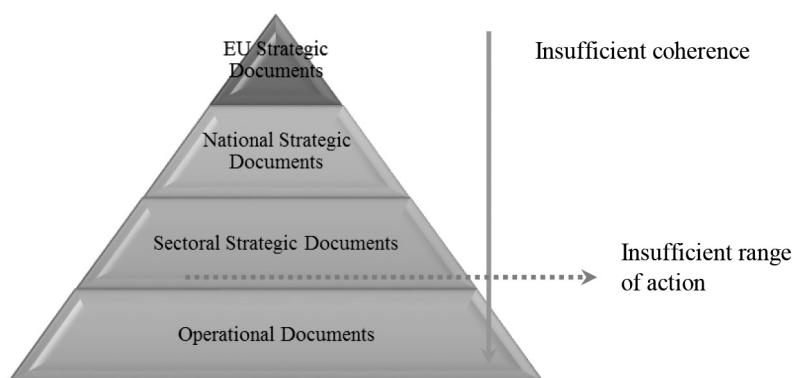


Fig. 2. Horizontal and vertical relationships between documents supporting the development of Industry 4.0

Source: own visualiation of the hierarchy and subordination of strategic documents.

Firstly, with regard to “insufficient subordination”, there is a variation in the action of the individual levels. For example, at European level, the industrial revival strategy is geared towards the development of industries of the future based on industrial mathematical models and large data and smart data industries, while at national level the priorities of the national strategy are not yet fully defined and at sectoral level only two sectoral strategies have been developed. In this way, it is “difficult”

to create modern supply chains and to create high value networks of enterprises that are the basis of modern Bulgarian industry.

Secondly, regarding the “absence of horizontal links”, the fragmentation of sectoral strategic documents and operational documents is observed. Individual sectoral strategies are being developed to create the appropriate prerequisites for the development of an industry, but there is no link with other sectors. For example, the export promotion strategy is not tied to a “missing” strategy for the development of applied science. Another aspect can be the operational documents defining the competitiveness through innovation (through OPIC) and the operational documents defining the improvement of human capital (through OPHRD).

To sum up, the main specific issue to be resolved is the following:

- how to implement the revival of industry with the available economic, social, and political conditions (strategic and planning documents), but at the same time realize the short-term plans aimed primarily at using investment measures to change the industry from the inside.

The solution to the question posed requires the development and implementation of complex strategic documents and relevant operational tools to “direct” the change in the development of the industry towards “Industry 4.0” (Figure 3).⁴

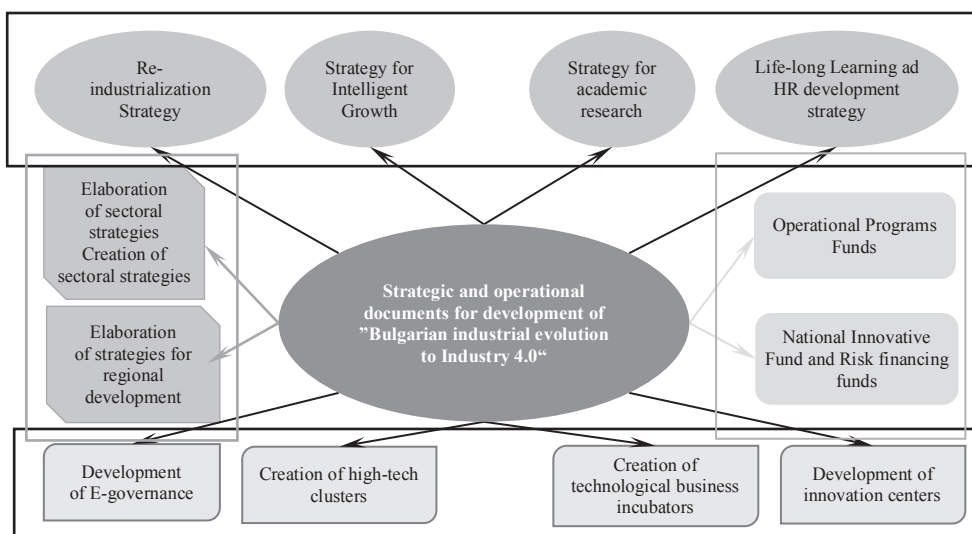


Fig. 3. Relevant strategic documents and tools supporting Industry 4.0

Source: authors visualisation.

⁴ See Iliev, Blagoev and Shterev, 2014, *The Process of Reindustrialization – Strategic Challenge to the National Economy*, Scientific Works of UNWE, p. 2.

The change in the level of Bulgarian industry in the direction of adopting the principles of Industry 4.0 requires four different types of solutions (Figure 3): Firstly, a set of interrelated strategic documents to be bound horizontally and comply with the principles of subordination with strategic documents at national and European level. Secondly, the adoption of operational documents related to the use of various mechanisms to promote re-industrialization to Industry 4.0. Thirdly, the creation of appropriate strategic documents, binding the main strategic documents with the operational mechanisms and instruments of re-industrialization.

On the basis of the appropriate set of horizontal and vertically related strategic and operational measures shown in Figure 3, the national priorities for promoting Industry 4.0 can be derived as follows:

- To develop and adopt a re-industrialization strategy and program with the active involvement of sectoral and stakeholder representatives. In order to comply with the principles of subordination and in view of the more effective implementation of the various measures to encourage the development and competitiveness of Bulgarian industry, it is necessary to develop a National Strategy and on its basis a program for the re-industrialization of the Bulgarian economy.
- Develop an action plan (road map for re-industrialization) with specific activities, performance indicators and deadlines for implementation. This action plan must “make” the business community to become involved in the problems of the state, and education and science. The action plan should direct businesses into universities and scientific organizations, and not the latter to seek the favor of the former.
- Provide appropriate mechanisms and tools, including financial programs, schemes and tools to ensure the implementation of the action plan. The necessary tools should be geared to creating new chains and networks of high added value industries.

4. Conclusion

To sum up, the following conclusions can be highlighted:

- There is a huge number of strategic documents: policies and strategies presenting basic strategic development directions;
- Some operational programs are implemented with appropriate measures to finance publicly significant projects;
- There is a lack of subordination between different levels of government planning documents;
- There is a lack of coherence between national strategic and planning documents with sectoral ones.

The possible solutions to the problems encountered in the implementation of the strategic documents and the operational measures, in the example of the re-industrialization of Bulgarian economy, can be summarized in the following two

directions. Firstly, it is necessary to update/develop all the four given above types of strategic and operational documents. Secondly, it is necessary to outline the main priorities related to the implementation of the strategic documents and the operational measures for the re-industrialization of the Bulgarian economy: to develop and adopt the strategy and program for re-industrialization; to develop a road map for re-industrialization; to provide appropriate mechanisms and tools to ensure the implementation of the re-industrialization road map.

Bibliography

- Bulgarian Innovation Strategy for intelligent specialization 2014-2020 (PMS №857/03.11.2015).
- EC, 2013, Industrial Performance Scoreboard, http://ec.europa.eu/enterprise/policies/industrial-competitiveness/monitoring-memberstates/files/scoreboard-2013_en.pdf.
- EC, 2013, Towards knowledge-driven Reindustrialisation, http://ec.europa.eu/enterprise/policies/industrial-competitiveness/competitiveness-analysis/europeancompetitiveness-report/files/eu-2013-eur-comp-rep_en.pdf.
- EC, 2014, For a European Industrial Renaissance, {SWD(2014) 14 final}, <http://cor.europa.eu/en/activities/stakeholders/Documents/Com%202014-14.pdf>.
- Hermann M., Pentek T., Otto B., 2016, *Design Principles for Industrie 4.0 Scenarios*. https://www.mi.government.bg/files/useruploads/files/innovations/ris3_26_10_2015_bg.pdf.
- Iliev J., Blagoev D., Shterev N., 2014, *The Process of Reindustrialization – Strategic Challenge to the National Economy*, Scientific Works of UNWE.
- Jasperneite J., 2012, *Was hinter Begriffen wie Industrie 4.0 steckt in Computer & Automation*, 19 December.
- Kagermann H., Wahlster W., Helbig J. (eds), 2013, Recommendations for implementing the strategic initiative Industrie 4.0: Final report of the Industrie 4.0 Working Group.