

## FORESIGHT: A NEW ERA OF OPPORTUNITY AND CHALLENGE FOR THE UKRAINE MANUFACTURING

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***Руліцька К. Форсайт: нова ера можливостей і викликів для українського виробництва***

*Показано результати досліджень перспектив проектування розвитку українського виробництва та визначення різноманітних областей, де поєднання стратегій і дій є найбільш доцільним. Досліджено особливості передбачення розвитку виробництва з використанням форсайт-досліджень. Підтверджена доцільність використання методології форсайту для проектування розвитку аграрних підприємств. Визначено можливості й перспективи проектування розвитку українського виробництва за допомогою методології форсайту.*

***Ключові слова:*** форсайт, виробництво, розвиток, підприємства, перспектива.

***Rulitska K. Foresight: a new era of opportunity and challenge for the Ukraine manufacturing***

*The results of research perspectives of Ukrainian production project and identification of various areas where action is needed at both strategic and more detailed levels are presented in this article. The features of Foresight to development of manufacturing are investigated with the use of Foresight- researches. Confirmed the feasibility of using Foresight methodology for the project of agricultural enterprises. Defined projected possibilities and prospects of development of Ukrainian manufacturing using Foresight methodology.*

***Key words:*** Foresight, manufacturing, development, enterprises, prospect

***Рулицкая К. Форсайт: новая эра возможностей и вызовов для украинского производства***

*Представлены результаты исследований перспектив проектирования развития украинского производства и определения различных областей, где сочетание стратегий и действий является наиболее целесообразным. Исследованы особенности предсказания развития производства с использованием форсайт-исследований. Подтверждена целесообразность использования методологии форсайта для проектирования развития аграрных предприятий. Определены возможности и перспективы проектирования развития украинского производства с помощью методологии форсайта.*

***Ключевые слова:*** форсайт, производство, развитие, предприятия, перспектива.

**Scientific problem.** Going up with the progress, agrarian economy can not remain aside modern world trends. This applies, in particular, forecasting methods. To ensure the reliability of the forecast must take into account as many factors influence it. The complex of actions on a consideration of all possible aspects of the implementation forecasting methodology contained in Foresight modern research.

**Analysis of recent researches and publications.** Foresight in Ukraine – a relatively new concept, but it has already managed to get its supporters and skeptics. It is possible to combine the interests and vision of the people involved in the implementation of the future so that it happened exactly the way they want. It is also possible to predict the negative scenarios

that could be, and in this case it is necessary to work with them so they are not true.

A lot of domestic and foreign scientists have activated their researches in Foresight. Among them is the sense to name B. Martin, T. Kvasha, N. Sheljubs'ka, Z. Poplavs'ka, L. Lyah, G. Karliuk and others. But existing situation in agriculture dictates the sharp necessity to continue similar investigations with the purpose to projecting future of adequate ways out from that situation elaboration and realization.

**Objective of the article.** Manufacturing in 2050 will look very different from today, and will be virtually unrecognizable from that of 30 years ago. Successful firms will be capable of rapidly adapting their physical and intellectual infrastructures to exploit changes in technology

as manufacturing becomes faster, more responsive to changing global markets and closer to customers.

**Statement of the main results of the study.**

Foresight project is based on real data with more weight management findings, a combination of rational (analytical) and irrational (subjective) approaches and proactive business Foresight researches. Foresight involves coordination not just the views of experts on the issue of «what is the future?», but also position of managers on the issue of «what do we do?». Foresight uses the latest scientific evidence and futures analysis to address complex issues and provide strategic options for policy [1].

Successful firms will also harness a wider skills base, with highly qualified leaders and managers whose expertise combines both commercial and technical acumen, typically in science, technology, engineering or mathematics [2]. Constant adaptability will pervade all aspects of manufacturing, from research and development to innovation, production processes, supplier and customer interdependencies, and lifetime product maintenance and repair. Products and processes will be sustainable, with built-in reuse, remanufacturing and recycling for products reaching the end of their useful lives [3]. Closed loop systems should be used to eliminate energy and water waste and to recycle physical waste.

These developments will further emphasize the key role of physical production in unlocking innovative new revenue streams, particularly as firms embrace «servitisation» and manufacturers make use of the increasing pervasiveness of «Big Data» to enhance their competitiveness. In the public sector, policy frameworks that affect the manufacturing sector directly and indirectly will need to recognise the extended nature of value creation and the new ways it is being developed. Public planning cycles should match the timescales of firms' own long term planning requirements. And it will be important that flows of highly skilled workers, patient capital, and support to promote critical mass in small and medium sized enterprises are all internationally competitive. The implications for Ukraine manufacturing firms and the Ukraine Government are substantial [4, p. 47–48].

Some businesses are already adapting and are world class, but many are not positioned to succeed in a future world where greater opportunities will be balanced by greater

competition. The implications for Ukraine manufacturing firms and the Ukraine Government are substantial.

The Ukraine needs to radically change its approach to providing a constant and consistent framework within which all firms aspire to prosper. A business-as-usual approach will not deliver that outcome, needs to radically change its approach to providing a constant and consistent framework within which all firms aspire to prosper. A business-as-usual approach will not deliver that outcome, needs to radically change its approach to providing a constant and consistent framework within which all firms aspire to prosper. A business-as-usual approach will not deliver that outcome.

Other economies are already ahead, and catching up will require an adaptive capacity that the Ukraine has not yet demonstrated. Achieving this is essential, as the future competitiveness and health of Ukraine manufacturing will affect many other parts of the economy through its numerous linkages. The key message is that there is no easy or immediate route to success, but action needs to start now to build on existing support, and to refocus and rebalance it for the future. Above all, policy design will need to address entire system effects [3].

The quality and skills of the workforce will be a critical factor in capturing competitive advantage [4]. It is essential that Ukraine policy makers focus on the supply of skilled workers, including apprenticeship schemes, support for researchers, and the supply of skilled managers.

Firms will need to pay much more attention to building multidisciplinary teams to develop increasingly complex products, and also innovative business models. It will also be crucial to address the current image associated with manufacturing. Here government and industry should work together to further promote and market the opportunities for careers in manufacturing industries at all levels of education. Financial challenges for the sector include a shortage of risk capital.

This is particularly evident as a funding gap between research and early development and the funding for proof of concept that is usually required before the market steps in. There is also a shortage of funding for applied research and development in some areas such as the development of advanced green energy sources [5]. So although there are excellent schemes for

public support such as Knowledge Transfer Partnerships, funding of the Technology Strategy Board, and public private partnerships such as the Energy Technologies Institute, these are much smaller than in competitor nations. Addressing this mismatch should be a priority.

Recent years have seen a resurgence in the development of industrial policies by governments in the Ukraine and overseas. In the Ukraine, industrial policies have been developed in 11 sectors, led in most cases by groups from the public and private sectors, with many of these encompassing manufacturing industries. Whilst specific initiatives are essential in areas mentioned above, more is needed. Recognition that the Ukraine's national infrastructure suffered from fragmented policy making led to the creation of Infrastructure Ukraine (IU). Manufacturing suffers from similar challenges and is no less strategic for the future strength and resilience of the Ukraine economy.

The Lead Expert Group of this Foresight Project considers that a similar office to the IU is needed for manufacturing. This would be responsible for helping Government to formulate long-term policies that would take into account the extended value chain associated with manufacturing industries. It should be staffed by experts, preferably with substantial successful industry experience.

They would consider all of the issues highlighted in this Report, and develop and assist Government with piloting new policies. A Ukraine Office for Manufacturing would need to work closely with IU, in view of the importance of infrastructure to manufacturing. It would also need to work closely with industry, particularly to improve skills and increase the ability of companies to innovate by working with relevant partners. Other countries including the United States and Australia have developed relevant offices from which the Ukraine can learn.

It is surely unique in Europe, if not globally, for a Government to commission a strategic look at the future of manufacturing as far ahead as 2050. In this article it is suggested to combine effort of about 300 leading business people, experts and policy makers from about 15-25 countries – sets out a vision of manufacturing that is very different to what we recognize today. Clearly, both industry and Government need to prepare for what will be considerable opportunities and challenges ahead. The

importance of manufacturing to the Ukraine economy, as set out here, is incontrovertible.

Manufacturing is no longer just about production, it is a much wider set of activities that create value for the Ukraine and benefits for wider society. Manufacturing includes significant innovation. It creates jobs that are both highly skilled and well paid. It also contributes to the rebalancing of the economy, with its strong role on exports and import substitutions.

Through the Government's industrial strategy we are already working with business on long-range plans to strengthen advanced manufacturing sectors such as automobiles, aerospace, life sciences and energy supply chains [6]. We are developing the Ukraine's ability to commercialize new technology and expand our skills base.

There are many Ukraine manufacturing firms that are world class. Indeed, manufacturing leads other sectors in many areas, including productivity, exports and research and development. There is no room for complacency, however. The analysis and advice contained in this report will help Government to take its support for manufacturing to another level. Our predictable officials will be working with the project experts to work out next steps. I look forward to seeing how their conclusions help Government and industry to harness the full potential of Ukraine's manufacturing.

This report looks at how manufacturing is set to enter a dynamic new phase, driven by rapid changes in technology, new ways of doing business, global competition and potential volatility around the price and availability of resources. It makes recommendations for government and industry to ensure that the Ukraine manufacturing sector is able to compete and thrive in this new world and move into a larger conversation on how to implement the findings from Foresight research.

Foresight project looking at the long-term picture for the Ukraine's manufacturing sector between now and 2050. The manufacturing sector makes significant contributions to the economy, accounting for over 10% of the Ukraine's gross value and employing around 2.5 million people. It accounts for more than half of the Ukraine's exports (53%) and around 3 quarters of business research and development (72%) [6].

This project looked at the long-term picture for the Ukraine's manufacturing sector up to 2050, investigating global trends and drivers of change. It explored how the Ukraine could maximize these opportunities and developed an evidence base to help policy-makers prepare for the challenges ahead.

The project should involve about 300 industry and academic experts, business leaders and stakeholders, from 15–25 countries. It should be guided by a multi-disciplinary lead expert group and a high-level stakeholder group to ensure it included the most relevant evidence and its findings should be of a high technical and scientific standard. The project should be sponsored by the Department for Business, Innovation and Skills. Foresight projects are in-depth 2-year studies which build a comprehensive evidence base on major issues looking 20 to 80 years into the future [7].

On July 23 in a Transatlantic Discussion has been identified five key global trends that will shape our world as 2030 approaches [8]:

- A richer and older human race characterized by an expanding global middle class and greater social and economic inequalities;
- A more vulnerable process of globalization led by an «economic G3»;
- A transformative industrial and technological revolution;
- A growing nexus of climate change, energy, and competition for resources;
- Changing power, interdependence, and fragile multilateralism.

The report also identifies three global revolutions that will pose subsequent challenges for Europe [9]:

- The global economic and technological revolution
  - Reshaping the economy
  - Moving towards a society of change and innovation
- The global social and democratic revolution

- Dealing with inequalities
- Restoring trust in democracy
- The global geo-political revolution
  - Enhancing the international role of the European Union (EU).

In order to address the above trends and revolutions, economic catch-up and a more effective working relationship between global players are necessary [10]. The future of the EU depends on strong leadership and sound strategic thinking. Foresight is a major component of determining the avenues that the EU can take to address these issues.

The practice of Foresight is to inform about strategy development. By focusing on key trends and uncertainties, especially those with more regional consequences, the intelligence community has been able to develop potential short-and long-term scenarios that are based on patterns and uncertainties.

**Conclusions.** From the above analysis, we can draw the following conclusions. The economic conditions of the local agricultural enterprises and the possibility of introduction of intensive technologies in the production are getting lower due to the increased growth of cost of such production. Grouping of farms in Ukraine in terms of the intensity confirmed this general tendency. Thus, to maintain the competitive advantage of domestic farmers, it is necessary to increase the government support or improve the mechanism of price formation for agricultural products and resources for its production.

In summary, manufacturing is too important to leave to its own devices. With this in mind, it is critical for Foresight analysts to expand their horizons and observe Foresight research conducted beyond the transatlantic community. As power becomes more diffuse and as the transatlantic community once again looks to reinvigorate intergovernmental organizations, Foresight analysis from anywhere are critical to informing long-term policy thinking.

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