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## Assessment of the socio-economic impact of sustainable development innovations

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### Abstract

The acceptance of the 2030 Agenda for Sustainable Development serves as a significant moment for countries to act towards a direction of steady sustainable development. Kazakhstan is one of the countries that has been actively implementing a sustainable development policy in all sectors of the economy and the development of society over the past years. Despite the fact that Republic of Kazakhstan is a relatively young country, Kazakhstan is smoothly moving from the old model of development, the so-called raw materials economy to more sustainable and innovative development. This article defines the concept of innovation in sustainable development, distinguishes the types of innovation in sustainable development, defines the concept of "impact evaluation of innovation in sustainable development", distinguishes result-based management approach to measuring socio-economic impact and provides examples of socio-economic impact of innovation in sustainable development. Originality of the research is to understand the concept of innovation in sustainable development and prove what socio-

economic effects have in the long term. In the article, the theoretical scientific foundations of the concept of innovation in sustainable development were identified, methodologies for measuring the socio-economic effects of innovation were studied, conclusions were drawn on the socio-economic impacts of innovation of sustainable development in the modern world.

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**Keywords**

Innovation in sustainable development, socio-economic impacts, eco-innovation, social innovation, product innovation, result-chain, SDG indicators.

## Introduction

The Republic of Kazakhstan, being an active participant in international processes in the field of sustainable development, considers the innovative economy as the most important factor of transition to sustainable development and increasing its competitiveness on the world stage. To implement this task, conceptual documents are being developed at the state level, and a number of sectoral programs are being implemented on this basis. The UN Member States, including Kazakhstan, committed themselves to achieving the Sustainable Development Goals by 2030 in 2015. Kazakhstan has started its work on SDGs implementation by adopting global SDGs indicators, and today the monitoring system includes 280 indicators – 205 of which are global and 75 of which are national [Kazakhstan Jumps 6 Points..., www]. More than 79% of the target's tasks are reflected in the documents of the government planning system of Kazakhstan [Voluntary National Review..., www].

The development of an innovative economy is primarily due to the need to overcome dependence on the raw materials sector and focus on the production of high-tech goods and services. This problem is especially relevant in connection with the current economic situation, when world prices for raw materials are declining.

## Main provisions

Currently, the topic of innovations in the field of sustainable development is discussed in foreign literature by various authors. However, despite the fact that the number of articles seems significant, publications are examples of creating sustainable innovations. At the same time, there is a significant shortage in terms of fundamental research and generalizing theoretical models. In this regard, Books and Liebe-Freunde [Boons, Ludeke-Freund, 2013] emphasize that there are no conceptual conclusions in the literature on the topic of sustainable development innovations. For further research projects on the topic, the authors Schiederig et al. [Hansen, Grosse-Dunker, Reichwald, 2009] propose to focus on research at the enterprise level and analyze the problem through the prism of the microlevel, giving comparative assessments of the implementation of environmental innovations by various companies.

There are different interpretations of the concept of sustainable innovation. In foreign sources, innovations that lead to increased sustainability can be described as “innovations focused on

sustainable development” (SOI) – a term first introduced by E. Hansen et al. [ibid.]. In recent decades, more and more descriptive and prescriptive works have been published that focus on these types of innovation processes. Innovations focused on sustainable development have been recognized as a priority area of empirical research. Modern researchers strive to fill the gap between research and action that exists in this area, and to improve the rather sparse and very diverse literature.

The discussion of SOI is complicated by the fact that different authors give different interpretations of both the concept of essence and management methods. The meaning of the related concept of “eco-innovation” is very often discussed in the literature, while the question of the social dimension causes some controversy. Many authors discuss whether improved financing can lead to social and environmental benefits, where SOI is considered as a by-product [Kemp, Pearson, 2007].

Although SOI has a broad definition, there are many aspects where the definition does not address them. Therefore, a broader definition of SOI must satisfy a number of criteria:

- should cover new ideas that come from internal and external sources;
- must include old ideas that have found a new interpretation;
- must describe the full range of innovative products, ranging from incremental improvements to existing designs or processes to completely new business models;
- Finally, to ensure sustainability, the definition of SOI innovation should be considered as tools that lead to improved social, environmental, and financial outcomes [Official site of Agency for Strategic planning..., www], or those that reduce the negative impact in them compared to other options.

## **Methods**

Analysis of scientific papers by different authors on the types of innovations in sustainable development, comparison of practices of different companies as a case study, study of the latest data and research, surveys on innovation of sustainable development. Methods such as analytical, statistical, historical review, result-chain and search are used in the research process.

## **Results**

There are different other types of innovation within the system. While the 20th century was dominated by the notion of business innovation and its Schumpeterian interpretation, nowadays there are new types of innovations, the concept of which changing during the time. Business innovation is the type of innovation for realizing new products and services into the market and making profit for the companies.

According to L. Zemtsov, environmental innovation is the new products, new technologies, new ways of organizing production that ensure environmental protection [Zemtsov, Baburin, 2016]. Mityakova O. And writes those ecological innovations are new technologies aimed at preserving the ecological resources of the planet [Mityakova, 2009].

Another type of sustainable-led innovations is social innovation. If environmental innovations were discussed at the beginning of the twentieth century, then for the first time social innovations began to be widely discussed in the 60s of the twentieth century in the works of P. Drucker and M. Young. According to Kachelkina O., social innovations are new projects, ideas and initiatives aimed at improving the life of society and based on the solution of social problems [Kachelkina, www].

As indicated in Table 1, the different forms of innovation may differ in their objectives and rationale, may target different markets or societal segments; and may rely on different forms of funding.

**Table 1 - Types of innovation in sustainable development**

<b>№</b>	<b>Forms of innovation</b>	<b>Objectives</b>
1	Business innovation	It is the type of innovation for realizing new products and services into the market and making profit for the companies.
2	Open innovation/Co-creation	Promoting new products and services using knowledge sharing with opportunities for profit sharing
3	Eco-innovation	Developed new products and services bringing profit and contributing to ecological improvements as positive externality
4	Mission-oriented innovation	Innovation that targeted to achieve specific technological goals (mission-oriented innovation) or directing to social problems (challenge-led)
5	Public sector innovation	Innovation based on improvement of quality in public administration, that provides more efficient public services
6	Smart specialization	Innovation through policies, programs and activities that gives opportunities for the regions to focus on their strengths (competitive advantage)
7	Social innovation	Innovation based on solution of a social problems
8	Grassroots innovation	Innovation based on place-based, bottom-up approach of solutions to local social or developmental problems

Note – compiled by the authors based on [Unilever, www; Accenture, www; GazProm, www]

In Kazakhstan practice, the main type of innovation in enterprises is environmental innovation. Since the use of new business models based on innovations are still not developed in Kazakhstan, researchers use the indicator of environmental innovation. In the table given below, we can see statistics on the number of enterprises with four main types of environmental innovations. Statistics show that the number of enterprises with innovations has a downward trend. Data given formed on the basis of annual state statistical observation according to form “Innovation report”.

**Table 2 - Types of innovation in Kazakhstan enterprises**

<b>Type of innovations</b>	<b>Unit of measurement</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Product innovation	Units	168	103	89	33	25	23
Process innovation	Units	181	154	108	48	54	47
Marketing innovation	Units	33	23	12	-	2	3
Organizational innovation	Units	64	104	43	18	4	11

Note – based on [Agency for Strategic planning, www]

## Discussion

The most important task in studying the effectiveness of these types of innovation is to study and analyze the socio-economic impacts of innovation in sustainable development. In order to measure impact of sustainable-led innovations used by companies or project we need to build the result-chain of this implementation project or technology. Result-chain management approach is the main tool used to know which impact can finally reach a company implementing an instrument, technology, project or policy not only in sustainability, but also in other concepts. Result-chain consist the following elements:

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“Output” is immediate, visible, concrete developmental product or service that is the tangible consequence of project activities (through the use of inputs).

“Outcome” is the developmental change (in the beneficiaries of the project) that is the logical consequence of achieving a combination of outputs. They are achievable in a medium term (in any case before the end of the project). Outcome can be disaggregated into final outcome and intermediate outcome. Final outcome is a change generated when all planned intermediate outcomes are achieved to the target groups. Intermediate outcome is a change generated resulting from the use of goods and services produced.

“Impact” is a long-term developmental change that is the logical consequence of achieving a combination of outputs and outcomes.

Therefore, in the world companies differentiate the various impacts of innovation on the basis of sustainability: for example, employee motivation increases, they start to have a higher assessment of the effectiveness of responsible business, the company's attractiveness to potential partners and buyers etc. After examination of 2,250 cases by Deutsche Bank by specialists, they realized that in 62,6% of cases sustainability agenda has a positive impact on the businesses economic situation and result. Main transnational international corporations which used and implemented sustainable-led innovations have demonstrated improvement in financial situations of the company. For instance, the DuPont, one of the leaders in chemical industry stated in their report that they earned income in the amount of \$ 11.8 billion doing investments in the development of environmental goods (eco-innovations) in the amount of \$ 879 million. Another example of socio-economic impact of sustainable-led innovation is that improvement of waste, water and energy management (key concept of circular economy) has saved Unilever more than 600 million euros since 2008 [Unilever, www].

Accenture proposed a survey, the result of which clarifies that 83% of respondents trust that technology and innovation activities in business play an important role in achieving the Sustainable Development Goals [Accenture, www]. Another example of positive long-term socio-economic impact is Gazprom Neft Moscow refinery, which using innovative water purification complex, has decreased river water consumption by more than five times in two years and provided savings of 4 million cubic meters – this is the volume of half of the Khimki reservoir [GazProm, www]. Huawei stated that the correlation between the company's digitalization investments (business innovation) and progress in achieving the six key SDGs (health and well-being, quality education, gender equality, industry, innovation and infrastructure, sustainable urban development and climate change) reaches 90%.

But this is only a small part of the company, as there are many barriers to the successful involvement of sustainable development innovations like ambiguous understanding of the value of sustainable development for companies; lack of competencies; lack of data and unified approaches to their collection; an undeveloped regulatory framework; “Green washing” that means many companies base their activities in sustainable innovations solely on a marketing basis, to attract customers and audience, on a populist attitude [Huawei, www]. Another problem is the uneven prevalence and a very small proportion of the use of this concept. According to data from the World Economic Forum (WEF) survey for March 2021, only 0.2% of enterprises were included in the MSCI All Country World index. It means that only these companies are determined to implement the UN plan to achieve a sustainable future by 2030. Not all sectors are developing in the same way, WEF experts note, but with good strategy and careful monitoring and evaluation systems businesses can deal with issues, and society can reach significant positive changes [In Russia, the total area..., www].

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## Conclusion

Most of the companies have begun to realize the importance of introducing sustainable innovative practices to minimize the negative social and environmental impact of their activities and, as a result, achieve higher corporate results. Moreover, government institutions and society itself require organizations to ensure that innovations in products, services, processes and business models are aimed at improving the well-being of the population and protecting our planet, as well as being accompanied by responsibility for sustainable development.

The study of the experience of successful world leaders in the field of sustainable innovation has shown a positive relationship between the application of sustainable innovative practices and the economic performance of companies, which explains the rapid growth of investment in this area. Nevertheless, the sustainable innovations produced are still concentrated in a few leading countries, that is, there is still a global innovation gap between countries with different levels of economic development.

An increase in the amount of financing for sustainable innovations leads to an active growth of companies involved in their production. Today, the sustainable activities of many companies that create revolutionary innovations are concentrated in the industrial field.

But there are some limitations in the wide implementation of sustainable-led innovations. The sustainable innovations produced are still concentrated in a few leading countries, that is, there is still a global innovation gap between countries with different levels of economic development. It is also worth noting that some countries get a greater return on their innovative investments than others, consider the problems of “green-washing” and legislative problems.

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## **Оценка социально-экономического воздействия инноваций устойчивого развития**

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### **Аннотация**

Принятие Повестки дня в области устойчивого развития на период до 2030 года служит важным моментом для стран, которые должны действовать в направлении устойчивого развития. Казахстан является одной из стран, которая на протяжении последних лет активно реализует политику устойчивого развития во всех секторах экономики и развития общества. Несмотря на то, что Республика Казахстан является относительно молодой страной, Казахстан плавно переходит от старой модели развития, так называемая сырьевой экономики, к более устойчивому и инновационному развитию. В этой статье дается определение концепции инноваций в устойчивом развитии, различаются типы инноваций в устойчивом развитии, определяется понятие «оценка воздействия инноваций в устойчивом развитии», выделяется подход управления, ориентированный на результат, к измерению социально-экономического воздействия и приводятся примеры социально-экономического

воздействия инноваций в устойчивом развитии. Оригинальность исследования заключается в том, чтобы понять концепцию инноваций в устойчивом развитии и доказать, какие социально-экономические воздействия они имеют в долгосрочной перспективе. В статье были выявлены теоретические научные основы концепции инноваций в устойчивом развитии, изучены методологии измерения социально-экономических эффектов инноваций, сделаны выводы о социально-экономических воздействиях инноваций устойчивого развития в современном мире.

#### Для цитирования в научных исследованиях

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#### Ключевые слова

Инновации в устойчивом развитии, социально-экономические последствия, эко-инновации, социальные инновации, продуктовые инновации, цепочка результатов, показатели ЦУР.

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