

## **INNOVATION AND INVESTMENT FUNDAMENTALS OF THE DEVELOPMENT OF ENTERPRISES OF THE G7 COUNTRIES DURING THE PERIOD OF GLOBALIZATION CHALLENGES**

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### **Abstract**

Ukraine and the G7 countries are strategic partners in the implementation of joint socio-economic projects. An analysis of the innovation and investment development of enterprises in the G7 countries and Ukraine showed that an important tool to remove obstacles to creating favorable conditions for attracting investment in the Ukrainian economy is to improve the regulatory framework and attract capital to modernize domestic production. The same applies to the issue of creating and developing special forms of organization of innovative activity (clusters, industrial park, technology parks).

The official basis for the analysis is the official materials of the State Statistics Service. Statistical analysis (absolute and relative statistical values, samples) allowed us to evaluate the main indicators of the enterprise, the dynamics and structure of export opportunities. Based on a systematic and structural approach, positive aspects of enterprise development and risks in G7 countries were identified. Thanks to the analysis, comparison and extrapolation in the sphere of functioning of enterprises of the G7 countries and Ukraine, priority areas of development are identified.

Based on the analysis of the development of innovative activity of enterprises of the G7 countries, it should be noted that a unique innovative system has been created in recent years. The main elements are the forms of organization of innovation. Each of the G7 states invests in the innovative development of enterprises, including the implementation of specific programs that promote development. It is empirically established that the problems of the development of domestic enterprises are determined by the low level of institutional support, insufficient investment activity and lack of innovation. Potential areas of cooperation for creating transnational clusters in the food industry between Ukraine and the G7 countries are substantiated. Positive aspects of development and factors hindering their functioning in Ukraine were identified (imperfect regulatory support, lack of preferences, low level of investment component). The existing experience in the functioning of special forms of organization of innovative activity must be taken into account in the process of building an innovative network in Ukraine. The problems of institutional support for the functioning of domestic and foreign forms of organization of innovative activity of the food industry (institutions of innovative

development, adoption of bill No. 2554 a-d, 2555 a-d) are identified. Proposals have been developed to improve the regulatory framework of Ukraine, taking into account the particularities of the experience of the G7 countries (including the Laws of Ukraine "On Science Parks", "On Industrial Parks").

Taking into account the main aspects of innovative development of G7 enterprises opens the opportunity to implement best practices in domestic enterprises. In particular, through the creation of joint ventures, clusters and transnational clusters. Therefore, such cooperation can be a promising avenue for further development in a time of globalization challenges.

**Key words:** *Cooperation, Enterprise, Joint venture, Cluster, Transnational cluster, Public-private partnership.*

## 1. Introduction

In the current conditions of globalization, the issue of innovation and investment development of the G7 countries becomes relevant. It is especially evident in the processing industries, in particular in the food industry. Increasing development of the industry is associated with the production of competitive products; dissemination of advanced technologies and equipment in the production process; increasing the role of small and medium-sized enterprises; forming the structure of export trade; enhancing the role of cooperation in scientific and technical work, etc.

It has been found that the innovative food industry is best developed in countries such as the United Kingdom, Italy, Canada, Germany, the United States, France and Japan. On the basis of the analysis the development of the industry peculiarities have been determined which have developed historically. So, in Canada, the leading place is occupied by the milling, meat and fish industries. In contrast to Canada, Italy has a well-developed pasta production. The country has long been a leader in the world for the production of these products.

The development of one or another sub-sector of the food industry is influenced by factors such as institutional, innovative, raw materials, etc. They are reflected in the article we are offered.

Indicators were used to analyze the innovative development of food processing enterprises in the G7 countries. Among them are the number of enterprises; the number of employees; innovations introduced in the production process; the number of technoparks, science parks, industrial parks and clusters, venture-backed enterprises that have innovated in the country.

The purpose of the work is to study the situation, identify problems of development of food industry in the

G7 countries on the basis of generalized experience, as well as to develop recommendations for the future functioning of Ukrainian enterprises.

## 2. Materials and Methods

The data for the study were taken from official statistical sources of information, scientific and analytical sources, and features of the current state of the food industry development in the G7 countries and in Ukraine were established empirically.

By means of descriptive statistical analysis the assessment of the main indicators of production activity, dynamics and structure of export of food industry products was carried out. On the basis of the system and structural approach positive aspects of development and factors hindering the increase of domestic production capacity of the food industry were identified. Comparison and extrapolation of international experience allowed us to determine the content of the priority directions of the food industry development on the basis of innovative aspects.

## 3. Main aspects of the food industry functioning on an innovative basis in the G7 countries and in Ukraine

### 3.1 Features of the innovative development of food industry enterprises in the G7 countries and in Ukraine

The G7 group of countries which consist seven of the world's most advanced economies (United Kingdom, Italy, Canada, Germany, United States, France and Japan). According to the rating of the Global Competitiveness Index 4.0 - 2019, among 141 countries of the world, they took the following positions: United States - 2nd place (83.7), Japan - 6 (82.3), Germany - 7 (81.8), United Kingdom - 9 (81.2), Canada - 14 (79.6), France - 15 (78.8) and Italy - 30th place (71.5). According to the Global Competitiveness Index 4.0 the Innovation Ecosystem group consists of two parts: Business dynamism (Pillar 11) and innovation potential (Pillar 12) - see Table. 1 [1]. In group 11, Business dynamism, the leader is the United States (1 place), Italy (43 place). This group is divided into subgroups: Administrative requirements (United States - 1st place) and Entrepreneurial culture (United States - 2nd place).

In the 12th pillar Innovation capability, the leader is Germany (1st place). If we consider the position of Interaction and diversity, the leader in this group is Germany (4th place). In terms of the Research and development position of the Innovation capability group, the leader is Japan (1st place), and in Commercialization - Germany (5th among the countries of the world).

**Table 1. G7 countries in the ranking of the Global Competitiveness Index 4.0 2019**

Indicators	Country Ranking Global Competitiveness Index 4.0 - 2019						
	Canada	Germany	France	Italy	Japan	United Kingdom	United States
<b>11th pillar: Business dynamism 0 - 100</b>	12	5	24	43	17	9	1
<b>Administrative requirements 0 - 100</b>	8	3	20	24	2	11	1
11.01 Cost of starting a business (% of GNI per capita)	7	72	16	93	78	1	24
11.02 Time to start a business (days)	2	47	8	32	70	21	31
11.03 Insolvency recovery rate (cents to the dollar)	9	20	24	33	1	12	18
11.04 Insolvency regulatory (framework 0 - 16 (best))	49	1	49	14	9	49	1
<b>Entrepreneurial culture 0 - 100</b>	20	9	36	97	35	14	2
11.05 Attitudes towards entrepreneurial risk (framework 1 - 7 (best))	20	16	55	73	58	10	2
11.06 Willingness to delegate authority (framework 1 - 7 (best))	18	16	42	112	27	22	7
11.07 Growth of innovative companies (framework 1 - 7 (best))	25	8	31	99	30	19	2
11.08 Companies embracing disruptive ideas (framework 1 - 7 (best))	22	7	30	98	48	16	2
<b>12th pillar: Innovation capability 0 - 100</b>	16	1	9	22	7	8	2
<b>Interaction and diversity 0 - 100</b>	13	4	20	32	26	15	8
12.01 Diversity of workforce (framework 1 - 7 (best))	5	16	65	139	106	14	7
12.02 State of cluster development (framework 1 - 7 (best))	22	4	24	1	12	15	2
12.03 International co-inventions (per million pop.)	14	11	20	29	25	18	19
12.04 Multi-stakeholder collaboration (framework 1 - 7 (best))	15	7	29	64	25	14	2
<b>Research and development 0 - 100</b>	12	2	5	17	1	6	3
12.05 Scientific publications score	4	3	5	7	6	2	1
12.06 Patent applications (per million pop.)	18	5	12	23	1	19	13
12.07 R&D expenditures (% GDP)	23	8	13	25	6	21	11
12.08 Research institutions prominence (framework 0 - 100 (best)) <sup>1</sup>	12	4	3	10	7	5	1
<b>Commercialization 0 - 100</b>	28	5	17	296	20	8	9
12.09 Buyer sophistication (framework 1 - 7 (best))	17	13	25	41	6	14	4
12.10 Trademark applications (per million pop.)	39	11	20	18	40	16	32

Points on a scale from 0 to 100 (compiled by the authors [1]).

We can consider the features of the food industry enterprises development of the G7 group countries. In the Canadian food industry, leading positions are held by such industries as the milling industry (the cities of Port Arthur, Montreal, Vancouver), meat, canned fish (employing 90 thousand person who produce 60.0% of fish exports), and alcoholic beverage. These food industries have important export value.

Of particular importance in Canada is the dairy industry and the production of dairy products. It should be noted that 455 enterprises operate in the industry. Of these, 15% are the largest companies in the country ("Saputo", "Agropur", and "Parmalat"). They produce 80% of the milk in the country. Products are of high quality and meet quality standards. The market for liquid milk (table milk and fresh cream) occupies 39% of dairy products, and the market for dairy products (cheese, yogurt, ice cream, etc.) - 61% [2]. These products are diverse. There is a positive development trend over the past few years. Today, Canadian enterprises produce 667 varieties of cheese in Quebec, Ontario and other provinces. Innovation in Canada's dairy industry is driven by research and development. Canadian scientists are leading in terms of the development and transfer of new technologies. This confirms one of the existing examples in the development of a high-grade line of functional dairy products. Some of the dairy enterprises are certified according to the "risk analysis and critical control points" system. There is a High Quality Canadian Milk program that aims to ensure food security for farmers. It was developed by the Dairy Farmers Association of Canada. The aim of the program is to improve the quality of milk produced by farmers. Particular attention should be paid to the fact that the Canadian dairy industry is developing a comprehensive strategy for achieving environmental sustainability. This is directly related to climate change, a reduction in greenhouse gas emissions into the atmosphere.

The food industry in Germany today is able to fully provide the country's population with food. It is mainly based on the work of private farms that grow: corn, barley, wheat, beets, oats, potatoes and rice. Grown products go to local processing enterprises. It should also be noted that organic products are in great demand in the country, the cost of which is 20 - 50% higher. Such products are marked with the image "Euro sheet". They are actively being bought up by the country's population. Another feature of the market is the existence of public and private quality standards. The latter include standards developed by manufacturers such as "Bio-land", "Demeter", and "Naturland".

Main directions of development of the food industry is the dairy, butter and cheese, meat, baking, confectionery industries and the production of alcoholic beverages. There are more than 6 thousand enterpris-

es of the food industry, which employ more than 550 thousand persons. The largest German concerns that produce food products include: "Dr.Ötker", "Tschibo", "Tönnis Fleischwaren", "Südzucker", and others. In addition to large enterprises in this industry, small and medium-sized enterprises operate. The annual turnover of the German food industry is about 170 billion euros. In Germany, meat producers have achieved particular success. There are about 400 enterprises that export about 1.5 million tons of sausages.

Attention also deserves such a segment of the food industry as brewing. The country produces about 4,000 beers. One third of the beer produced in the country is exported. Despite significant beer production in Germany, this type of economic activity is developing as winemaking. Its main production facilities are concentrated in the Rhine river valley. Traditional consumers of German wine are countries such as the United Kingdom, United States and Japan.

In Germany, innovative activity in the food industry is actively developing. If we analyze the indicators of innovation in the food industry in Germany, we can see that the main partners for a long time are: France (10.5%), USA (9%), Great Britain (8.5%), and Italy (7%) [3]. According to Filatov, and Filatov and Dorofeev, [4, 5], about 50% of the country's food industry enterprises brought about 40% of the produced innovative products to the product markets and 45% of the developed innovative processes. These numbers indicate that food industry enterprises are developing on an innovative basis. They focus on increasing the volume of innovative projects in the food industry state financing. It also focuses on improving the conditions necessary for introducing innovations in the food industry private sector. Attention is paid to the issue of stimulating technology transfer at state-owned enterprises in the food industry. The accelerated development of national segments of innovation markets, in particular in the field of development of high technology, is taking place. Role of the development of public-private partnerships in the food industry in Germany is growing. The processes of technology commercialization in the country's food industry are accelerating.

According to existing statistics, in recent years, the food industry in France produced 1.7% of GDP (1980 - 2.6% of GDP). It should be noted that the country achieved this level thanks to the French companies functioning (98% of the total number of companies) engaged in the food industry ("Danone", "Lactalis", "Pernod Ricard", "Sodiaal", "Nestlé France", "Agrial", "Groupe Bigard", "Moët Hennessy", "Cargill France", "Terrena", "Bongrain", "Coca-Cola France", "Unilever France", "Limagrain", etc.). In addition to large food industry companies in France, a significant part is occupied by small family-type bakeries and gastronomes. The most developed sectors of the food industry are the production of: meat and

dairy products, drinks (including wine and strong alcoholic drinks), animal feed, bakery and confectionery products, processed vegetables and fruits, oils and fats, flour and cereals, fish and seafood, sauces, seasonings, and flavors. In recent decades, the production of organic and healthy foods has increased, including foods that are low in fat and salt.

French food industry enterprises are characterized by the introduction of advanced technologies and innovations in the production process. This phenomenon is accompanied by the so-called "regional innovation revolution". Thanks to this, a network model has been created that allows one to design innovative relationships in a specific territory where the subjects of the innovation market and food industry enterprises are located. Such networks are tied to a geographical location, and include autonomous interchangeable links. For example, it can be clusters and food industry enterprises that interact with actors in the innovation market. Thus, the development of industrial clusters in the city of Montpellier deserves special attention. Within the city there are 800 enterprises, including food industry enterprises. The number of employees is almost 20 thousand persons [6]. Business schools have been created in the city that deal with the issues of effective functioning and innovation in the food industry, in particular in the field of international trade. Business schools attract the attention of talented students from other countries who wish to work in this field. It should be noted that instead of implementing measures for the strict specialization of food industry enterprises in France, such regions of the country are able to introduce innovations and are characterized by high industry flexibility. Thanks to this development, a significant amount of innovative products manufactured by the country's food industry are exported. These are products such as wine, spirits and cheeses.

In the Italian food industry, 2,550 medium and large enterprises are registered. The number of people employed in these enterprises is 390 thousand persons. If we consider the activities of enterprises from the point of view of their specialization, then we should note that these are enterprises of the milling industry (Naples region), as well as enterprises that produce Italian pasta. It should be noted that Italy ranks 1st in the world for the pasta production. 175 enterprises are engaged in the production of pasta, of which 155 specialize in the production of dry pasta, and 30 specialize in the production of "fresh". These are enterprises such as "Barilla Alimentaria", "Pastificio Rana", "Agnesi one thousand eight hundred forty-two", and "De Cecco". Also on the territory of the country there are a number of enterprises that are engaged in the production of sugar ("Eridan", "S.F.I.R.", and "Easy"). Raw materials for local enterprises producing sugar are sugar beets of their own origin.

Canning production is significantly developed in the country. It should be noted that 70% falls on the fruits and vegetables preservation, as well as meat and fish. In our opinion, it is worthwhile mentioning that Italy is second in the world and the first among European countries in the field of tomato processing. 223 enterprises are involved in tomato processing, of which 134 are located in the Campania region, 32 in Emilia, Romagna and other areas. The largest producers of tomatoes in Italy are such companies as "Star Stabilimento Alimentaria", "Coserve Italy", "La Doria", "Trinity Alimentaria Italy", and others.

Italy has long been famous for producing such a popular product in the world as cheese. This is especially true for the production of fresh cheeses and other types of cheese ("Grana Padana", "Parmigiano Reggiano", "Italice", "Crescenza", "Provolone", "Gorgonzola", and "Asiago"). Almost all production of the dairy industry is concentrated in Northern Italy. These are such large enterprises of the dairy industry as "Galbani Egidio", "Stelilgard", "Sammontana", and others.

Italian enterprises sell 1/3 of all olive oil produced in the world. The industrial production of olive oil is carried out at 12 enterprises, the most famous of which is the "Salov" enterprise.

In Italy, in addition to the indicated industries, enterprises are engaged in the production of confectionery products ("Unilever Italy", "Nestle Italyano", "Ferrero", "Perfetto Van Melle", and "Leaf Italy"); meat ("Inalka", "Uniqueness", and "Montorsi Francesca"); meat processing products ("Alkar Uno", "Cheaters Giuseppe Salumifichio", and "Rovaniati"); drinks, beer and mineral water ("Heinike Italia", "San Pelligrini", "David Campari", "Birren Peyroni Industrial", "Aqua Mineral San Benedetto", and "Martini Rossi").

There are 36,928 food processing enterprises operating in Japan (32,352 units are enterprises producing food products, as well as 4,576 units are enterprises producing drinks). These are enterprises of some food processing industries such as: canning, flour milling ("Nissin Flower Milling", and "Nippon Flower Mills"), sugar industry ("Mitsui Shuga"), production of alcoholic and non-alcoholic drinks ("Kirin Brewery", "Santori", "Sapporo Brueriz", and "Asahi Brueriz"). Unlike these food industries, the meat ("Itoham Foods", "Nippon Ham", "Nitirai Foods") and dairy ("Meiji Holdings", "Nippon Ham", and "Itoham Foods") are underdeveloped.

We would like to note such a feature of the development of the Japanese food industry as the creation of a group of enterprises called keiretsu. They represent a combination of enterprises in sustainable industrial and financial groups in Japan, see Table 2.

**Table 2. Japanese food industry enterprises that are part of keiretsu**

Food industry enterprises	Keiretsu
"Kirin Brewery Company, Limited" (production of alcoholic and non-alcoholic drinks)	"Mitsubishi"
"Nippon Flour Mills Co., Ltd." (flour milling), "Mitsui Sugar Co.,Ltd." (sugar production)	"Mitsui"
Asahi Breweries, Ltd." (production of alcoholic beverages)	"Sumitomo corporation"
"Itoham Foods Inc." (production of meat and dairy products), "Suntory" (production of soft drinks)	"Sanwa Electric Instrument Co., Ltd."
"Nisshin Flour Milling Inc." (flour milling), "Sapporo Breweries Ltd." (production of alcoholic beverages)	"Fuyo Group"
"Kagome Co., Ltd." (production of vegetables and canned vegetables)	"Tokaj"

Compiled by the authors [1-4]

From the total number of specialists working in the country's industrial sector, in the Japan food industry are working 14.5%. Japan is a world leader in science and technology with a high level products in the food industry competitiveness. This is the Tokyo-Yokohama agglomeration (60% of scientific developments and about 40% of the country's high-tech industries). The cities of Osaka, Kyoto and Nagoya also play an important role. The number of small innovative enterprises in the food industry concentrated in these cities is about 80% of the total number of enterprises in the industry [7].

The prerequisites for the development of the innovation market in the food industry of Japan are: (1). orientation of innovation market entities on the deepening of applied and fundamental research in the industry; (2). creation and expansion of centers for technological development of the food industry network, with the participation of business, industry institutions, and the government; (3). promoting the technological policy results in the innovation market of a sectoral economic system, with the help of the progressive expansion of the complex external relations of market entities and innovators; (4). participation in international technology exchange programs to provide solutions to the problems of the innovation market development in the food industry; (5). orientation of innovation market entities to the development of technologies for the food industry aimed at providing support to older people, etc. Given the features of development and their introduction into production, it should be noted that Japan food industry enterprises are significantly ahead of other countries. The Japanese were able to effectively use the achievements of not only domestic science and technology, but also world achievements. They intensively borrowed "alien" inventions and used them in the economics of food industry development. Also, it is very important that Japanese food enterprises are entering the market with a new product within a month from the start of the production process.

For a long period of time, the United Kingdom has undergone reforms related to changes in the innovation markets structure of food industry sectoral economic systems. Thanks to these transformations, it became diversified. In turn, this led to changes in the executive branch structure, which is directly responsible for conducting innovative activities. One example is the development of one of the country's leading food industry companies, the "Grand Metropolitan PLC". The company is the largest producer of dairy products, and a supplier of soft drinks in the United Kingdom. This company in the field of dairy production includes 29 enterprises, as well as 130 distribution bases concentrated throughout the country [8]. It should be noted that 10% of the company's products are exported abroad.

The prerequisites for the development of the innovation market for industrial economic systems in the UK food industry are following [3, 8]:

- Purposefulness, effective stimulation of the creation and development of innovative enterprises.
- Development of normative legal acts in the field of food industry enterprises innovative activity.
- Formation of competitive local markets for innovative products and technologies in the food industry.
- Creation of competitive, environmentally friendly, safe innovative products and technologies in the food industry.
- Ensuring effective management of the activities of innovation market entities, as well as improving the existing infrastructure of the food industry, etc.

Thus, we can conclude that the strategic goal in the future is the development of innovation markets for industrial economic systems, including UK food industry in the context of globalization.

One of the leading industries in the United States is also the food industry. Most economically developed enterprises in the industry are [8 - 10]:

- “R. J. Reynolds Industries Inc.” (tobacco products, wines, frozen and prepared foods, canned fruits and vegetables).
- “Dart & Craft Inc.” (dairy products, batteries, kitchen appliances and equipment for the food industry).
- “Philip Morris Inc.” (beer and containers for it, soft drinks and their concentrates, cigarettes).
- “Beatris Companies Inc.” (dairy products, non-traditional food products, alcoholic beverages, mineral water, groceries, meat and fish products, frozen and prepared dishes, confectionery).
- “General Foods Corp.” (seasonings and sauces, bakery products, coffee, meat products, fish products, groceries, pet food).
- “PepsiCo Inc.” (packaged light snacks, syrups, soft drinks).
- “Coca-Cola Inc.” (concentrates and syrups, soft drinks, pasta).

These food processors adhere to food safety standards. In the United States, food safety control is carried out by government agencies at various levels: federal, state, and local. At the federal level, fifteen institutions administer 30 laws related to food safety. However, there are only two main federal agencies responsible for food safety in the United States: US Department of Agriculture, and the Department of Food and Drug Administration.

Among other departments responsible for food safety in the United States are: United States Department of Homeland Security (coordination of government agencies' activities in food safety), National Marine Fisheries Service (providing seafood safety and quality inspection services), Environmental Protection Agency (regulation of the use of pesticides), and Centers for Disease Control and Prevention. At the state level, food safety regulation is carried out by departments of health, agriculture, or the environment. Their powers include laboratory research of food products, audits in the field of catering, and retail product regulation.

In the United States, food safety laws consist of numerous federal laws, as well as state-approved documents. The main federal acts are: Food Safety Modernization Act, 2011; Federal Law on Food Products, Medicines, and Cosmetics, 1938; Federal Law on Meat Inspection, 1906; Federal Law on the Inspection of Poultry Meat, 1957; Federal Law on Egg Processing Products Inspection, 1970; Federal Law on Insecticides, Fungicides and Rodenticides, 1947; Federal Law on Combating Bioterrorism, 2002. In addition to laws, there are numerous applicable documents and recommendations for the food industry, as well as consumers. They are developed by specialists at the state level, and are subject to mandatory public discussion.

### 3.2 Basic principles of the creation and development of clusters as special forms of innovative activity of enterprises in the G7 countries and in Ukraine

An interesting aspect in the direction of creating and developing clusters as one of the special forms of organizing innovation is the experience of the G7 countries. By a cluster it is necessary to understand a voluntary association of independent companies, associated institutions, and other cooperation entities that are geographically concentrated in the region which cooperate and compete. They also specialize in various fields, are connected by common technologies and skills, and complement each other. This is necessary to make a product or provide a service. As a result, it becomes possible to obtain synergistic and network effects, diffusion of knowledge and skills.

The purposes of the clusters activity located in priority development areas, including in the G7 countries, are: to increase the competitiveness of cluster members as a result of the introduction of new technologies; to reduce costs and improve the quality of high-tech services by introducing a synergistic effect and unifying approaches to quality, logistics, engineering, etc. providing employment in the context of reforming large enterprises and outsourcing; to have consolidated lobbying for the interests of cluster members, etc. Cluster activities have various sectoral areas of specialization: agro-industrial production and food processing industry (Italy, France); biotechnologies and resources (United Kingdom, Germany, France); pharmaceuticals and cosmetics (Italy, Germany, France); oil and gas complex and chemical industry (Germany); mechanical engineering, electronics (Italy, Germany); and light industry (Italy).

For the clusters functioning in G7 countries, there are tools that can stimulate their development (the provision of special guarantees, the application of tax benefits and preferences; subsidies, non-financial support, etc.). In addition, there are special programs that allow for the development of clusters in the UK, Canada, Germany, USA, France, and Japan. For example, the UK government funded the creation and development of innovation clusters in the amount of 26.75 million € (biotechnological development of the cities of Edinburgh, Oxford).

At the federal level in Canada, there is no single concept for implementing cluster policy. There is a National Research Council that is engaged in research development. The Government of Canada provides support to clusters by implementing an investment promotion policy; contributes to the sale of company products in foreign markets; regulates the labor market; finances research and development projects; creates educational programs for the population; contributes to the

protection of intellectual property rights, etc. Cluster initiatives are undertaken by the provincial and municipal administrations. This is manifested in the form of scientific developments, the implementation of educational programs, attracting foreign investment and the provision of related services.

The operator of the federal cluster program in Germany is "VDE-IT". She represents the interests of the German Ministry of Economics and Technology, and also contributes to the implementation of the Competence Center Development Program. The aim of the program is to support the development of clusters in the regions of the country.

It consists of two areas. The first direction is aimed at supporting the most promising studies. The second direction is related to the cooperation of science and business. Thanks to such cooperation, new technological structures are being created. Their creation is associated with programs such as "BioRegio / BioProfile" and "Bioindustrie". There is also a process of changing the structure of the country's regions, which are supported by the programs "Innoregio", "Unternehmen Region", "Netzwerkmanagement Ost", "Inno Watt".

In US law, the concept of "cluster policy" appeared in 2010. The National Research Council has written a report in which considerable attention is paid to cluster policy. This concerns the issue of implementing innovative cluster development programs, which are involved in the ministries of energy, trade, defense, agriculture, labor and education. The main directions of the program are: the creation of "energy innovation hubs" (regional innovation clusters in the field of solar energy, energy-efficient designs and nuclear energy); the creation of a robotics cluster (the city of Michigan); the implementation of the project "Innovation Ecosystem of the National Science Foundation of the USA" (support for regional innovation clusters that help teachers and students to commercialize their own innovative developments, to form alliances). Investment in the implementation of the program amount to about 12 million US dollars.

In France, cluster policy is being implemented as part of the "Les pôles de compétitivité program". The goal of the program is cooperation between organizations at various levels, due to which clusters are created. About 1 billion euro was allocated at the first stage and 1.5 billion euro at the second stage.

In Japan, the "Knowledge Cluster Initiative" program is known, the purpose of which is to stimulate the development of clusters in 18 regions of the country. State support is provided to joint projects in which universities are the so-called cluster core. Around the core of the cluster are small innovative enterprises and large industrial companies.

It should be noted that in contrast to clusters located on the territory of the G7 countries in Ukraine there is no institutional and legal support for their functioning. Therefore, the main tasks of the functioning of clusters in Ukraine include:

- creation and development of clusters (development of the legal framework for the functioning of clusters; defining the concepts of "cluster", "cluster policy", "clustering"; creating a state program for the development of clusters in Ukraine; creating a registry of clusters in Ukraine);
- development of cluster relations and network cooperation (attracting domestic and foreign investments; developing human capital; financing joint scientific research; quality control of products and the provision of services);
- increasing the influence and responsibility of local authorities in the direction of creating clusters during the decentralization period; improving the investment climate in the country;
- developing models for using the mechanism of public-private partnership in order to attract non-state investment resources for the development of clusters (first of all, providing the territory with the necessary infrastructure);
- legislative definition of the mechanism for creating transnational clusters (conclusion of bilateral agreements on the creation of transnational clusters at the level of governments of member countries, coordination of strategies and plans for the development of national parts of transnational clusters).

Unlike G7 countries, Ukraine has more than 50 clusters [11 - 17]. These are such clusters as following: Vinnitsa food processing cluster (Vinnytsia region), Forest and tourist-recreational clusters (Volyn region), the National innovative cluster "New machines" (Dnipropetrovsk region), Forest and tourist-recreational clusters (Zhytomyr region), Transport-logistics cluster (Transcarpathian region), cluster for the souvenirs production "Constellation" (Ivano-Frankivsk region), Lviv cluster of IT and business services (Lviv region), cluster "Transit potential of Ukraine" (Odessa region), Innovation and Investment Cluster (Ternopil region), Transport and logistics cluster "South Gate of Ukraine" (Kherson region), etc. The cluster is created according to one of several existing scenarios. Ukraine is characterized by a bottom-up scenario (individual projects and programs that integrate potential cluster members), and a different scenario functions in G7 countries. It is called "top-down" (creation of an institute of advisory activities, monitoring, and implementation of a cluster development strategy).

So, thanks to the analysis of cluster development, we can say that in Ukraine, the main areas of the cooperation initiative with the G7 countries are:

- Institutionalizing the development of industrial high-tech segments at the state level (introducing a system of reforms to stimulate industrial production; creating and implementing programs that promote the development of industrial enterprises within in the framework of the cooperation initiative with G7 countries; creating conditions for the accelerated development of industrial high-tech segments).
- Creating an innovative ecosystem of industrial high-tech segments (conducting an audit of existing ecosystem elements with target development indicators to a target model for the development of an innovative ecosystem of industrial high-tech segments); establishing a technology transfer system from Ukrainian scientific institutions, science parks, R&D laboratories, as well as from international centers, corporations to end customers; creating networks of the most effective structural elements in the framework of the cooperation initiative with G7 countries ecosystem (centers of expertise, R&D laboratories, technology parks, incubators, accelerators, start-ups, and the like); attracting investments to accelerate the innovative development of industrial enterprises.
- Accelerating development of the clustering process both at the regional and national levels. This is the institutionalization of cluster policies and initiatives at the government level. Also relates to the creation and implementation of regional development programs in the framework of the cooperation initiative with G7 countries. It is especially important for regions with the most powerful potential for the development of industrial high-tech segments in such cities as Kharkov, Dnipro, Zaporozhye, Kiev.
- Full-scale digitalization of key sectors of industry, energy and infrastructure (creation of regulatory incentives to accelerate the processes of digitalization; introduction of road maps of digital transformation in target industries), etc.

### 3.3 Institutional support for the functioning of special organization forms of innovative activity in the G7 countries and in Ukraine

We believe that for a more effective assessment of the institutional support for the new forms of innovation organization functioning, it is necessary to study in more detail the experience of the G7 countries and Ukraine.

So for example, there is "Innovative Strategy of Government of Canada" (2002). It envisages the acceptance of the measures sent to development of innovations on enterprises. Except Strategy, also other programs operate in Canada. For example, "Integration of innovations in business strategies", "Application of rational business practice", "Introduction of innovations in a private

sector", "Development of the strategic and complex going near creation of centers of business experience", "State encouraging support of innovative activity that is certain market possibilities", "Improvement of co-operation of research centers with industrial enterprises", "Improvement of access to the government innovative program, including scientific researches and experimental developments", "Program of tax initiatives", etc.

Innovative development of Germany is related to realization by Government of "Strategy of development of Germany in the field of high-tech". The priority types of economic activity are: power engineering specialist, defense of environment, health protection, safety, motor industry, shipbuilding and aircraft construction, biotechnologies, nanotechnologies, newest materials for a production and others like that. On realization of Strategy a Government planned charges, by volume of a more than 15 milliard euro [18].

The enterprises that initiate and implement innovative changes apply such types of incentives as [19, 20]:

- provision of targeted free grants to enterprises that are adopting new technologies (not more than 54 thousand euros for the acquisition and installation of new technological equipment; about 900 thousand euros for the introduction of innovations over three years);
- provision of preferential loans to enterprises whose annual sales do not exceed the amount of 300 thousand euros (a condition is to invest in the modernization of the enterprise, the release of new goods, the introduction of measures for the rational use of energy);
- provision of up to 100 thousand euros soft loans for the development of small and medium enterprises engaged in industrial cooperation;
- limited liability companies - fully exempt from value added tax;
- provision of subsidies from municipal authorities to educational research institutions, chambers of commerce for the creation of technology centers in the amount of 75% of the costs incurred at the planning and preparation stage (no more than 200 thousand euro), as well as at the stage of the center's direct construction (no more than 1.5 million euros);
- accelerating depreciation in the amount of 10% of production costs for new equipment, etc.

Stimulating economic development in France is focused on creating favorable conditions for attracting investment in the innovative industry, in particular through [20, 21]:

- regional advisory support fund (advisory and information services for innovative enterprises);
- organizations engaged in the transfer of technologies developed by government organizations

- (technical centers, state research laboratories, regional innovation, and technology transfer centers);
- state organizations financing innovative activity in the industrial sector at the initial stages of development (subsidies, soft loans, and tax credit);
  - private organizations that apply various forms and means of financing innovative activities (venture financing, bank loans, etc.).

In France, funds invested in risky projects (100% of taxes on invested funds) in the venture business are not taxable. For enterprises that not only initiate, but also implement innovative changes, a state incentive system is also applied. This happens through the provision of state subsidies to organizations carrying out research work under contracts (about 50% of the amount of expenses for work on the order of small and medium enterprises). Small and medium enterprises also receive subsidies in the amount of 50% of the cost of hiring scientific personnel (about 175 thousand euro per year). Preferential tax is applied for new companies, which is 25% of income tax for three years [20].

In France, the famous "Chateau Bombert Technopole" technopark is located. The total area of the technopark is about 180 hectares. More than 50 enterprises are concentrated on this territory, the number of employees in which is 1100 persons [22, 23]. The infrastructure of the technopark is the Marseille institute of technology, a business incubator, exhibition and conference rooms, a restaurant, an industrial development center, an international center for robotics and artificial intelligence. The technology park provides a wide range of services.

In Italy, the state has regulated innovation since 1982. This is the application of a tax incentive system (tax incentives are granted to enterprises and investors); implementation of depreciation policy; and provision of direct budget subsidies to companies involved in the development of new types of products and more. Crediting priority types of economic activity (automotive, electronics, aerospace industry, metallurgy, chemical industry, agro-industrial sector, and environmental protection) comes from the funds provided by the technological innovation fund. Loans are granted to enterprises for up to 15 years. These are such conditions as the removal of interest for using a loan in the amount of 15% of the discount rate existing at the time of conclusion of the loan agreement in the first five years; for the next period, the rate rises to 60% [24]. The amount of loans by the Fund may not exceed 80% of the total cost of the innovation project.

Special forms of organization of innovation in Italy began to be created in the last century. According to the Italian association of science and technology parks, there were 31 science and technology parks in the country. They contain about 600 high-tech enterprises,

14 business incubators (support is provided for the creation and development of new enterprises), as well as 150 research centers [19, 25].

One of Italy's famous science and technology parks is "AREA Science Park". The area of the park is 55 hectares. There are 60 enterprises in the territory of the scientific and technical park. These are: national and international scientific centers and educational institutions, state structures of regional authorities; laboratories and service centers; world leading research and development companies; small and medium-sized research and development high-tech companies and enterprises. The number of employees working in enterprises is 1,400 persons [18].

Mechanisms that stimulate the development of the science and technology park should include:

- exemption from registration tax for established enterprises;
- exemption from income tax during the first two years of their activity, as well as income tax at a reduced rate in subsequent years for enterprises that operate for a certain period of time as part of science and technology parks;
- exemption from land tax, as well as property tax.

At the legislative level, the development of innovation in Japan is regulated by the Law on scientific and technical development (1995). This law provides support from the Science and Technology Policy Council under the Cabinet of Ministers of Japan. In particular, this is such a document as the "Basic Plan for the Development of Science and Technology in Japan". The first Basic Plan provided for state funding for the scientific and technical sphere of Japan. The total amount amounted to 142 billion euros [18].

The second basic plan provides for the development of priority types of economic activity. These are such as: biological sciences, information and communication technologies, environmental sciences, nanotechnologies, and natural sciences. Additionally, a group of "other types of economic activity" was identified. Among them are energy, manufacturing technologies, infrastructure, space and ocean research. The total funding amounted to 500 million euros [18].

It should be noted that the third basic plan continues the development of studies defined in the second basic plan. The group of "other types of economic activity" was modernized into the group of "secondary priority areas". They also include important projects that require constant attention. Particular attention in the program of the third basic plan is given to the development of human resources. This provides motivation for the activities of young scientists in the country's institutions; gender policy issues (11 - 25% women of the total number of scientists in the natural sciences); visa facilitation for foreign scientists [18].

The fourth basic plan continues the development of the research identified in the third basic plan. The fifth basic plan is also associated with the development of critical strategic resources. This is human capital and, of course, the creation of Super Smart Society 5.0 (“a more intelligent society” or “Society 5.0”), [26, 27]. Japan, like other developed countries, benefits from the introduction of the “open innovations” model. In order to take a leading position in terms of technological and economic development, Japan is consolidating the “Open Science” model. It is a concept that includes open access and turns research data into open data. As a result of open access to materials, research results will be available to all users. This will lead to an accelerated production of knowledge and will become a new stage in the collaboration. Thus, Japan’s competitiveness depends on the rational use of human resources, knowledge and capital domestically and abroad. It also depends on the creation of new values and their rapid implementation in society as part of a global initiative in the field of innovation. To achieve this level, it is necessary to create an innovative environment. It provides mobility of human resources, knowledge and capital without any barriers, as well as leadership in the field of innovation. This can be achieved by creating an effective collaboration between companies, universities and public research institutes. It is also achieved by creating and strengthening a venture capital business.

For the Japanese model of development of innovative activity, the provision of soft loans, preferential taxation and subsidies is characteristic [19, 28, and 29]. An example are enterprises that initiate innovation. They are entitled to receive subsidies from the state fund. This amount is about 17 thousands euros. Small innovative enterprises receive half the interest rate for using a loan. Stimulation of small innovative enterprises occurs by combining in cooperatives.

Unlike enterprises that initiate and implement innovative changes, Japanese venture companies have the right to receive preferential income tax. It is 30%, while the amount of regular tax for enterprises is 42%.

Enterprises are entitled to receive preferential loans from venture funds. The interest rate is 5 - 6% per annum. There is also a mechanism for guaranteed return (about 80%) of funds that have been invested in the development of venture enterprises by government organizations [19, 20]. There is a system of tax exemption for contributions paid to insurance funds. This is one of the bankruptcy protection mechanisms.

Japanese companies are actively developing and implementing innovative products, including thanks to the assistance of the state. Thanks to the rapid introduction of innovations, public-private partnerships are developing at Japanese enterprises.

Priority areas of innovation in the UK are the development of industries such as: nano-electronics, renewable energy, medical technology, new materials, biotechnology, infrastructure, intelligent management systems, and environmental management. The main principles of their development were presented by the Ministry of Finance in the report “Global Economic Problems in the Long Term and Opportunities for the UK” (2004). Also, the main aspects were reflected in the “Program of Investments in Science and Innovative Technologies for 2004-2014” developed by the Ministry of Finance, the Ministry of Trade and Industry, the Ministry of Children, Schools and Families [18, 30]. In addition to the program, there are other important documents. These are the UK Laws “Income and Corporation Taxes Act” from 1988, and “Finance Act”, from 2000 and 2002. They spelled out the conditions for the provision of tax benefits for scientific and scientific-technical work. In addition, the Ministry of Trade and Industry published the Guidelines for the Definition of Innovation Activities for the Purpose of Taxation (2004). Comments are provided on the application of tax benefits for certain types of economic activity. These are documents such as CIRD 81960 and CIRD 81920.

Enterprises that invest annually more than 10 thousand pounds in scientific activity, according to the legislation, are entitled to tax deductions. For example, when calculating the amount of income tax in the amount of 150% of expenses that fall under the criteria of scientific and technical work for small and medium enterprises. For large enterprises, this is 125% of the cost of scientific and scientific-technical work [18, 30]. These benefits do not apply to individuals in accordance with applicable law. As part of the implementation of state policy in the scientific field, enterprises may be granted grants for research work. If the innovative activity of a small or medium-sized enterprise is funded by the state in the form of a grant, then tax benefits for such activities are not applied in terms of the size of such a grant.

Enterprises also have the right to tax benefits provided in the form of accelerated depreciation. This applies to acquired fixed assets that are used in scientific and scientific-technical work. There is a rate of 100% depreciation on investments in scientific and scientific-technical work. There are benefits for depreciation deductions for the first year of economic activity of the enterprise. This is 40% of depreciation for small and medium-sized enterprises, subject to investment in plants, machinery. The rate of 100% depreciation for small enterprises investing in: information and communication technologies, energy-saving technologies and equipment, equipment for the economical use of water, and cars with a reduced level of CO<sub>2</sub> production is also applied [18].

Innovation activities in the UK are implemented through national and regional programs such as “Mercia”, “Connect”, “Enterprise Fellowship Scheme”, and “Medici” [20, 24, 32, and 33]. New patents are being registered annually in the country and venture capital firms are being set up and given significant benefits. This are: a reduction in income tax; insurance of funds provided to venture capital firms by the state; reimbursement of innovation costs under state programs to subsidize small innovative firms; in any amount of write-off for the cost of products (services) costs for scientific and scientific and technical work.

The UK’s main innovation institutions are the Innovation Higher Education Fund (2001). For three years, the fund has a funding of 155 million euros [20, 34]. With the assistance of this fund, as well as utilizing the opportunities of the regional innovation fund, the activities of the University innovation centers were initiated. Their main task is to facilitate technology transfer between higher education institutions and industry, as well as to encourage small businesses to use new knowledge.

In the UK, innovation is disseminated through the creation and development of specific forms of innovation management (technoparks, science parks, business incubators, etc.). The main institute for technopark coordination is the UK Trade & Investment, which provides organizational and information support as well as facilitates business cooperation through regional institutions.

In the UK, the “National Technology Park Limerk” has completed its operations in 1984. Its area is 236 hectares. There are 95 companies operating within the Technology Park. The number of employees is 5,400 persons [35]. Activities of the park are related to the granting of grants to: residents, start-up capital, property management, marketing, business development, patenting and licensing advice, and more. Experience shows that there are 2 programs. The first program is the development of the business incubation “The Innovation Center incubation program”. Funding for 12,700 euros is provided to finance the start-up of the University. The second program, the Alumni Start Innovation Works, is related to the creation of alumni of the University of software, digital technology, ecology and international services.

The “Technium” network of technoparks also deserves attention. It was established in 2001. 200 companies are concentrated in the technopark. The number of employees is 1,300 persons. Development of a network of technology parks is supported by the implementation of the “Technium” project, which is funded by the European Union. The aim of the project is to create a sustainable driving force for Wales’ economic development. The main objectives of the “Technium”

project are: to promote the creation of new spin-out companies from university structures; promoting local businesses (Wales); providing a continuous mechanism for attracting investment in research. Thus, thanks to the “Technium” project, 314 companies were supported (108 companies are residents of “Technium” science parks; 175 companies were supported through the annual Technium Challenge business plan competition; 25 companies are Technium graduates; and 6 companies are currently not engaged in commercial activities). The main centers of “Technium” are: “Technium Swansea 1 and 2” (biotechnology, multimedia technologies, optoelectronics, high-efficiency engineering), “Technium Digital” (scientific and high-speed calculations, optical and wireless telecommunication systems of the next generation, software for solving graphs), “Technium Digital@Sony” (electronics, digital manufacturing, access to up-to-date Sony equipment), “Technium Sustainable Technologies” (providing space for companies working in renewable energy, energy, materials and geo-ecology), “Technium Performance Engineering” (support for start-ups in the automotive, auto, sports and aerospace industries), “Technium Pembrokeshire” (development of energy companies), and “Technium Aberystwyth” (provides space for start-ups in different technology sectors) etc.

The main organization that coordinates the work of 100 science parks in the UK is the Science Parks Association. According to statistics, science parks cover an area of approximately 1.5 million m<sup>2</sup>. There are 3,000 companies in the territory. The company employs almost 68,000 persons [18, 31]. Activities of UK science parks are related to supporting the development of a high-tech sector of the economy (biomedicine, pharmaceuticals, information technology, energy-saving, and alternative energy technologies).

More than 388 million euros has been invested in the development of 40 UK science parks [35, 36]. Sources of funding for science parks are: founders and sponsors; commercial loans; reinvestment of profits; grants and grants; and the proceeds from the sale of structures built by the science park and the like. Science parks are involved in financing client firms. For example, “Aston Science Park”, together with the Birmingham City authorities and “Lloyds Bank”, created “Birmingham Technology Ltd.” It funds the client firms of the park.

One of the country’s most promising science parks is Southampton Science Park. The area of the park is 182.1 thousand m<sup>2</sup>. The number of companies operating within the Science Park is 60 units. Companies are equipped with modern equipment, and there are research laboratories. They are located on the territory of one of the leading academic institutions in the UK - Southampton University.

Another of the most promising in the country is the Science Park "Surrey Research Park". It was established in 1986. Its area is 28 hectares, with 140 companies concentrated. The number of employees is 2,750 persons [35]. Its activities are related to the development of: information and communication technologies, mobile communications, software, biomedicine, biotechnology, chemical technology, and pharmaceuticals.

The country also has a network of 325 business incubators [37]. They provide services in setting up and leasing a company. The consultations are conducted by highly qualified specialists who will conduct trainings, seminars and training courses.

Activation of innovation environment development is carried out in the UK by setting up venture enterprises that receive benefits. In particular, the corporate income tax is reduced to 25% (current rate 35%). Important for enterprises is the system of insurance of funds provided to venture capital enterprises by the state. This is a repayment of 70% of long-term loans granted over a period of 2 to 7 years [19, 20].

The state actively participates in support of special forms of organization of innovative activity. In particular, through the implementation of programs:

- The Credit Guarantee Program (1981) allows commercial banks and financial institutions to lend. The amount of funding is 111,000 euros. The crediting period is from 2 to 7 years. The borrower deducts 2.5% of the guaranteed amount from the Ministry of Trade and Industry.
- The Business Extension Program (1983) is linked to the financing of projects that are expected to generate high returns. Investors are offered tax benefits to offset their risks.
- "Grants Promotion Program for Small Businesses in Science and Technology". There is a two-stage competition. In the first stage, the winner receives a grant from the Ministry of Trade and Industry. It covers 75% of the cost of the project (the sum does not exceed 55,500 euros). In the second phase, the Ministry awards the winner 50% of the project cost (up to 110,000 euros).
- The New Product Development Support Program (1991) is associated with helping small businesses produce new products and processes. The minimum cost of the project is 55,500 euros. The project implementation period lasts from 6 months to 3 years.

So, thanks to the implemented government programs, public funding for innovation development in the UK is taking place.

In the United States, the state plays a significant role in the development of innovation. It implements the state innovation policy [32], and the components are:

- The legislative framework, which is based on the provisions of the Constitution, laws, internal departments and administrative orders. It contains a number of laws on: patents, copyright, granting preferential loans, and licensing technology, encouraging investment in venture capital. However, the laws did not fully ensure the effectiveness of innovation in the United States. That is why the Stevenson law-Weidler "technological innovation" was adopted. It envisages measures for the establishment of special organizations within the executive power apparatus. The purpose of such organizations is to study and stimulate industrial innovation, to facilitate the exchange of scientific and technical personnel between universities, industrial enterprises, federal laboratories, etc.
- More than 40 ministries and departments of the Federal Government provide state funding for the scientific sphere.
- The contractual system of relations between the state and the subjects of innovation activity.
- The tax system which is characterized by the fact that the state has introduced a corporate income tax amounting to 20% of the increase in expenses on research and experimental development. In addition, a tax credit is applied to funds invested in innovation activities (long-term research at universities). In some states, they account for 25% of the investment.
- Patent license policy. A flexible patent registration policy and a simplified procedure for examining applications.
- Technology transfer and support for the development of small innovative businesses.
- Introducing a public procurement system.
- Development of research and development infrastructure.

The state is implementing special programs to promote innovation in the United States. The most important of these are the "Small Business Innovation Research Program" and the "Small Business Technology Transfer Program". The purpose of these programs is to increase the financial capacity to support the innovation process that occurs in research nonprofit organizations. In addition, the US National Science Foundation is implementing a program that facilitates joint research activities by enterprises, government research institutes, and universities. A US Innovation Partnership program is being implemented to shape competitive policy in the United States. The purpose of the program is to mobilize the country's industrial resources, academic institutions, federal, state and local governments to coordinate innovation development programs.

Existing business innovation support programs have created a network of business incubators in the United

States. These are commercial enterprises that specialize in the rapid development of high-tech small businesses. The mechanism for granting state subsidies is used for their development. Business incubators are involved in various projects. Business incubators do not carry out additional scientific researches. They are also not interested in high technology. It should be noted that with these factors, they can be easily distinguished from technology parks [38, 39].

Technoparks in the US have been around for a long time. US technology parks are divided into two groups by way of formation: spontaneous and state-targeted. The most common are technology parks belonging to the first group [40]. These are famous techno parks such as "Rout - 128", "Silicon Valley", "Triangle Park" and others. Rout-128 Technology Park was created on the basis of Northwestern and Harvard Universities, Massachusetts Institute of Technology. More than 700 manufacturing companies and about 2.5 small companies are concentrated in its territory. The main area of specialization is the development of electronics and microbiology.

"Silicon Valley Technopark" is characterized by being the most concentrated hi-tech deployment area for companies. They specialize in the development of artificial intelligence, robotics, biotechnology, semiconductors, and software. It should be noted that technopark companies account for 20% of global computing and computers. It is here, according to various experts, that 15% of the industrial and 30% of the design potential of world computer science is concentrated [40 - 43].

Unlike previous US technology parks, "Triangle Park Technopark" is characterized by the fact that it comprises three universities in the country. These are the University of North Carolina (Chapel Hill), the University of North Carolina at Raleigh (Raleigh), and Duke University (Durham). In addition to the higher education institutions, the Technopark also includes more than 20 small universities, colleges and about 40 research centers, 5 business incubators [40]. Since the mid-1990s, there have been approximately 50 companies, 30 banks and venture funds operating in the technopark [44].

Unlike the G7 countries, the development of industrial parks is the most common special form of innovation in Ukraine. In 2014, the Register of Industrial Parks was established in Ukraine, with 43 units registered. Inclusion in the Register of industrial parks occurs on the condition that at the time of inclusion within it, there is no complete property complex that allows the production of products.

The creation and development of industrial parks in Ukraine is influenced by such factors as: manifestation of acute shortage of investment resources and

deformed structure of Ukrainian industry; dependence on imports of raw materials, and external market conditions; obtaining a legitimate state, in terms of WTO rules, the opportunity to partially "subsidize" investment activity; leasing of prepared production areas in the territory of the industrial park with the possibility of obtaining production, office and warehouse space for a short period of time than the acquisition of land with subsequent independent construction; granting of import duty privileges for equipment and materials not produced in the territory of Ukraine; distribution of residential and industrial areas within settlements, and removal of industrial zones outside cities; high number of people of retirement age (40 - 50% of the local population), which was formed due to the application of preferential conditions for retirement of mining specialists; low incomes and upward trends in poverty; technological backwardness, physical and moral deterioration of the main production assets of town-forming enterprises; low level of entrepreneurial activity and ineffective specialization of small business; crisis of communal infrastructure, poor condition of cities and roads, improvement of environmental safety problems; and narrow profile of specialization of working population and low level of their mobility, which leads to increasing territorial disparities in the labor market.

The basis for the legislative framework aimed at supporting the establishment and operation of industrial parks in Ukraine, is the Law of Ukraine "On Industrial Parks" (2012) [45]. In order to further develop industrial parks in Ukraine, a legislative package (Nos. 2554 a-d and 2555 a-d) was adopted as a first reading. It proposes to introduce tax and customs investment incentives for new domestic industrial enterprises. Of all the existing stimulus packages that are successfully used on the world stage, this legislative package provides for the application of only some tax preferences. Among them: exemption for 5 years from the income tax and for the next 5 years half rate (9%) provided that these funds are reinvested in the development of production; exemption from import duties on equipment and equipment for carrying out business activities within the framework of IP; installment payment for 5 years of import VAT on equipment and equipment for carrying out business activities within the framework of IP; the possibility of obtaining fiscal incentives from the real estate tax, land tax and rent for the use of the state or communal property plot on which the industrial park was established, at the discretion of local authorities [46 - 49]. At the same time, the draft legislative package (Nos. 2554 a-d and 2555 a-d) contains clear norms of direct action, which require: implementation of specialized production and research activities; a formal employment mechanism with at least 30 employees must operate in the industrial park; the average monthly salary should be at least 3 minimum, that is more than 370 euros. It should be noted that the

acquisition of such legislative initiatives and the introduction of an appropriate stimulus package will be a priority step towards the development of a network of existing domestic industrial parks.

As for the development of technoparks in the territory of Ukraine, according to the Law of Ukraine "On special regime of innovative activity of technoparks", 16 technoparks ("Evgeny Paton Electric Welding Institute", "Institute of single crystals", "Semiconductor technologies and materials, optoelectronics and sensor technology", etc.) are registered. The purpose of their activity is to commercialize scientific research of academic, university and other research centers, whose scientific production is brought to industrial and commercial structures. The peculiarity of the creation and functioning of national technoparks is that due to the lack of proper funding, they do not operate according to the traditional model (all participants are concentrated in a single house or common area), but according to the "technopark without walls" model (no significant primary ones are required) investment. The latter model was first implemented in the US.

In order to further ensure the creation and development of technoparks in Ukraine, we consider that it necessary to: develop a state program for the organization and financial stimulation of technoparks; strengthen the role of the regions in creating technoparks, giving them greater financial and administrative autonomy; provide preferential use of state property (in particular, buildings and structures); simplify the procedure for allocating land for long-term use on preferential terms; strengthen economic and scientific, scientific and technical links between enterprises, scientific and educational institutions by creating a system of financial and economic incentives; and stimulate the creation of small innovative enterprises.

As a result of the analysis of foreign experience in the creation and development of science parks, the obtained result shows that the developed countries pay considerable attention to the scientific parks functioning due to the fact that their activity contributes to the scientific and technical works results transformation into new competitive goods, services, training of highly qualified specialists for innovation, creation of small and medium-sized innovative enterprises, reduction of the innovation cycle from idea to product, etc. Positive experience of functioning of science parks can be used for their development in Ukraine taking into account national peculiarities and interests.

There are also 19 science parks in Ukraine. The current situation in the field of functioning of scientific parks as special forms of innovative activity is characterized by the presence of problems. The most important of these are:

- the imperfection of contractual and legal relations in terms of issues regulating the use of state and communal property land on which scientific parks can be established (in the part of the use of exclusively land lease agreements);
- lack of a clearly defined list of activities that should be implemented within the Science Park;
- imperfection of the current legislation norms, in particular - in terms of determining the optimal forms of stimulating the attraction of investments necessary for the arrangement of scientific parks by exemption from payment of import duties on equipment, equipment and components thereto, etc.

These problems need to be addressed, in particular by:

- improvement of the current legislation and introduction of such measures of state support for the development of scientific parks as: personnel support (increase of the number of trained managers in the scientific and technological sphere, preparation to order);
- providing state financial support for the development of science parks and material and technical base updating;
- development of an effective mechanism of interaction between science and business power, including through the system of e-government and creation of online services;
- internationalization of national science parks and their inclusion in global innovation networks by attracting foreign direct investment, technology transfer and development of cooperation with foreign science parks;
- conducting research on the prospects for the development of science parks, developing programs and systems for evaluating the results of their functioning, etc.

The Verkhovna Rada of Ukraine adopted the Framework Law of Ukraine "On Scientific Parks" (No. 1563-VI - June 25, 2009), which defines the legal, organizational and economic principles for the creation and operation of science parks in the territory of Ukraine. The law provides for a state order for the supply of scientific parks products, performance of works and provision of services to ensure priority state needs; raising funds from the state and local budgets, etc. The envisaged mechanisms of state support in the period of prolonged economic recession, and lack of state resources for scientific parks functioning are purely declarative. However, amendments to the Law and their implementation will contribute to the positive development of science parks, as one of the special forms of innovative activity in Ukraine.

Supporting legislative initiatives aimed at improving the efficiency of national science and creating civilized mechanisms for using scientific results to meet economic and social needs, we draw attention to some of the shortcomings present in the draft Law of Ukraine "On Amendments to Some Laws of Ukraine on the Activation of Scientific Activity parks", which we propose to include in the Law of Ukraine "On Scientific Parks": We consider that it is appropriate to make the additions or changes in different sections and articles:

1. We consider it appropriate to make the addition to Article 1. Definition of the terms of Section I General Provisions, in particular to introduce such concepts as:
  - customers of scientific park products - institutions, organizations, enterprises, domestic and foreign companies of any form of ownership that order and pay for the development or development of services in accordance with the project of the scientific park;
  - transnational science park - a science park that is created and operates on the basis of an international treaty of Ukraine concluded between the governments of the countries or the authorized founders of its creation. The procedure for creating and developing a transnational science park is governed by the international treaties of Ukraine.
2. In Article 2, Science Park Legislation, in Section I of the General Provisions, to add the item 2:
  - If the international treaty of Ukraine, the consent of which is provided by the Verkhovna Rada of Ukraine, establishes rules other than those stipulated by this Law, the rules of the international treaty of Ukraine.
3. The following shall be included in Section II of the Organizational Framework for the establishment and operation of the Science Park:
  - Article 14 - List of Documents for Inclusion of a Science Park in the Register of Science Parks of Ukraine, which should specify the following:
4. The inclusion of a science park in the Register of Science Parks of Ukraine requires that the founder of a science park submits to the authorized state body the following documents:
  - 1) application for inclusion of the science park in the Register of science parks of Ukraine;
  - 2) the decision of the founder to create a science park;
  - 3) the concept of science park development;
  - 4) the name of the partners of the science park (if any).
  - Article 15. Decision on inclusion of a science park in the Register of science parks of Ukraine
    1. Consideration of the submitted application by the founder of the science park and the documents attached thereto shall be carried out by the authorized state body within 30 calendar

days from the day of their receipt. The authorized state body decides on the inclusion or justified refusal to include the science park in the Register of science parks based on the results of the document review.

2. The decision to include a science park in the Register of Science Parks of Ukraine shall be based on consideration of such criteria as:
  - 1) availability of manpower necessary for the functioning of the science park in accordance with the concept of development;
  - 2) availability and/or possibility of involvement of the founder of the scientific park with the financial, logistical and other resources necessary for its development in accordance with the concept;
  - 3) support of the Science Park by local self-government bodies and local executive authorities;
  - 4) the presence of signed memorandums of intent and / or agreements with partners of the science park.
3. The decision to include a science park in the Register of Science Parks of Ukraine shall specify:
  - 1) the name of the science park;
  - 2) the founder of the science park;
  - 3) the term for which the science park is established;
  - 4) the locations where the science park is created.
4. The authorized state body is obliged to inform the central executive body implementing state tax and state customs policy in writing within three working days from the date of the decision to include the science park in the Register of Science Parks of Ukraine and the relevant local state administrations. about the founder, partners of the science park.
- Article 16. Concept of functioning of a science park
  1. The founder of the Science Park is obliged to develop and approve a concept of development, which states:
    - 1) the name of the science park;
    - 2) the founder of the science park;
    - 3) the purpose, tasks of creation and functional purpose of the science park;
    - 4) location and area;
    - 5) the term for which the science park is created;
    - 6) requirements for science park partners;
    - 7) plan of development of the science park;
    - 8) indicative resources (financial, material, technical, labor, natural, etc.) necessary for the creation and development of the Science Park, the expected sources of their involvement;
    - 9) expected results of functioning of the science park;
    - 10) other information at the discretion of the founder of the science park.

11) organizational model of functioning of the science park.

5. The concept of operation of a science park shall be approved by the founder of the park concerned, by decision".
6. Needs to be supplemented Article 4. Functions of the Science Park under item "2. The functional purpose of the Science Park is determined by the Concept of the Science Park in question, since the main functions of the Science Park in the Law are vague.
7. It is also necessary to amend Article 5. The constituent documents of Section II Organizational principles for the establishment and operation of the Science Park - replace item 2 with item "4". The essential terms of the agreement for the establishment of a science park are: the subject of the contract, the term of the agreement, the procedure and conditions for carrying out scientific activity within the scientific park, the procedure and conditions for involvement of partners of the science park, the legal regime of the property created by the founder of the scientific park, as well as the property transferred for use, that is the property of the founder; composition and procedure of reporting to the authorized state body; the order of entry into force of this agreement from the date of its signing".

"The essential parts of the agreement on the establishment and operation of the Science Park are:

- decision to create a science park;
- science park concept;
- is a science park business plan".
- A new clause needs to be introduced. Article 7 Establishment of a science park insofar as science parks should ensure that information about their activities defined by the current legislation is published, except for information with restricted access. The society must also be informed about their creation and activities. Therefore, we propose to introduce paragraph 6. in the following interpretation: "Information about the established science parks is public, access to it is provided by the authorized state body, by posting it on its official website".

In order to provide the state support provided by the legislation, the authorized state body creates, maintains and places on its official website the Register of Science Parks of Ukraine. To it, science parks are included with the consent of the founder of the science park.

The intellectual property rights in the Register of Science Park of Ukraine (databases) belong to the state in the person of the authorized state body. The state, state authorities and their officials use the Register of Science Parks of Ukraine (database) free of charge.

Property rights for computer programs and databases for maintaining the Register of Science Parks of Ukraine are subject to the requirements of Article 18. Financial and other provision of administrative services for the Law of Ukraine "On Administrative Services" (5203-17).

State support is provided to the founders of the science park, to the partners of the science park included in the "Register of Science Parks of Ukraine".

- Addition to Article 19. Features of taxation on import duties of scientific, laboratory and research equipment, components and materials for the implementation of scientific park projects in paragraph 2 of the following content: "Business entities exempted from import duties of scientific, laboratory and research equipment, components and materials for the implementation of scientific park projects in connection with the implementation of activities under this Law, are obliged to publish quarterly information on their own site, official to the local self-government body regarding the tax benefits received and the tax exemption, their amount and the directions of use of these funds".

In our opinion, the draft Law of Ukraine "On Amendments to Certain Legislative Acts of Ukraine on the Activities of Science Parks" is promising and can be adopted in the light of the comments and proposals made. Implementation of the proposed measures will not only preserve science parks in Ukraine, but also promote their productive development.

The state is interested in the creation of transnational special forms of organization of innovation activities, since the implementation of such cooperation has significant advantages, which include:

- implementation of structural restructuring of the real sector of the economy due to the development of high-tech and high-tech industries requires strengthening the role of the state, in particular in terms of efficiency of implementation of all stages of the innovation process (from scientific and scientific-technical works to commercialization and launch of new products);
- strengthening of innovative activity of industrial enterprises due to cooperation between research and production sector, development of public-private partnership in the innovation sphere, attraction of highly qualified personnel, introduction of outsourcing, etc.;
- development of inter-regional relations through the state support of creation and functioning of special forms of organization of innovative activity, elimination of disproportions of socio-economic development of regions.

Among the measures to ensure the development of transnational initiatives in the field of functioning of

special forms of organization of innovative activity, we offer the following: providing organizational support to transnational initiatives in the field of functioning of special forms of organization of innovative activity (providing premises and equipment for joint activity of participants of a special form of organization of innovative activity; of innovative activity with subjects of innovative infrastructures, institutions of science and education); ensuring cooperation by creating a Cluster Register in Ukraine and creating Internet portals (B<sub>2</sub>B, B<sub>2</sub>A, B<sub>2</sub>A); economic stimulation and financial support to economic entities in the field of special forms of organization of innovative activity.

#### 4. Conclusions

- Taking into account the peculiarities of the modern development of the food industry enterprises, defining the existing problems and prospects for the development of the industry in the G7 countries, recommendations for domestic enterprises have been developed. In particular, it concerns the creation and development of food industry clusters in Ukraine.

- The main directions of their further development within the framework of the cooperation initiative with the G7 countries are highlighted, both at national and regional levels. Taking into account the experience of the G7 countries in the aspect of development of other forms of innovative activity of the food industry, it is determined that it is important for Ukraine to develop technoparks, industrial parks, scientific parks, venture enterprises. To do this, it is necessary to amend the institutional support for the development of special forms of organization of innovative activity. In particular, this applies to the Law of Ukraine "On industrial parks", "On the special regime of innovative activity of technoparks", "On science parks".

- Implementation of the proposed measures will further develop special forms of organization of innovative activity of the food industry in Ukraine.

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