

MECHANISMS FOR ENSURING THE REGION'S TECHNOLOGICAL SECURITY STRATEGY

Doctor of Economic Sciences, Professor, Zhavoronkova G., PhD (Economics), Associate Professor, Zhavoronkov V.,
PhD (Economics), Associate Professor, Klymenko V.,
National Aviation University, Kyiv, Ukraine
zhavor@ukr.net

Annotation. One of the key concepts that expresses essential processes in techno-economic development is the technological way of production. The concept has been forming for a long time. The economic opportunities of the regions are differentiated due to the presence of different geographical, historical, demographic and other factors. The article identifies the author's concept of "technological security of the region" and the main reason for the state's technological security. The main provisions for the development of the concept of technological security strategy of the region are proposed. It is determined that the region's technological security strategy is a long-term plan of action aimed at ensuring the technological interests of the region, finding and creating appropriate reserves to prevent, avoid and eliminate the risks, threats and dangers to the development of the region. The mechanism of implementation of the technological security strategy of the region includes state regulators and market institutions, as well as their influence on the processes taking place in the innovation and technological sphere. It is proved that the main purpose of the mechanism of implementation of the technological security strategy of the region is to create conditions with ensuring a high level of technological security and with observance of social, labor and environmental standards for the population of the region. The priority tasks of scientific and technological support for the solution of technological security problems in the region is the innovative policy of both the state and the regions, on the development and application of high technologies, protection of intellectual property rights, creation of human resources of science and knowledge bases subject to state protection. The strategic directions of state regulation of the development of economic and technological potential of the region for ensuring its technological security have been determined.

KEYWORDS: TECHNOLOGICAL SECURITY OF THE REGION, TECHNOLOGICAL SECURITY OF THE STATE, REGIONAL DEVELOPMENT, TECHNOLOGICAL SECURITY STRATEGY.

1. Introduction

One of the key concepts that expresses essential processes in techno-economic development is the technological way of production. It is such a complex that forms the basis of economic development during a certain and long historical period of socio-economic progress. The concept has been forming for a long time [1].

It is well known that the economic opportunities of regions are differentiated due to the presence of different geographical, historical, demographic and other factors. Therefore, ensuring the technological security of the region is often associated with the realization by the region of absolute and relative advantages in the possession of various resources (labor, financial, natural, scientific and technological).

Here is the author's definition of the concept of "technological security of the region" - this is the state of its research, innovation, technological and production-technical potential, which allows to ensure the proper functioning of the regional economy, sufficient to achieve and maintain the competitiveness of products and economic entities, and also guaranteeing financial autonomy and economic sustainability at the expense of their own intellectual and technological resources with simultaneous controlling their exports and facilitating the latest technologies to the region [2].

Significant differentiation in the levels of economic and technological potential of regional development poses a direct threat to the technological security of the state [3]. The main reason for this threat is the lack of an effective regional development policy in Ukraine, which has led not only to widening imbalances and aggravation of socio-economic problems in the regions, but also to a decrease in the level of technological security.

Lack of work on the correlation of national security and national regional policy, mechanism to promote the protection of national interests in economic and technological spheres, in the formulation and implementation of national regional policy, require the development of appropriate proposals and recommendations.

2. Concept of Region's Technological Security Strategy

The necessity to fulfill the constitutional requirements for the implementation of the functions of government bodies the regional level aimed at ensuring technological security requires the

development of the concept of a technological security strategy of the region, which should include the following main provisions:

- methodology of forming the strategy for ensuring the state technological security at the regional level;
- priority of the goals of ensuring state technological security and its regions in the long-run period;
- methodology of diagnostics of technological security of the region and organizational principles of its application;
- classification of risks, threats and dangers that will facilitate the process of their diagnosis, prevention and neutralization;
- criteria and indicators of the state technological security of the region, mechanisms of correspondence of status indicators for the analysis and evaluation of the integrated index of technological security of regions;
- mechanisms for implementing strategic plans, programs, etc. ensuring the technological security of the regions;
- monitoring and control of technological security of the region.

The region's technological security strategy aims to protect research, production, technological and innovation activities from external and internal hazards and to ensure the economic stability of the region, which can be defined as an opportunity for effective control by regional authorities of the use of their own intellectual resources and inflowing resources from the outside for the economic growth of the region, as well as ensuring the competitiveness of business entities.

The region's technological security strategy is a long-term plan of action aimed at securing the technological interests of the region, finding and creating appropriate reserves to prevent, avoid and eliminate the risks, threats and dangers of the region's development. The concept of the technological security strategy of the region is a sequence of actions of the authorities, which includes a set of functions, principles, methods and tools, as well as targeted comprehensive programs for ensuring technological security at the regional level (Figure 1).

- The objects of the region's technological security strategy are:
- scientific and technical activities and education;
 - information, and information and communication technologies;
 - environmental technologies;
 - industrial production based on the latest technologies and techniques;
 - energy using promising and unconventional technologies and resources;

- combined transport infrastructure for diagnostics and monitoring of technological infrastructure objects;
- Systems for protection of high-tech objects from accidents and catastrophes.

In order to increase the efficiency of innovative development [4], it is necessary that the main directions of formation of the technological security strategy of the region ensure the utilization and reproduction of economic and technological potential. It should be noted that for the development and successful implementation of this strategy it is necessary to achieve a high level of information and analytical support, which is a prerequisite for the technological development of the region.

The main goals of the technological security strategy of the region should include:

- cardinal improvement of technological infrastructure as a basis for sustainable development of the region, its integration into national and international markets;
- ensuring the technological independence of the region and the competitiveness of regional products;
- positive balance of payments related to technology transfer;
- providing safeguards for protection of vulnerable technological systems and intellectual property;
- institutional and structural changes in the field of material production of high-tech objects;
- reducing technological risks of environmental pollution;
- integration of basic technologies into a single, highly efficient system.

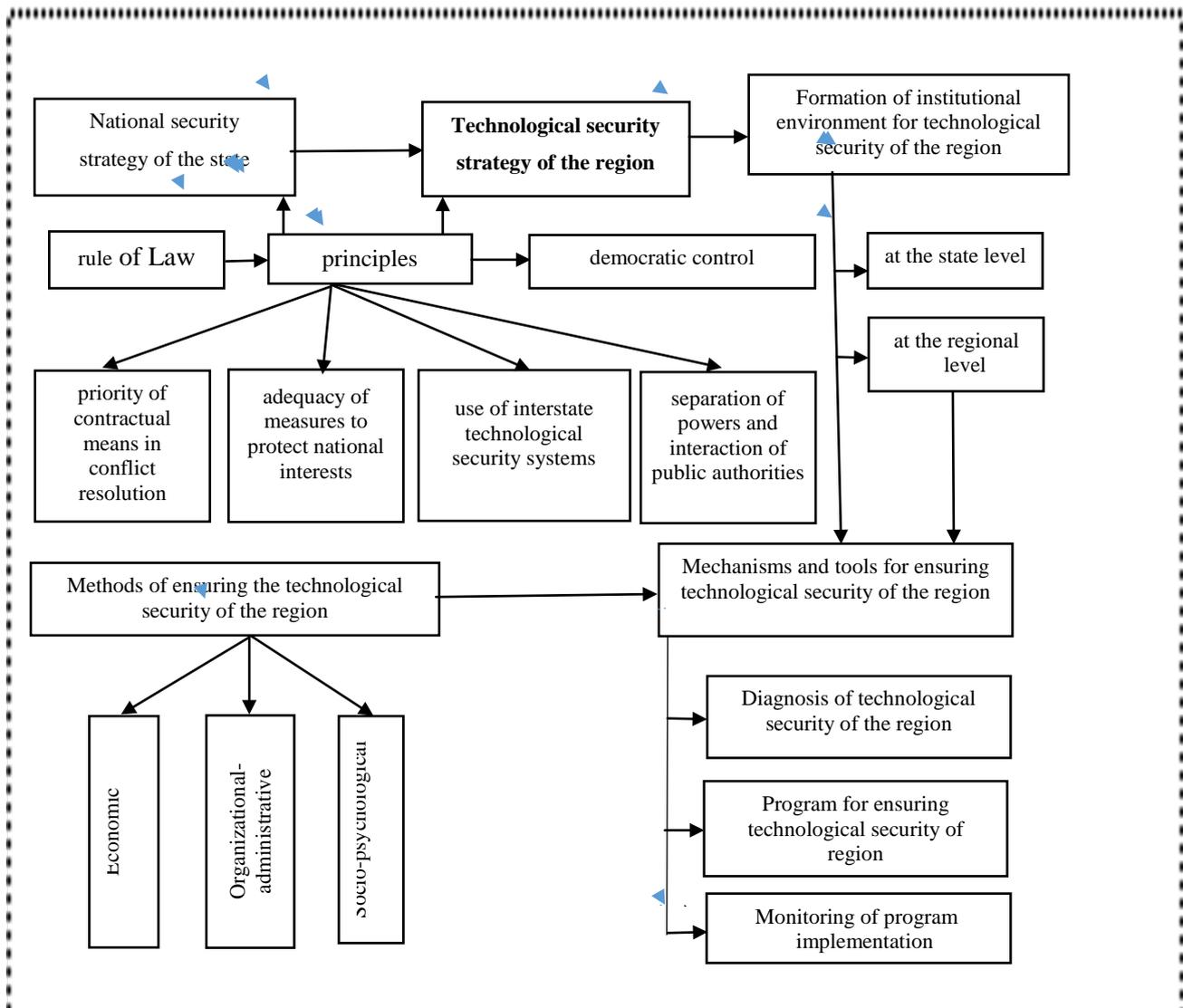


Figure 1 The concept of the technological security strategy of the region

The objectives of ensuring the economic security of a region are specific, desirable indicators of the individual determinants of technological security of the region, which must be achieved within a certain period of time.

Thus, in order to increase the level of technological security of the region (industry), the state policy of forming an innovative model of economic development should include the implementation of the following measures:

- promoting the promotion of the widespread use of the world's intellectual, scientific output in all spheres of the national economy through the development and implementation of economic incentives to create an effective institutional environment [5];

- expansion of the domestic market of unrealized technologies and increase of effective demand for domestic R&D results;
- stimulation of comprehensive development of the intellectual potential of the individual, which implies the active influence of the state at all stages of human capital formation in the region;
- improvement of the system of indirect methods of state influence on the development of high-tech industries sector [6];
- creation of a stable functioning legal framework for generating a highly productive knowledge resource, which needs to be addressed in the education and science system, and complete the formation of an effective system of protection of intellectual property rights.

3. Mechanisms for Implementation of the Region's Technological Security Strategy

The lack of a mechanism for implementing a regional technological security strategy that takes into account the protection of national interests in the economic and technological spheres in the formulation and implementation of national regional policy requires the development of appropriate proposals and recommendations. Ensuring balanced and innovative development of the regions in the context of the technological security strategy of the region determines the following principles in developing the implementation mechanism and measures [6]:

- innovation, that is, structural restructuring of the economy of the regions, taking into account the peculiarities of their economic and technological potential;

- equality of regions at the expense of improvement of the state strategic, budgetary and financial planning;

- economy and integration of research activity of regions with the use of territorial division and cooperation of labor;

- development of cross-border and inter-regional economic relations on the basis of industrial cooperation and integration, creation of industrial-financial groups, scientific and technological clusters;

- balance of interests between the scientific center and the regions, clear delineation of liabilities, rights, powers and responsibilities and their legal formulation, introduction of contractual relations between them;

- improving the development of targeted state support programs for regions with regional research programs, ensuring their balance and coordination at all stages;

- prioritizing the development of regions of strategic technological importance for Ukraine;

- development of criteria and mechanisms for providing state support for innovative development of regions;

- responsibility of regions for failure to comply with measures in national research programs;

- efficiency of inter-regional distribution of scientific work, improvement of the mechanism of use of intellectual labor resources, promotion of formation of their regional labor markets;

- the reliability of the regional system for preventing and counteracting the emergence and spread of threats to the technological security of the region.

For the implementation of the strategy of technological security of the region, it is important to direct the process of strategic decision-making to ensure the optimal balance of profits and costs of economic entities, so that the content of economic risk management would be viewed from the standpoint of providing a system of measures not only to neutralize the negative consequences of problem situations, but also to prevent them occurrence.

The mechanism of implementation of the technological security strategy of the region is a functional and institutional way of organizing the interaction of elements of the economic system in order to coordinate and manage economic and technological processes to ensure the realization of national and regional economic interests, prevent threats to technological security, eliminate their consequences and achieve given level of technological security.

The main starting points of the formation of the mechanism of technological security strategy implementation were determined:

- system incorporates different models of regulation – from traditional to full liberalization model;

- production and commercial activities of knowledge-intensive enterprises are adapted to regulatory regimes and market conditions;

- mechanism is based on a systematic approach that integrates the requirements of international legal documents, market mechanisms, national regulatory processes and the elements of interrelated production activities;

- transition from the traditional to other regimes of regulation takes place in stages, taking into account changes in the parameters of supply and demand, market pricing, competitive environment

based on the assessment of the economic efficiency of commercial activities of knowledge-intensive enterprises in market conditions;

- interests of the state, developers and consumers of high-tech products (as a priority) are agreed.

The mechanism of implementation of the technological security strategy of the region includes state regulators and market institutions, as well as their influence on the processes taking place in the innovation and technological sphere (Figure 2) [7].

The main purpose of the mechanism for implementing the strategy of technological security of the region is to create conditions in which the scientific and technological sphere of the region can develop in a stable, cost-effective manner, while ensuring a high level of technological security and respecting social, labor and environmental standards for the population of the region.

There is no doubt that without the proper logistical support and maintenance it is impossible to create the conditions for the development of efficient high-tech production. Now, taking into account domestic and foreign experience, it is necessary to set the task of creating their own high-tech means of high-tech production.

The outcomes of Ukrainian producers of high-tech products, competitive in foreign markets, depends on the cost of labor; total costs of the enterprise for high-tech raw materials, materials, components, as well as upgrading production facilities, putting into operation machines and equipment for technological processes [8].

Thus, the main directions of further technical re-equipment of science and production should be:

- effective state support for the development of the market of material and technical resources of high-tech production through pricing policy, introduction of preferential loans, improvement of the system of financial leasing, creation of favorable conditions for wide attraction of domestic and foreign investments;

- modernization of production capacity taking into account modern economic and technological potential, with improved technical and operational indicators and reduction of operating costs for production of high-tech products;

- computerization and production automation, etc.

The fulfillment of these requirements will not only ensure the implementation of the state innovation policy, especially in terms of bringing the country to the stage of sustainable economic development and the revival of domestic knowledge-intensive production, but will also increase its profitability and competitiveness of innovative products, increase employment and improve the standard of living, which will guarantee high level of technological security of both countries and regions.

4. Management of Region's Technological Security

The technological security of the region is managed through an appropriate system. In the future, the system of technological security management in the region will be understood as an organized set of entities: state bodies, public organizations, officials and individuals, united by the goals and objectives of protecting national and regional interests that carry out concerted activities within the legislation. The main functions of this system are: creation and support in the readiness of forces and means of ensuring technological security; management of the security system; implementation of planned and operational activities; participation in national and international security systems.

Since the formation of the technological security management system in the region requires institutional support, it is necessary to create a certain organizational structure that will be responsible for its formation. At the region level, we propose to create a special unit at the regional state administration, which will include its own system of management, monitoring and control over the implementation of the technological security strategy of the region.

Thus, the formation of a mechanism for ensuring technological security in the region should take into account two main factors: 1) creating the conditions for the transition to an innovative path of development; 2) the emergence of motivation in economic entities to activate innovation and technological processes. The first factor can be attributed to the process of formation of technological infrastructure as an independent element of the economic system. In the second case, it is about stimulating innovation and technological activity.

The development of a mechanism for the implementation of the technological security strategy of the region will allow: to create the organizational and legal basis for the construction, operation and development of the technological security system; to identify and evaluate potential threats; to participate in international, national technological security systems. The monitoring of the the region should be carried out by an institutional and organizational monitoring system.

The main activities that will enhance the technological security of the region include: the development of fundamental, university and corporate science; creation of technological infrastructure; commercialization of innovations and retraining system, formation of economic and technological potential of the region, etc. In view of this, the main task of the regional authorities in enhancing technological security is to promote the influx of new technologies into the region with simultaneous control of their exports for the economic growth of the region, as well as to ensure the competitiveness of economic entities.

5. Conclusions

Significant differentiation in the levels of economic and technological potential of regional development poses a direct threat to the technological security of the state. The main reason for this threat is the lack of an effective regional development policy in Ukraine, which has led not only to widening imbalances and aggravation of socio-economic problems in the regions, but also to a decrease in the level of technological security.

The priority tasks of scientific and technological support for the solution of technological security problems in the region is the state and regional innovative policy on the development and application of high technologies, protection of intellectual property rights both in the domestic and foreign markets, creation of human resources of science and knowledge bases, including special ones, which are subject to state protection.

Strategic directions of state regulation of development of economic and region technological potential for ensuring technological security should be: providing conditions for production activity of subjects of innovative entrepreneurship in order to increase production volumes in accordance with the needs of Ukrainian society and the world market; regulation of the price affordability of products for the consumer.

6. References

1. Zhavoronkova G., Zhavoronkov V. The technological imperative and technological safety in the systems of national security of the state // International scientific journal «Security and future». 2/2018. P.63-66.
2. Жаворонкова Г.В. Стратегія технологічної безпеки регіону / Г.В. Жаворонкова // Вісник Національного технічного університету «ХПІ»: зб. наук. праць. Тематичний випуск: Технічний прогрес і ефективність виробництва. – Харків: НТУ «ХПІ», 2012. – №15. – С.89-95.
3. Регіональні інноваційні системи України: стан формування та розвитку в умовах інтеграційних процесів : монографія / за ред. д-ра екон. наук професора Л.І. Федулової; НАН України, ДУ «Ін-т екон. та прогнозув. НАН України». – К., 2013. – С. 554-602.
4. Urmas V. How to improve the National Innovation Systems of catching-up economies? / Urmas Varblane, David Dyker, Dorel Tamm //Trames. – 2007. – Vol. 11, No 2. – Pp. 106–123.
5. National Security Throuh Technology: Technology, Equipment and Support for UK Defence and Security [Electronic resource]: Presented to Parliament by the Secretary of State for Defence by Command of Her Majesty February 2012 / Ministry of Defence. – 63 p. – Electronic text data. – Access mode: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/27390/cm8278.pdf (date of the application: 08.09.2019). – Title screen.
6. Саліхова О.Б. Високотехнологічні виробництва: від методології оцінки до піднесення в Україні / О.Б. Саліхова; НАН України, Ін-т екон. та прогнозув.. – К., 2012. – 624 с.
7. Жаворонкова Г.В. Напрями забезпечення реалізації технологічної безпеки регіону / Г.В. Жаворонкова // Економіка і прогнозування. – 2012. – № 3. – С. 135-144.
8. Zhavoronkova G. Institutionalization of innovative and social strategy of regional development /G. Zhavoronkova, V. Zhavoronkov, V. Klymenko // *Economika i orhanizatsiia upravlinnia*: Collection of scientific articles. Vol. № 3 (23). – Vinnitsa: DonNU 2016. – P. 49-59.

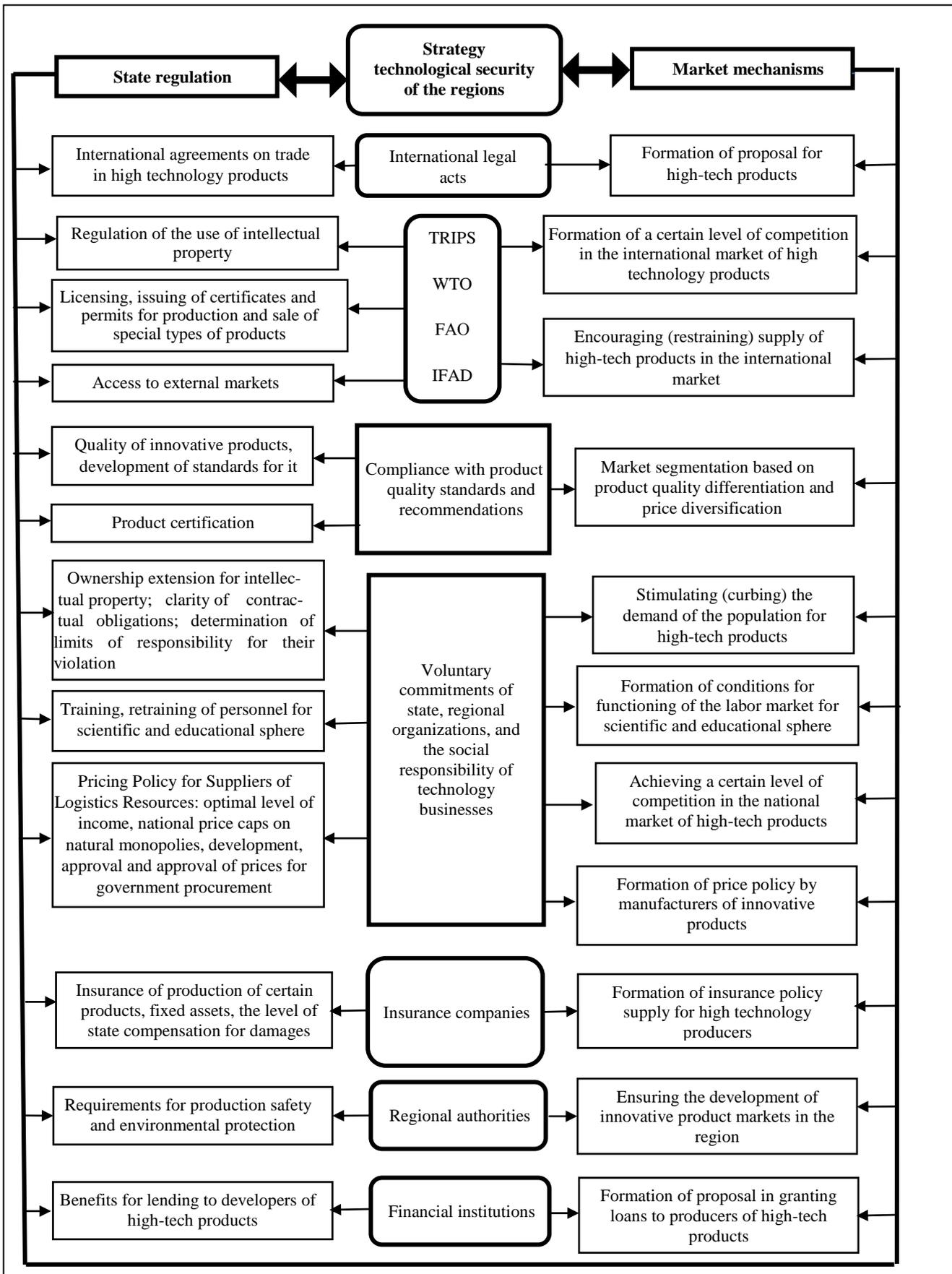


Figure 2 Mechanism for implementation of technological security strategy of the region