

# FOR FURTHER PERFECTING OF INNOVATION POLICY IN GEORGIA

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**Abstract** – In this article demonstrated that state innovative policy is the part of the state policy of scientific-technical and social-economic development, expressing relation of the state with the innovative activities, determining the reasons of activities of state governmental authorities with the phenomenon of the cycle “Science-Technique-Production”, as well as directions and forms of activities.

For performing effective innovative politics of the government and for stating its priority directions the author states the main goals of state politics in her article.

National innovative system and its main segments are formed the main principles of fulfilling the country’s innovative politics are discussed.

As the author considers, to solve the existing problems of Georgian economics it is essential to advance and develop innovative sphere. Herewith, state innovative policy shall be directed towards activation of innovative processes in all fields of the economy, improvement of innovative climate, creation of favorable conditions for effective usage of scientific-technical potential, market mechanisms of stimulation of innovative activities and formation of effective innovative infrastructure, functioning of small enterprises, formation of venture structures, learning working principles of commercialization of innovations for the personnel of the scientific-technical domain.

**Keywords:** Innovations, innovative politics, intellectual ownership, innovative products, fundamental research, funding for contest, direct activities;

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## INTRODUCTION

Elements of perspective development policies of sciences and technologies of every country comprise of key trends of state policy in the fields of science and technologies, as well as its aims, tasks and the methods of their realization, and economical and other systems promoting scientific and scientific-technical activities.

In the system of the mechanisms of realizing state policy in the field of development of science and technologies, special attention is paid to the necessity of conducting inferential studies, as well as their stating, determining perspectives of scientific-technical and technological trends, evaluation of the outcomes of managerial decisions made in the scientific-technical field.

Under current conditions, special attention is gained by the rich information base and key principles in short and middle-term periods for development of scientific-technical and innovative field, along with the structure of the system of state regulation of forecasting scientific-technical and innovative development and main functions of its elements, mathematical and statistical apparatus of the indicators of combined forecasting of development of scientific-technical domain and etc.

In the Manuscript we aim at the information base required for conducting forecasting calculations for development of scientific-technical and innovative domain; structure of state policy of social-economical and scientific-technical development and its components, particularly, innovative policy itself, structural policy and institutional policy.

Generally, they write much about innovations, innovative processes, innovative activities, innovative policy and methodological grounds of its development: important scientific works have been published: Abzalava A., (2009);

Dzamukashvili D., (2000); Chiqava L., (2006); Qoqiauri L., Qoqiauri N., (2015); Drucker P.F., (2009); Campbell K., (2008); Brooking A., (1997); Bromberg G.V., (2002); Schumpeter I., (1982); DeMerli P., (1994); Johnson D., (1998); Sakhto B., (1990) and etc.

It is 21<sup>st</sup> century and main task of modern social-economic development of the country is its transfer to the innovative trajectory, as well as maximal utilization of principally new factors of economic growth characterizing postindustrial information eparchy. This task is extremely important for modern Georgia, where necessity of transferring to the innovative way of development of the economy requires strong activation of innovative activities, in the first place – for industrial subjects, and at the industrial level – investment and other conditions of respective scientific-technical processing. This allows reorganization of the national industry. On the basis of science-consuming industry it becomes possible to overcome large and traditionally increasing backwardness (in different field of industry, compared to the highly developed countries).

Under modern conditions, our country owns scientific-technical potential of sufficient level, however, due to the economic crisis, under the conditions of transitive period, the Country goes significantly backward of the global level of innovative development of production. In this regard, terms and categories required for characteristic of innovative development of production, as well as the methodology of analysis of effectiveness of innovative development of production.

Herewith, transfer to the economic methods of influencing effectiveness of industry is conditioned by the necessity of formation of new mechanisms of management of production, as entirely, so – in relation with innovative development.

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The problems of assessment of innovative and intellectual capital needs to be studied as well, together with their influence upon final social-economical outcomes of production, which shall become dominated source of resource provision of creating novelties and technical re-equipment of the existed industrial and agricultural enterprises by means of strengthening market orientation of economy of the country.

### **INFORMATION BASE NEEDED FOR CONDUCTING PREDICTION CALCULATIONS FOR THE DEVELOPMENT OF SCIENTIFIC-TECHNICAL AND INNOVATIVE FIELDS**

Scientific-technical and innovative development in the system of state forecasting, they consider the indexes included in the official forms of state statistic observation to be the object of forecast. These forms are distributed and accumulated by the State Statistics Service of the country.

According to the guidelines of the State Statistic Service, statistic information in the scientific-technical domain is formed on the basis of annual statistic studies of scientific organizations, higher institutions, project-construction, technological, projection and project-surveillance organizations.

The system of the indexes formed in the field of scientific studies and processing, shall give fluent reflection of the organization structure of scientific domain; amount, composition and movement of the staff performing works in the field of scientific studies and processing, as well as training of the scientific personnel; funding scientific studies and processing, material and technical base of science, efficiency of studies and processing and etc.

To conclude forecasts of development of scientific-technical field from other information sources, including reports of scientific academies and its departments, forecasting evaluations of the principle macroeconomic indexes of the Ministry of Economic Development, various ministries, as database of sectorial scientific-technical potential of the Ministry of Education and Sciences; statistic data of the collection of Research Centre of the National Academy of Sciences of Georgia and State Department of Statistics, experts' opinions of the dynamics of forecast indexes; and forecast-analytical materials of foreign countries.

Except above forms of statistic reporting and databases, in course of forecast calculations data of periodicals are used, touching upon funding of scientific studies and processing; statistic data of industrial, labor and salary and etc. as well as governmental programs of the social-economic development, operative (monthly) statistic data, short-term macroeconomic forecasts and other necessary data.

Outcomes of innovative development of industrial fields are characterized with the following statistic figures:

- patents issued for native inventions and discoveries in the field of technologies and innovative industrial products; licenses issued for using outcomes of scientific studies and processing (patents on inventions and discoveries, Know-How) in the industrial production;
- mastering new types of vehicles, and samples of the devises and equipment;

- expenditures on technologic innovations;
- amount of the sent (overloaded) innovative products and its share in the sent (overloaded) products in the total volume.

In some countries, except those, named above, in the statements about innovations they reflect following:

- industrial enterprises on the independent balance;
- scientific-industrial, and industrial unions at the territory of the location of the head enterprise;
- industrial units placed at the territory of another district, region, republic.

Source of data about the volume of innovative products also is quarter form of statistic statement. Information data of evaluation of innovative activities of the enterprise is the index of the sent (overloaded) innovative products and derived index – share of the innovative products in the total volume of the sent (overloaded) products.

Another information source of important nature for concluding forecasts of innovative development of the industry is database of the Ministry of Industry and Sciences. It includes information about progressive (resource-saving) modern industrial enterprise, as well as the terms and conditions of the projects of scientific-research and experimental-construction works. It stipulates data of the implemented stages of innovations, as well as further effectiveness of completion and these processing.

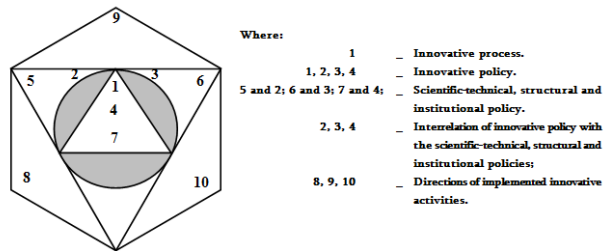
Economic terms: “organization and management of innovations”; “innovative process”; “innovative activities” are inter-determining and inter-conditioning concepts. Their implementation is influenced by the policies of scientific-technical and social-economic development undertaken in the country. Relation between these concepts is identified in the attempts made for the creation and realization of scientific innovation, is of multilayer nature. Shaping of the said concepts depends on the instruments used by the state, influencing upon the cycle of the stage “science-technique-production”. Long-term concept of innovative development of the country consists of the concepts of various kinds, representing set of the instruments (activities). They influence upon development and functioning of the innovative domain. The instruments of the state policy of scientific-technical and social-economic development may include: scientific-technical, structural, institutional, innovative and other policies.

The scientific-political level of scientific-technical and social-economic development are influenced by the purposes set by the government and, to our mind, state innovative policy is the means for achievement of this purpose. Main purpose in the field of innovation is provision of positive fluctuations in the economy, at the expense of GDP and improvement of social-economic environment for the members of the society.

State policy of scientific-technical and social-economic development (hereinafter referred to as the State Policy) is the organizational, managerial, legal, scientific-technical, economic and social activities, implemented by the state cycle – “science-technique-production” for the purpose of provision of economic growth of the country in course of management of the stages, by means of expressing interests of the entire society, and its social groups and separate persons.

The structure of state policy may be represented in the form of the crystal, core and ribs of which express every part of activation of state organs of management, for the purpose of creating favorable economic environment inside the country (Fig. 1) (Qoqiari L., Qoqiari N., 2005).

Under the modern conditions, the innovations are included in all fields of economic life, and state innovative policy is in close relation with other components of the state regulation (activities) (hatched segments of the circle): scientific, structural and institutional policy<sup>1</sup>, influencing upon development of social-economical processes.



**Fig. 1. Structure of state policy of social-economical and scientific-technical development**

**Innovative policy**, in its turn, is in close relation with the social-technical and other policies, including regulations of science and scientific-technical developments.

Scientific-technical policy directed to the stimulation of investments, simultaneously stimulating innovations by means of their materialization, as well as their financial outcomes. In other words, it supports development of education and science, receiving new knowledge and creation of technical and technological innovations.

**Structural policy** removes possible ways of stimulation of innovations by means of supporting high-technological fields, development of the new-technological base of traditional fields.

**Institutional policy** determines social-economical domain of innovative processes, including activities and relations of industrial subjects.

It is known that under modern conditions economic growth of the country and people's welfare greatly depends on effective using of scientific-technical potential, and functioning of the active system of innovations. Existence of scientific-technical potential in the country – **this is necessary, though not sufficient condition** for successful development of achievement of scientific-technical progress, for the purpose of acceleration of economic growth, promotion of commodity products at the market of distribution, for provision of its competitiveness, increasing newly created values (Gross Domestic Product, national income) and rising life level of the population. It is necessary to achieve using of the scientific-technical industrial and personnel potential and receiving maximal profit under the

conditions of required and correct directions and minimal expenses.

Of course, utilization of justified policy (scientific-technical, structural, innovative, institutional) influences upon the level of development of innovative enterprise and social-economic status of their personnel, and respectfully, entire society.

Main subjects of scientific-technical potential of any countries, including Georgia are the scientists and specialists engaged in scientific-studies and development.

- Perfection of program-purposeful methods of studies of the organization and development of their outcomes in the industry. Under the modern condition, XX state program is being completed in Georgia in various scientific lines. Their listing is approved by the government and funded from the state budget;

-Perfection and development of the system of protecting rights at the objects of industrial ownership. Innovative development of the economy foresees existence of innovations offered from the scientific side, their selection by the industry from the position of opportunities of effectiveness and utilization, as well as temporary monopolizing on innovations, for the purpose of making guaranteed additional earning by their authors. This latest may be provided in case when the rights on innovations are protected by legislation;

-Activation of innovation activities. Principle task in this direction is formation of the national innovative system, which shall be provide innovative process – started with the scientific ideas and completed with the creation of the innovative product and their bringing to the consumers.

We consider it to be purposeful in the country, in the first place, to develop state policy of the scientific-technical and social-economic development for provision of effective functioning of technical market. On the other hand, this is the only way to reforming scientific-technical domain, making it possible to rise the country to the higher level of economic development. For this purpose, in the first place, there shall be all necessary organization forms of the innovative field: small enterprises, incubators, technical parks and respective normative and legislative base.

State policy developed in the country makes it possible to solve several tasks (problems):

- Rising competitiveness of national industry at the domestic, so – foreign markets;
- Rational utilization of factors of production;
- Adaption of production with the structural and cycled crises;
- Development of science and development;
- Environmental protection;
- Increasing welfare of people and etc.

Solving listed problems shall be performed by means of direct, indirect and synthetic influence of the set of instruments (activities) at the stage of the cycle “science-technique-production”.

**Direct activities** of influencing economic growth includes budgetary (state) funding of scientific-research and experimental-construction works, governmental orders, guaranteed acquisition of the industrial products of particular kinds and etc.

<sup>1</sup> Policy is Greek word and it means state activity. The policy is the activity between large social groups, nations and states.

**Indirect activities** (ordered stabilizers) make innovative enterprise and economy of the country to work in the regime of self-regulation. They include, for example: tax stimulation of investments in studies and development (innovations), depreciation benefits, development of scientific-technical cooperation and etc. (Chiqava L., 2006).

Patent-licensing regulation, to our mind, shall be allocated to the **synthetic (combines) activities. In the first place**, this is direct influence upon the economy. Based on the pragmatic methods of approach timely developed normative-legislative base adopted by legal way protects producer of goods from external encroachment of creation and utilization of innovations, preventing their diffusion. This latest provides additional profit as for the investors, so – innovators and later conditions increasing GDP and other aggregated indexes of the country.

**On the other hand**, it is indirect instrument of regulation. Patent-licensing regulation may be the factor preventing economic growth of another country, as technical decisions are the ownership of the patent holder. This latest is eligible to decide opportunities of its distribution at the market. Under the conditions the country, as the leader may reach priority in relation with the innovative directions and earn additional profit.

Patent-license regulation may influence indirectly upon economic growth of the country creating technical innovation, protected with the patent. It may become preventing factor in the issue of making additional profit for the enterprise, providing similar goods. This phenomenon in the enterprise of military-security complex, which extend the term of secrecy of invention without respective analysis of the trends of development of science and technique.

Herewith, state policy of scientific-technical and social-economic development expresses independence between the state and innovative activities, determining the purpose of operation of the state authorities, as well as their directions and forms, in the field of innovations and sciences, as well as provision of development of achievements of technique.

### STATE INNOVATION POLICY AND ITS PRIORITY AREAS

Global experience proves that the country preferring innovative line of development of national economy, develops and effectively practices state innovative policy.

State innovative policy is the part of the state policy of scientific-technical and social-economic development, expressing relation of the state with the innovative activities, determining the reasons of activities of state governmental authorities with the phenomenon of the cycle “Science-Technique-Production”, as well as directions and forms of activities.

According to our opinion, principle purposes of the state innovative policy may be formulated as follows:

- Rising technologic level and competitiveness in the production of economic wealth;
- Provision of transferring innovative products to the domestic and external markets of distribution;
- Replacing products imported to the domestic market with the native products and on this basis, transferring industrial products to the stage of sustainable economic growth;

- Extending state support of innovative activities; rising effectiveness of using state resources;
- Creation of economic, legal and organization conditions for innovative environment.

The environment of implementing innovative activities, national innovative system, including several segments (Fig. 2), normative-legal base of innovative activities, i.e. special segment of legal domain, regulating innovative processes. Innovative infrastructure, including: innovative centers and technoparks, venture and insurance funds, especially enterprises and scientific-industrial centers. The system of training for innovative activities, including higher institutions and academic sciences, and training centers and other systems (mechanisms) of funding state support and important (prior) scientific lines. International scientific-technical cooperation segment, characterizing the level of development of the balance of invention, export and import of innovations, and payments at the international balance of knowledge. In other words, this segment of innovative system reflects its effectiveness, for example: registered patents reflect as results, so – the potential of the research attempts, as well as for the further utilization of knowledge for the purpose of economic growth of the potential. The analysis show that the countries, being leaders in GDP with science-consuming, is: Sweden, Finland, USA, and Germany. They hold the most part of the share of patents per 1 million person. The countries distinguishing in the low level of science-consuming (Portugal, Greece, Spain), having insignificant outcomes in patenting objects of industrial ownership (from 3 to 20 patents per 1 million people).

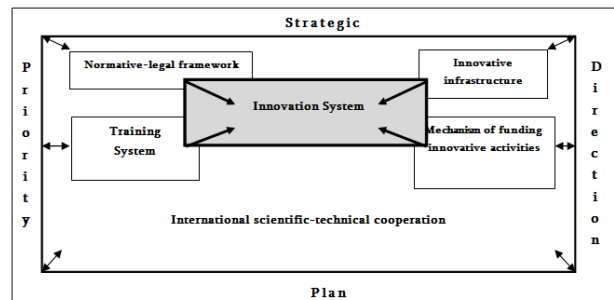


Fig.2 The innovative system's main segments

**After formation and implementation of the state innovative policy, main principles are considered to be:**

- Recognition of the fact that innovative activity is directed towards rising effectiveness of public production and increasing competitiveness of the science-consuming products at different markets of distribution (international, national, regional, sectorial, local), rising security of life level of population, national and ecological security;
- Concentration of state resources, on creation of basic innovations in the economy, for the purpose of providing structural changes;
- State security of the intellectual ownership, including industry, subjects, and rights;
- State provision of regulation of innovative activities in innovative domain, in conformity with the

effective functioning of the competitive mechanism in the field of innovations.

**We consider to group main priority areas of innovative policy in the following form to be purposeful:**

- Works in direction to the creation of basic technologies for the fields of republic regions, which are able to provide comparative priorities of innovation, economic independence of the enterprise and the country in total;
- Works according to the sectorial and republic programs of the state scientific-technical programs, requiring scaled concentration of resources, which may not be provided by the separate innovative enterprises;
- The works performed in direction to separate programs and projects.

Herewith, state innovative policy shall be directed towards activation of innovative processes in all fields of the economy, improvement of innovative climate, creation of favorable conditions for effective usage of scientific-technical potential, market mechanisms of stimulation of innovative activities and formation of effective innovative infrastructure, functioning of small enterprises, formation of venture structures, learning working principles of commercialization of innovations for the personnel of the scientific-technical domain.

**Outcomes of implementing innovative policy may be:**

- **Qualitatively new level of resource-saving**, which is intended to provide growth of labor efficiency and fund-return, reduction of material-consuming, reducing energy-capacity of products, achievement of its competitiveness. Rational use of production factors is directed towards fundamental transformation of the structure of public industry and foreign trade; the only purpose is economy of the raw materials and supplies in total, which is necessary for creation and realization of novelties, finally conditioning growth of profitability of processing industries;
- **Qualitatively new social line of scientific-technical progress** – this is ecologically clean, wide usage of technically safe technologies. In this particular field of innovations permanent organized and managing activities are needed, as incompletely conducted studies of new innovative technologies and using such technologies may appear to be disastrous for health and life of a person. It shall be noted, that today, in the first place, main task is not only maintenance and increasing health of the workers of the cycle “Science-Technique-Production”, but implementation of the same to entire society;
- Qualitatively new life level of the population may be achieved for the population of the city and the village, by improving household conditions. Welfare of population significantly depends on the overcoming of technical and technological gaps, performing innovative activities.

**PRINCIPLES AND MECHANISMS OF FUNDING SCIENTIFIC-RESEARCH AND EXPERIMENTAL-CONSTRUCTION WORKS**

Foundation to the implementation of innovative policy is funding scientific-research and experimental-construction

works. Well-justified and formed system of funding innovative activities create all conditions for accumulating financial resources, concentration of their opportunities for key lines of the innovative processes.

Financial resources of the subjects of innovative domain may be used for creation of intangible assets, bringing innovations to the industrial stage, purchasing raw materials, supplies, completing devices and etc. They are intended for performing financial liabilities, towards financial, leasing and other companies.

Sources of forming financial resources are those attracted from own and other sources, budgetary and non-budgetary incomes. Besides this, composition of the financial resources of scientific institution includes its principle activities, profit made from implementation of financial operations. Important financial resources may be mobilized from the realization of the securities of primary and secondary emission, as well as credit investments. Funding of scientific-research and experimental-construction activities may be also implemented at the expense of internal distribution of existed cash resources.

Under the conditions of market economy financial resources perform three important functions: distribution, controlling and readjustment.

**Function of distribution** provides moving of finances from one field of science to another, and their distribution among subjects of the industrial activities. Subjects of funding may be independent innovative enterprises, financial-industrial structures, territorial and state authorities of management, individuals and etc. All of them in particular way are participants of reproduction process, influencing upon formation of commodity and service market. The market with “promotes” effective operation of enterprises and “punishes” for bad work. It influences upon selection of more important innovations, which may be profitable in perspective, as for the processor of the innovations, so – the investors. The process of distribution of finances are implemented in compliance with their economic purpose and existed legislation.

**Controlling function of finances** makes it possible to receive information about ways and proportions of distribution of cash resources.

It is based on the financial indexes reflected in the accounting, statistic and operative statements of the enterprise. They may include: total earning, expenses, profit, payments to the budget and etc. Based on the financial indexes, it is possible to fix various sides of the operation of innovative enterprise and evaluation of outcomes of their industrial activities.

In course of implementing stages of the cycle of financial control “Science-Technique-Production” may be implemented at various levels: by the services of innovative enterprises, by the third parties (independent auditors), specialists of the state tax inspection.

**Function of financial readjustment** is related with identification of financial assistance of to the debtor-scientific institution, for the purpose of recovering its sustainable solvency and recovering interrelation of the debtor and creditor, within set terms.

Finances of innovative enterprise in economic essence is monetary relation formed in course of incomes and outcomes, formation and utilization of the funds. Due to this, timely



determination of targets and directions will support rising competitiveness of innovative goods, reduction of industrial expenses, influencing upon effectiveness of entrepreneurship in the innovative domain.

**Main key principles of funding scientific-research and experimental-construction works may be grouped as follows:**

- Purposeful orientation of finances and connection with the tasks of involvement and development of innovations in the industry;
- Reasoned and legal protection of the sources of funding;
- Diversity of the sources of attracted finances;
- Coverage and complexity of funding. Using this provision in practice, in compliance with various kinds of scientific-research and experimental-construction activities, allows funding of innovations to be processed in compliance with the subjects of various kinds;
- Flexibility and customization (adaptation) of the system of funding with the dynamic changes of market conjuncture.

**Rational system of funding scientific-research and experimental-construction works is intended for solving principle objectives, particularly:**

- Creating conditions for rapid and effective development of innovations in every field of public industry;
- Maintenance and development of innovative infrastructure;
- Creating necessary conditions for maintenance of HR potential of science and avoidance of its outflow from the innovative domain.
- Provision of solvency of innovative enterprise and increasing its capital.

Listed and other tasks may be realized in case of effective planning, accounting, analyzing, stimulation of the amount of sales of innovative projects, as well as in case of earning profit and rising profitability.

Generalized index of using financial resources directed towards involvement, development, production and distribution of innovations is increasing cash flows. According to its size, we may speak about effectiveness of funding scientific-research and experimental-construction works, regularity of set purposes and optimal methods of its solving.

The mechanism of funding scientific-research and experimental-construction works in the countries of the developed market economy is formed in particular way. He state, as a rule, funds not only fundamental studies, but also scientific-research and experimental-construction works, outcomes of which will not find wide utilization in the close future in commercial sector due to the numbers of reasons.

Let us consider the mechanism of funding scientific-research and experimental-construction works from state budget (Fig. 3).

**Fig. 3. The scheme of state funding of fundamental studies**

The mechanism of funding scientific-research works is built on the foundation of building projects based on the conclusions of authorized specialists; by taking into account the outcomes made by means of the studies concluded earlier for obtaining contracts; on the basis of the opinion of wide layers of scientific society (Dzamukashvili D., 2000).

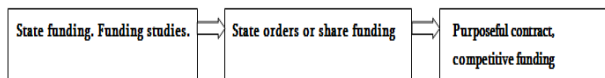
State budget or share funding is considered to be principle source of funding at the stage of fundamental studies. For this purpose, two channels of distribution of allocated resources may be used: implementation of purposeful of competition funding of scientific research works; by any subject of innovative domain, if outcomes of studies are directed for the welfare of entire society, in case of equal opportunities of making grants. In the first place, funding of scientific-research works is implemented in the fields, as national security, transport, energy, and civil purposes. Herewith, outcomes of studies, with which the state is interested in the first place, may be used as in private, so – public sector of the economy.

From the positions of neoclassic economic theory, necessity of such funding is justified with extremely high degree of uncertainty and risk, as well as under the conditions of full independence of the outcomes of fundamental studies of the cycle “Science-Technique-Production” at the following stages. The necessity of wider state finding is justified in compliance with the implementation of innovative process – so-called linear model, according to which the science is the source of the progress of new technique, technologies and economy.

Funding of scientific studies of applied nature in the countries of developed market economy, is usually implemented by the private sector. Exception is scientific-research works of performed applied nature under the order of the state for military purposes, for priority directions of some studies of medical nature and scientific-technical progress of the medical nature. Participation of the state in the scientific studies of applied nature is related with the fact that obtained scientific information is of general nature.

The situation with the funding of scientific-research works of applied nature is much more difficult in the countries of transitive economy. For example: such method of approach to the funding of scientific-research works of applied nature today does not respond to the economical requirements, as the outcomes of the scientific-research works of applied nature, which are obtained at the expense of budgetary assigning, may be used by the subjects of various form of ownership. Based on the conditions that the outcomes of scientific studies and processing is particular foundation in the scheme of increasing competitiveness of goods and services. Industrial firms with the ownership of various forms, shall participate in the investment of scientific-research works of applied nature with the government.

The mechanism of funding scientific-research works of applied nature is identic of the mechanism of investment of **fundamental studies**. It may be implemented by means of state order or share participation of the state, by means of purposeful, competition or specialized funds. These latest implement their activities under the state control. In some countries financial resources used on them reach 50%.



Participants of funding of given kind may be the subjects of the forms of various ownership of industry, interested in the implementation of the planned studies. They are ready to allocate necessary financial resources for this purpose, and, if necessary, material-technical resources.

Funding processing may be provided at the expense of the resources of the subjects of ownership of state, share and various kinds (Fig. 4).

Realization of state order may be provided by signing purposeful contract or with the credit issued with preferential and competitive rule. Herewith, purposeful funding shall be related with the solution of specific state objectives. For example, creation of experimental samples for implementation of ecology control of the enterprise. Preferential crediting includes indirect activities of influence for implementation of state policy of scientific-technical and social-economic development.

Share and preferential form of crediting and funding of scientific-research, as well as experimental-technical works allows reduction of the expenditure of budget of the country. Released financial resources are guided for implementation of fundamental scientific-research activities. Outcomes of this latest may become grounds for growth of national economy.

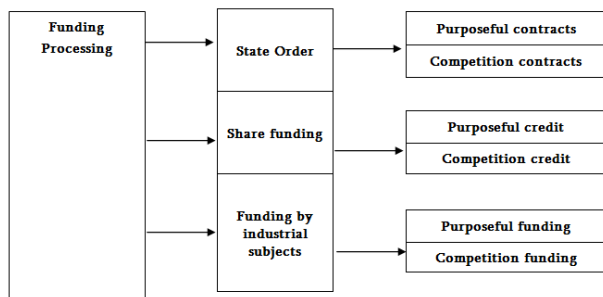


Fig. 4. Scheme of processing funding

In course of funding scientific-research and experimental construction works they usually use external (attracted) and internal (own) cash resources. External (attracted) financial cash resources include state budgetary allotments, credits of financial-credit organizations, borrowed resources of separate groups of organizations and citizens.

One of the most important external financial source are budgetary allotments. They solve large scientific-technical programs. Under the conditions of market economy, sectorial science of studies of such kind cannot be performed by the science. Such studies shall be funded from the state budgetary resources and at the expense of specialized funds.

For example, in the Post-Communist states cash resources for funding scientific-research and experimental-construction works were allocated from the state budget, local budgets, funds of fundamental studies, and resources of the ministries and other organizations. These resources are usually directed to the funding of state purposeful innovative programs and innovative projects, on the competition basis and etc.

As a rule, resources of state budget are allocated, in the first place, for production of import-consuming highly demanded

products, competitive goods, and it is of high quality and class, compared with the mastering of new commodity.

Important source of funding scientific-research and experimental-construction works is important source for bank credit. Bank credit is issued by the bank within set terms, with the determined bank rate, to be used for the prescribed purpose. Size of the bank interest rate depends on the terms of loan, the value of the risk of innovative project, characteristics of borrowers and etc.

Bank crediting, usually, is oriented towards minimal credit risk, and due to this availability of credits of innovative enterprises is always reduced. Commercial bank, as a rule, makes crediting of the innovations, with real terms of redemption, and the enterprise shall have sources of returning credit and shorter terms compared with entire field.

For the purpose of provision of scientific-credit and experimental-construction works, under the modern conditions, creation of non-budgetary state funds are adopted. Such funds may be created by the ministries, regions, large cities, enterprises, insurance, venture (risk) and leasing companies, as well as nongovernmental pension funds, and pawnshops. They are credit nonbanking financial organizations, performing multiple bank operations and competing with the banks.

Important sources of non-budgetary (nongovernmental) funding of innovative projects may include: own resources of the enterprise and organization, performing innovative activities; for example, production development fund and the fund of depreciation charges, specialized and charity funds; local and foreign investments; the sources, which may be adopted by the innovative enterprises by means of implementing secondary issuance of shares (or other securities); financial leasing and venture (risks) sources; and other non-budgetary sources, not prohibited by law.

Let us discuss, to our mind, more perspective sources of those of funding innovative projects in more details.

Quite widely distributed form of funding scientific-research and experimental-construction works is secondary issuance of securities. With its help required amount of financial resources may be attracted within short period of time. This form of funding is relatively available for the open and closed joint stock companies. Secondary issuance of shares makes it possible to accumulate large cash sources, which may be directed in the future towards funding of the new innovative projects, repayment of credit, redemption of the shares of primary issuance and etc. By means of the secondary issuance of securities, changing of investment credit is implemented, supporting optimization of the structure of financial resources, invested into the innovative projects.

For example, US Company "Logic" organized issues of semi-conductors at the expense of issuance of the primary shares. Share price was 60 cents. After a year from secondary issuance of shares, price of these shares was increased to 21 US Dollars, which is higher for 35 times compared to the price of shares of primary issuance. Said condition allowed the company review credits and make high profit (Qoqiauri L., 2010).

**Venture (risk) sources**, as a rule, are used for funding small research and provisioning companies, and scientific-technical processing; as well as discoveries, any innovation, inventions, bringing engineering decisions to the production

and development, providing funding those of risky and perspective nature. They receive financial resources of venture companies without payment and warranty of their refunding. Due to this, they have high risk, but in case of success, the risk is compensated with the profit exceeding incurred expenses for 30-200 times. Subject to the published data, 15% venture capital is completely lost; 25% is loss under the conditions of large term of the planned redemption, 30% of venture companies make warranted profit and only 20-30% takes measures. In order to avoid large expenses in course of venture funding, innovative projects shall be accurately selected. This shall take place by simultaneous investment of resources in several innovative projects, with different terms of their implementation.

In some cases, holders of venture capital evaluate innovative projects only at the stage of issuing shares. Playing with quotation of shares, they may earn much higher price than the value of invested venture capital. Venture mechanism of funding innovative projects (Fig. 5), by different industrial subjects, different from receiving credit, is characterized with numbers of distinguishing peculiarities.

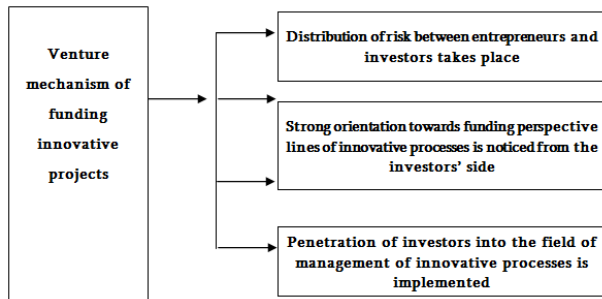


Fig. 5. Venture mechanism of funding innovative projects

Let us discuss in more details peculiarities of venture mechanism of funding innovations.

**The first peculiarity** of funding venture mechanisms of innovation project, is mostly related with the development of innovations with the specialized conditions of small companies.

Each stage of the Cycle Science-Technique-Production requires important investments. Such demand on credit, in the most cases, appear with small entrepreneurs, scientists, inventors, constructors and engineers, when they are trying independently to develop their innovations. Compensation on the credit allocated for the investors may be authorization for earning profit for them (package of shares) during the period of manufacturing highly demanded new product.

**Another peculiarity** of venture mechanism of funding innovative projects is that they implement funding of the most leading direction of scientific-technical progress. Investors of venture capital always pay attention to the trends of development of science, technique and production, reacting on insignificant changes of economic policy and market conjuncture. Stipulated trend influences seriously upon distribution of venture capital at the stage of Science-Technique-Production between various fields of economy. For example: share of risk funding in the USA for computers was increased from 26 to 43% during five years (2004-2009),

while share of venture investments was reduced from 20 to 2%. Reasons for changes are conditioned with the changing of global prices on energy-resources during said period.

**Third peculiarity** of venture capital investments is that the investors are not limited with only receiving financial credit. They participate in the management of the company personally or via their representatives at each stage of the Cycle Science-Technique-Production.

One of the forms of funding scientific-research and experimental-construction works is financial leasing. Leasing – is transferring right for using movable property or real estate by transferring its ownership for particular term or indefinite period by periodical payment of compensation. As a rule, it represents triple complex of relations, in which leasing company (recipient) acquires equipment from the manufacturer, to be transferred for temporary usage (lease) with the request and instruction of the user. The Complex includes two agreements:

1. Agreement of sale and purchase between leasing company (recipient) and manufacturer (seller) of the equipment;
2. Leasing agreement between leasing company and user of the equipment.

Financial leasing looks like purchasing by postponement. The user (tenant) undertakes liability for periodical payments with the bank creditor or leasing company. In some cases, after expiration of the term, the user is able to purchase equipment. In various countries, this process may be regulated differently.

In some of them term of the user for possible procurement is the necessary term according to the lease agreement (for example: in France, in Belgium). In other countries this depends on the opinions of the parties (in the USA), and in some countries it is prohibited to include such term into the agreement (for example, in Great Britain). Leased equipment may be evaluated with the market prices applicable at the given moment.

Herewith, during the term of the Agreement, the tenant (user) pays entire cost of the received assets with periodical installments and becomes its owner. These installments play the role of credit payments (interest on the credit).

Financial leasing is often called net leasing with full payment. This is related with the fact that in ideal case, the recipient (lease giver) shall receive entire sum of sources during market period, included in purchasing the property, as well as the costs related with the funding. Consequently, remuneration of the recipient (lease giver) includes lease payments + evaluation cost of tax benefits + residue cost of assets or residual value of the warranted assets of the user (tenant). Size of payments during basic term of agreement shall cover costs of leasing company for acquiring and wrapping equipment and it shall provide interests on the invested capital and profit.

Priority of leasing management is that in case of existence of profitable innovative project, scientific-research establishment becomes able to receive the equipment and implement innovative process without simultaneous expenses.

**Internal cash resources include:**

- **Incomes of innovative enterprise:** part of profit from realization of commodity products, incomes made



from scientific-research establishments, construction-maintenance works, financial operations and etc.;

- **Revenues:** depreciation charges, income from realization of malfunctioning property. Liabilities, including own capital, short and long-term liabilities;
- **Financial resources mobilized at the financial market:** selling own shares, bonds and securities of other kind, financial leasing and credit investments, other kinds of mobilized resources;
- **Financial resources entered by means of distribution:** insurance remuneration according to the incurred risks; financial resources entered from the concerns, associations, sectorial and regional structures; financial resources entered from equity basis; dividends and interests from other issuers' securities; budgetary allotments and resources of other kinds.

### **SCIENTIFIC-TECHNICAL, STRUCTURAL AND INSTITUTIONAL POLICY: ESSENCE, PURPOSES AND TASKS.**

Scientific-technical, structural and institutional policy, making elements of scientific-technical and social-economic development, together with the innovative policy, influence upon innovative activities of the subjects of innovative domain. Their successful realization proves inevitability and manageability of innovations. Management of innovations is the key and supportive factor of economic growth.

Scientific-technical policy considers the system of activities directed towards assistance and development of science and education; under the conditions of existence of restricted factors of production for the purpose of satisfying unlimited requirements of the member of public for the purpose of creating scientific-technical, organization-economic and social innovations, under the conditions of restricted factors of production.

#### **Scientific-technical policy is intended for:**

- Orientation and support of scientific studies;
- Regulation of lines of scientific-technical development;
- Perfection of moral and material incentives of innovative activities;
- Rising competitiveness of native industry;
- Creation of effective patent-leasing rights (legislation), providing protection of intellectual property;
- Regulation of innovative activities;
- Selection of the criteria of assessment of innovative activity and those of stimulation, as well as selection of the criteria of the methods management of the scientific-technical development;
- State and sectorial scientific-technical programs of forming and realization of the separate innovative projects;
- Implementation of innovative activities, at the expense of budgetary and non-budgetary cash resources;
- Development of applicable system of attestation of the scientific, scientific-pedagogic and engineering and technical employees.

**Structural economic policy** is directed towards overcoming disproportions existed in the economy: reduction of gaps between production and service fields; reduction of the security production share; overcoming significant imbalance between technical equipment of innovative production of various fields and economic sectors. Optimal structural criteria of the economy are: efficiency, competitiveness, sustainability to the cycled fluctuations.

**Purpose of the structural policy** is provision of the economic growth of industrial and agricultural fields, as well as those of intangible production. This means not only quantitative growth of the value of realized innovations, but also structural improvement of GDP, i.e. rising share of the goods of long-term usage; increasing high-quality products, modern services, and financial and information share. Economic independence of the country shall be achieved in course of realizing structural policy, as well as technology transformation of industry, issuance of new product on the basis of scientific-technical progress.

Special place in the structural policy is occupied by the accompanying purposes: selection of structural-depression production and releasing innovative enterprises from the technique with the expired exploitation term; reduction of issuing outdated mechanical engineering products, and its further termination; regrouping main capital of innovative and mechanical engineering enterprises. This latest is purposeful to be implemented within the framework of merger and confluence of the enterprises. For stimulation of these processes avoidance of bankruptcy procedures of problematic enterprises is of high importance and as well as changing their owners.

**One of the most important tasks of structural policy** is rising profit of investments into innovations. It is important not only to renew industrial capacities, but also to change outdated devices with innovations, which is greatly depended by the progress of the technique and technologies.

**Institutional economic policy** is related with the activities of formal and informal institutions. According to the standard definition, the institutions are particular game rules in the society or creation of restricting frameworks by a human, forming the structure of stimulation of human activities in the system of innovations. **Formal institutions** include adopted laws and the rules prescribed in the game, directed to the implementation of innovative processes, as for informal ones – the habits, unwritten norms of conduct and public conditionings, conditioned by the historic development of economic order.

From the position of the institutional economic policy, as one of the lines of economic opinion, we may explain development and functioning of human society with the change of institutions (generally formal and informal game rules), influencing upon innovative activities.

Institutional economic policy supports avoidance of negative outcomes in course of making innovative decisions, formed in course of ignoring formal and informal game rules and the mechanisms of management of innovations. The processes of development, involving, mastering and realization of innovations is influenced (stimulating) motives and the interests of industrial subjects; hierarchy structure of innovative management based on the applicable laws, orders, resolutions and etc. of the country, depends on the duration of human life and intellect; as for the innovative activity of a

human, enterprise or entire country – it depends on its life level measured with real GDP per capital.

In case of ignoring intellectual restrictions, being able to influence upon innovative activities, the subjects may get into the so-called Institutional Trap. Institutional Trap is the negative outcome of sustainable nature, which sometimes formed as a result of rigid decision. In other words, it is economic deadlock, coming out of which is difficult due to the ignorance of the institutional restrictions.

Due to this reason, formal and informal institutions sometimes form serious difficulties for implementation of the stage Science-Technique-Production and, respectfully, economic growth. Innovative activity of the enterprise and social state of an equity greatly depend on the well-considered and comprehended tax and budgetary, credit-monetary foreign-trade policies for the applicable system of pricing for the commodities and services, as well as the legislative base, social state of an equity is formed with historic traditions, mutual assistance and mutual trust. Of course, common purposes and interest of various social groups and classes shall be considered here as well.

## CONCLUSION

Innovation process is provided via three principle channels in the country. They are:

- Obtaining new scientific-technical knowledge within the framework of national research systems and its utilization;
- Investments by obtaining patents and licenses in the intellectual property;
- Renovation and receiving knowledge into the imported high-technology machineries via installed technologies.

Particular innovation activity may use more than one or all three channels. The process is extremely complex and it includes activities and interrelations of as private, so – state sectors. Due to the complex and importance of the processes, multi-layer national innovative systems were formed in the modern countries, including all branches of supreme government, local governments, ministries and authorities, research organizations and universities, scientific service centers and scientific and experimental laboratories operating in the industry.

**Objective of the agreement, as the system manager, is influence upon all three channels of innovations to receive maximal effect, as from governmental, so – private investments.** The government acts as investor, placing sourcing as in the study of particular usage, commercialization of which is expected, so (and mostly) into the education, fundamental and applied studies, development of infrastructure (scientific service). The government acts as catalyzer and regulator, for which it creates conditions for supporting participants of innovative processes, strengthening their cooperation (including – international); forming promoting legislative environment (including taxation); processing long-term plans, concluding priorities and directions and volumes of national programs; providing functioning innovative system.

Science, or research system, it one of the channels of innovations, which is actively influenced by the government of Georgia in course of the reform. Unfortunately, this reform

does not consider development of the system of studies in the context of the process of current innovation of the country. Under the conditions of absence of innovative policy, it could not happen differently. On the other hand, purposeful conformity would not be formed without this, between various functions/components of the research system. In such case, Conformity means conformity between the amount of sciences, organizations and resources, concentrated for performance of separate functions, and Purposeful means the one, responding current vision of the objectives of the country. In the process of the reform, if we miss or insufficiently assessed the functions related with the innovation, the reform provides its institutionalization, making it difficult to improve the mistake in the future. It happened so. Without state funding, medical science was left, restricting growth of degree of the health system. Several strong scientific staffs stopped existence in the various scientific disciplines. Multiple research organizations were granted legal status of LLC, which practically means termination of research works.

Ignoring context of innovation automatically provokes serious disproportion between research and research service. According UNESCO and OECD, this includes: scientific-technical libraries and information services; translation, publishing and etc. of scientific-technical literature; geologic, hydrologic and similar studies; searching minerals and etc.; accumulation of data about social-economical phenomenon; production testing, standardization and quality control, metrology; public agricultural and industrial consulting services; patent and license activities. Investment into the studies is senseless, if no investment into the research service takes place.

United States rendered multimillion assistance to Georgian science during last 10-12 years with the programs of ICRDF, EU Union, ISTC and NIH. They include assistance in commercialization of the study results, i.e. relation of the research with innovation is sufficiently underlined. There is the opinion that with this assistance Americans implement their purposes, such as prevention of outflow of the science related with the arms to irresponsible countries and, also, accumulation of information about ex-soviet developments. Even though, they have brought something, and didn't take anything free of charge. Except direct funding of studies with ISTC program and several other programs, the Europe rendered assistance several times in the field of planning and management of studies under the market conditions. World Bank projects were performed in the same field as well. This is the World Bank ordering researches to Red Corporation. Within the framework of one of the project recommendations were prepared about Tec inform and development of republic scientific-technical library.

Development of innovative activities in Georgia prevent greatly extremely low level of development of innovative infrastructure, undeveloped, incomplete legal base, existence of the system of venture funds and innovative activities, non-development of tariff policy supporting innovative activities, undue promotion of import of innovative activities and etc.

Based on the global experience, we know that in the 20<sup>th</sup> century high results were achieved only by the countries, governments of which implemented purposeful long-term innovative policy. National economies undergo periods of growth and fall, though growth measured for the term of a

decade may be allocated to the investment into the scientific-technical knowledge. In the countries, where only rhetorical applications were made, backwardness was increased (many African countries are distinguished in the regards). Due to the higher rate of development, 21<sup>st</sup> century will be much stricter towards the retarders than 20<sup>th</sup> – everybody will have much less time for correction of allowed mistakes.

Complex analysis of the mechanism of development and realization of the state innovative policy shows that among the elements of this mechanism at the state level three elements are paid attention – management, financial provision and innovative legislation. Organization element is considered to be relatively secondary.

Under such conditions, when Georgian economy is under difficult situation, it is extremely important to promote and develop innovative field. Moreover when there is such potential in Georgia today.

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