

UDC 001.89(571.122)

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Economic evaluation of scientific and technical activities in the Khanty-Mansiysk autonomous okrug – Ugra

The article deals with the current state and analysis of scientific and technical activities of the Khanty-Mansiysk autonomous okrug – Ugra.

Scientific and technical activities, analysis of scientific and technical activities, scientific and technical potential.



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Khanty-Mansiysk autonomous okrug – Ugra has real opportunities to further strengthen its role as a powerful cluster of hydrocarbon production and processing, and establish reputation of a leading center in production and distribution of high technologies. It is necessary to maintain and develop the territory of Ugra as a preferred platform for experimental and other kinds of work, allowing for the introduction of innovative technologies for oil and gas production and processing, including works on the basis of scientific research and experimental developments, carried out in other regions of Russia and abroad.

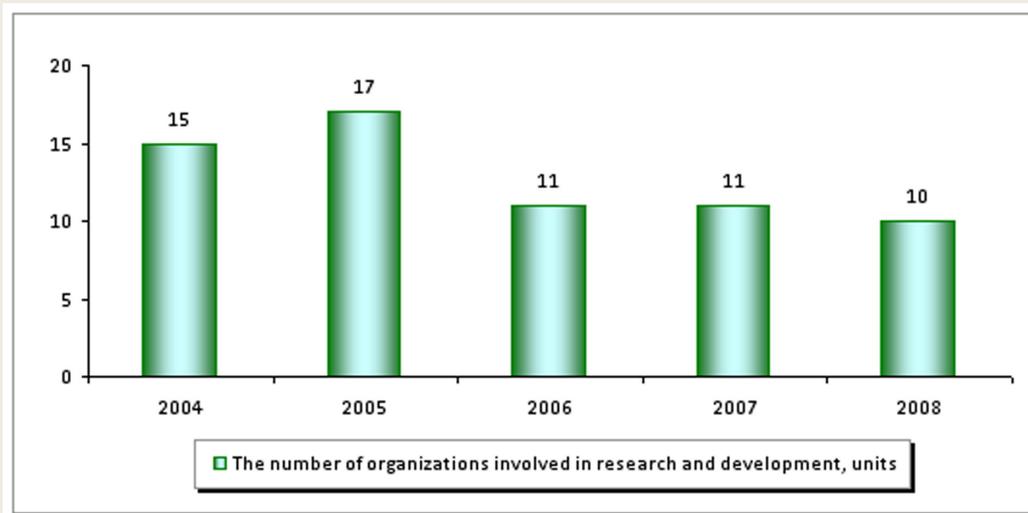
The relevance and novelty of the study is that there is a need for a comprehensive study

of the scientific and technical sphere of the district, its potential opportunities and development of proposals and coordination activities for all parties interested in improving the technological level of the district and demand for results of research activities.

The most important indicator of scientific and technical sphere of the region is number of organizations carrying out research and development. It declined from 15 in 2004 to 10 organizations in 2008 (in 1.5 times) (*fig. 1*).

The analysis of the number of personnel engaged in research and development by sectors of activity and ownership showed the following results: with the reduction of personnel in the public sector from 316 people in 2004 to 252 in 2008 (by 20%) a significant increase in the

Figure 1. Dynamics of organizations carrying out research and development



number of staff in the business sector from 1,730 people in 2004 to 2,222 people in 2008 is observed, or 28% (fig. 2). Also significantly increased the number of personnel engaged in research and development in higher professional education from 112 people in 2004 to 160 in 2008.

Personnel structure shows that in 2008 the largest share was private ownership of organizations that employ research staff – 88% (fig. 3).

Distribution of researchers by fields of sciences in 2008 is following (fig. 4). From 1,716 people in the field of natural sciences 142 people; in the field of technical sciences – 1,542 people, social sciences and humanities – 21 people.

The number of researchers of the academic profile is small: in 2004 – 166, in 2008 – 184 people. The geographical distribution of the personnel engaged in research and development in cities and districts of the Khanty-Mansiysk autonomous okrug-Ugra shows that there is a concentration of research personnel in two major centers: Surgut – 963 people, or 36.5%; Khanty-Mansiysk – 270 people, or 10%.

Basic indicator of the scientific and technical sphere development of the district – the volume of scientific and technical work.

In 2004 amounted to 1,384.0 million rubles, in 2008 – 3,890.9 million, i.e. over this period it increased 2.8 times. Thus, the volume of scientific and technical work grew on average by 29%.

Figure 2. The distribution of personnel engaged in R&D by sectors of activity in 2008, persons

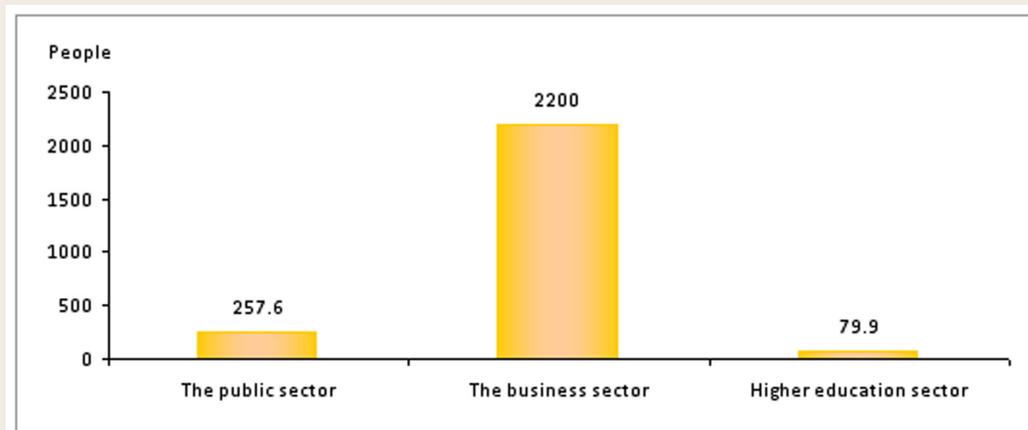


Figure 3. Structure of staff ownership of organizations in 2008, %

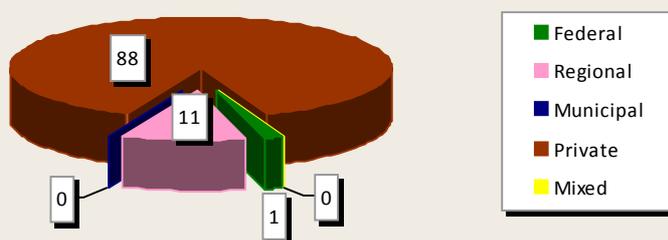
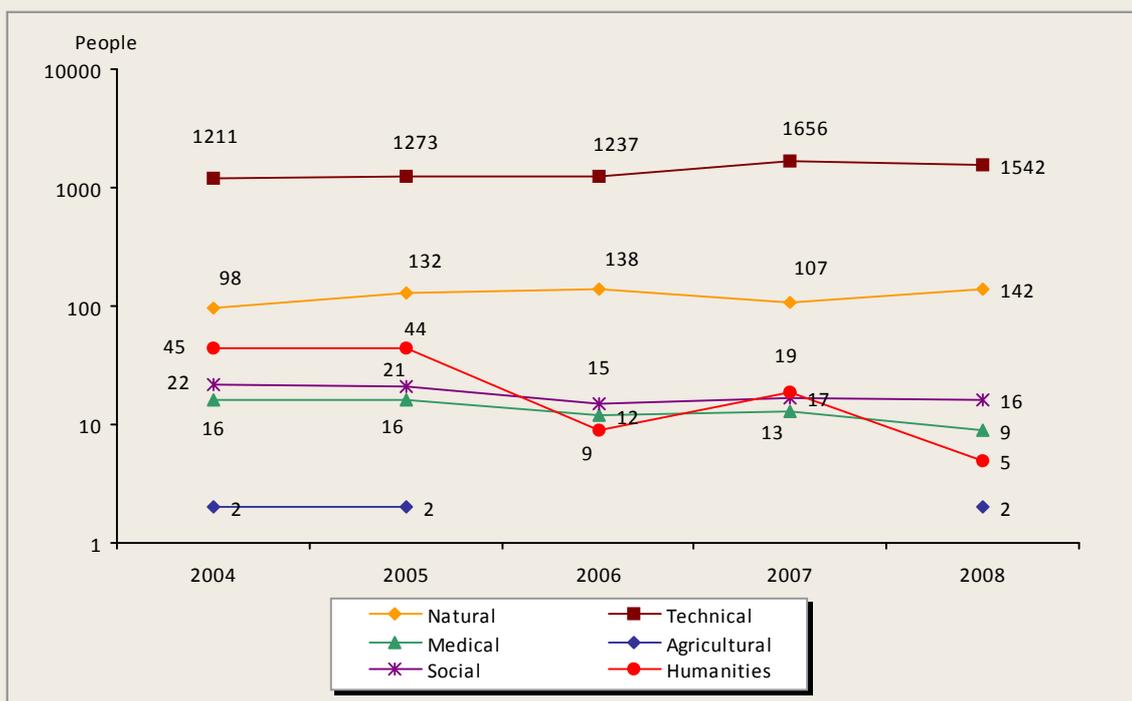


Figure 4. The dynamics of the number of researchers by branches of sciences, the persons



In 2008 the cost of research and development activities in the context of scientific organizations is as follows (fig. 5):

- research and development – 2879.9 million rubles (84%).
- design – 468.6 million rubles (13.7%).
- higher education institutions – 79.9 million rubles (2.3%).

As for the distribution of costs by types, domestic costs on research and development dominate, which increased from 1076.0 million rubles in 2004 to 2984.8 million rubles in 2008 (fig. 6).

Analysis of internal costs on research and development by source of funding showed that they were financed mainly at the expense of own funds (fig. 7).

There was substantial increase in funding from the budgets of the territories – from 109.3 million in 2004 to 258.6 million rubles.

The business sector in the district is a leader in terms of growth rates of financing the costs of research and development and the unit weight in the structure of implementing costs as well. Thus, experience shows that the commercial sector can actively work in science.

According to the areas of science the distribution of internal costs in the ratio of 2004 and 2008 was as follows (fig. 8). The largest costs increase for the period under review occurred in the social sciences – 7.1 times (from 3.4 mill. rub. up to 24.3 mill. rub.), the following are the technical sciences – 2.8 times (from 1004.2

Figure 5. The dynamics of R&D costs of in the context of types of scientific organizations, million rubles

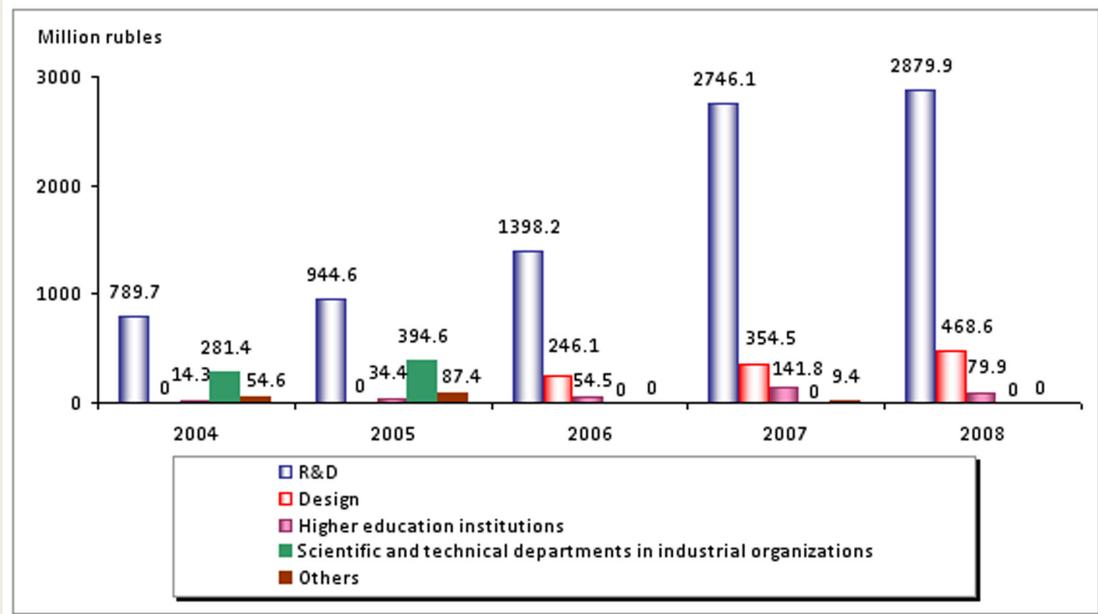


Figure 6. The dynamics of R&D costs by types of costs, million rubles

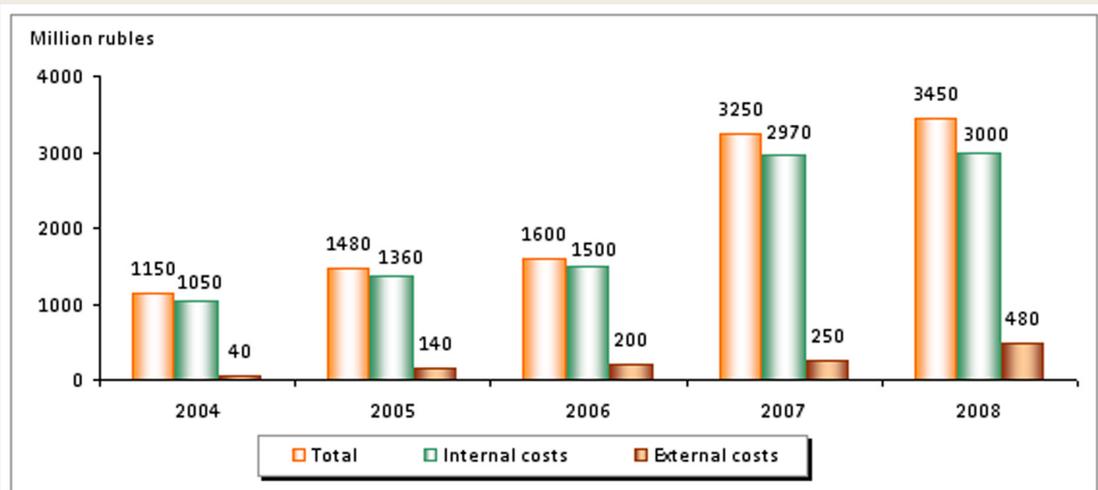
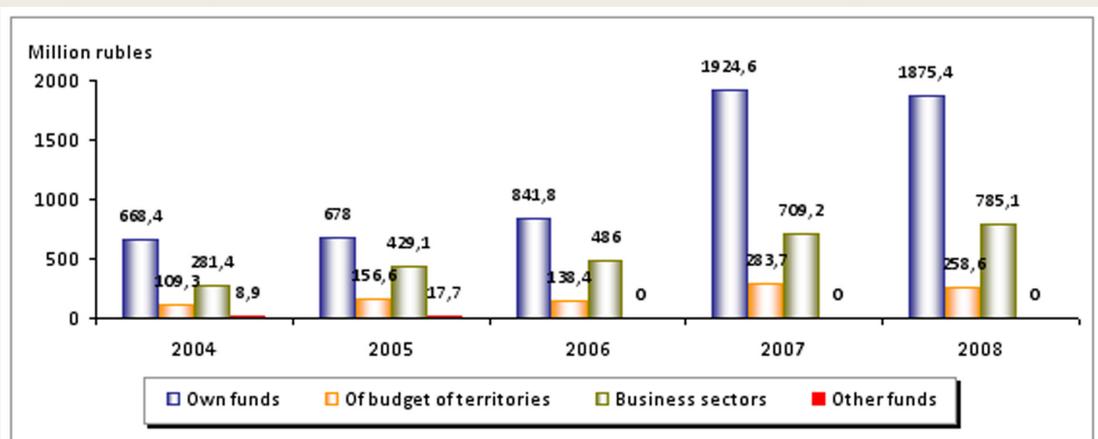


Figure 7. The dynamics of internal costs in the context of sources of funding, million rubles



mill. rub. up to 2829.1 mill. rub.), the natural sciences have 2.4 times (from 52.2 mill. rub. up to 127.5 mill. rub.), and the humanities take the last place in the growth rate – 0.09 times (from 15.0 to 1.4 mill. rub.). By share in the cost structure in 2008 of technical sciences occupied the first place (94,8%), naturally – the second place (4,3%), all the other branches of science in the amount yielded only 0,9%

The number of organizations that used advanced technologies, increased by 2.7 times – from 38 in 2004 to 106 in 2008, the number of used advanced production technologies has increased significantly, from 947 in 2004 to 1,243 units in 2008. For the period of 5 years the increase of used advanced production technologies is only 296 units.

Only execution of documents of the achievement of intellectual activity results can be noted as a positive phenomenon. The number of applications to patents increased 6 times – from 10 to 59 over the analyzed period. The greatest growth is observed in applications for official registration of computer programs, databases – from 3 to 33, i.e. 11 times.

However, in the state of scientific and technical sphere of the region are many unresolved issues. The share of researchers in academic staffing of organizations is only 55%. In this population doctors and candidates of sciences occupy only 17%.

The structure of internal costs is prevalent wage – 1930.3 million rubles (56.3%), while

capital expenditures do not exceed 45.3 million rubles. (1.3%), equipment costs, on average, 57.2 million rubles (1,7%).

The development and adjustment of the priority areas of science, technology and engineering – one of the transition to innovative development.

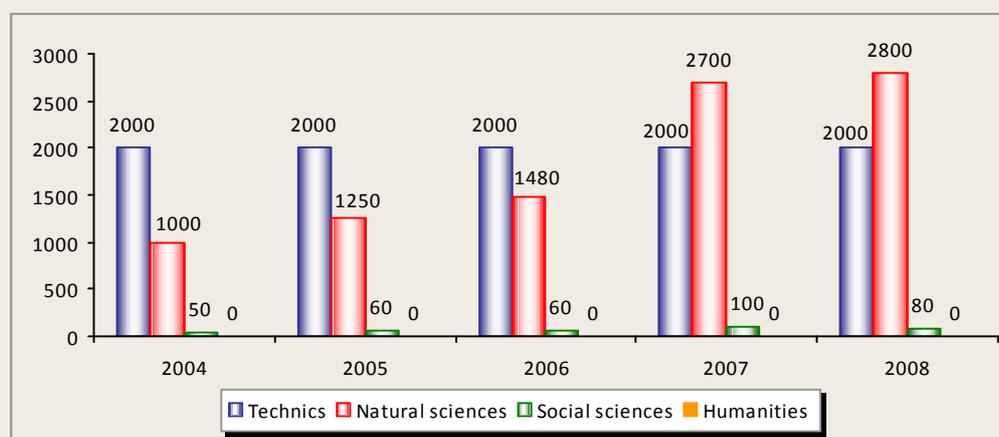
Adjustment of priorities and critical technologies appropriate to carry out at least once every four years, taking into account ongoing and planned results-term program of socio-economic development. The choice of priorities in the adjustment process should include the following stages:

- monitoring of technological development;
- formation of a “portfolio” of proposals for the refinement of the priority areas of development and a list of critical technologies;
- expert assessment “portfolio” of proposals and preparation of the preliminary list;
- approval of the preliminary list, final selection and approval of proposals for priority development, and the list of critical technologies.

In the Khanty-Mansiysk autonomous okrug – Ugra, given the importance of scientific and technical sphere and the need to follow the national vector development, approved the priority areas of science, technology and equipment and critical technologies, which now include such as:

- information-communication technologies and electronics;

Figure 8. The dynamics of distribution of internal costs on researches by branches of sciences, million rubles



- new industrial materials and chemical technologies;
- production technologies;
- ecology and environmental management;
- energy-saving technologies;
- technologies of living systems.

In the interest of socio-economic development of most of the structural subdivisions of the Government of the autonomous region are increasingly involved in research and development and their continued use. For example, the research work of the Department of Education and Science aimed at addressing the major tactical problems in education, such as improving access to quality educational services, more efficient management and improvement of economic mechanisms in the education sector, priority

development of fundamental science, conservation and support of leading scientific schools, etc. Most of the research is the establishment of the Khanty-Mansiysk autonomous okrug – Ugra Obskougorskim Institute for applied research and development. Constant active participant in research and development is the Committee of socio-political analysis and public relations division of the Governor of autonomous district.

However, our investigation convinced of the need to form a complex of measures to promote scientific and technical sphere of the Khanty-Mansiysk autonomous okrug – Ugra for the near term, implementation of which will allow the district to go to the front lines in the Ural federal district to develop scientific and technological activities.

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