Journal of Siberian Federal University. Humanities & Social Sciences 5 (2011 4) 667-677
~ ~ ~

УДК 338.24 (571.510)

Maturity Profile of the Innovative Development of the Administrative-Territorial Units of the Krasnoyarsk Region

Vladimir I. Kirko*,
Anatoliy V. Bukharov and Anna V. Keusch
Siberian Federal University
79 Svobodny, Krasnoyarsk, 660041 Russia [1]

Received 4.05.2011, received in revised form 11.05.2011, accepted 18.05.2011

The authors of the article have carried out a research of the innovative potential of typical administrative-territorial units.
For our research, we have chosen some administrative-territorial units of different socio-economical levels of development that are situated in various climatic zones of the Krasnoyarsk Region: the Evenkiya Municipal Region; Minusinsk and the Minusinsk Municipal Region; Achinsk; Divnogorsk; Zheleznogorsk.
In order to research the innovative potential of the chosen territories, we have chosen to use the modified TACIS methodology in the given work. The methodology is based upon carriage of working seminars with specialists of the subject, their questioning in a certain sphere and formation of a general indicator (maturity profile) and a certain scheme of analysis of the gained results.
Maturity profile estimates the level of administrative-territorial units development in various aspects on the basis of selected factors, which define the development of the territory. Proceeding from the set task, the following eight factors have been defined: four of them characterize the resources and four rest characterize organizational structures and technologies.
Its results are presented as a diagram, which visually illustrates relative levels of various activity spheres' development. The form of the diagram also gives us an opportunity to compare the correlation between the levels of factors development of a separate territory and other administrative-territorial units.
According to the results of the carried research of the selected territories, we have worked out the following practical recommendations concerning their innovative climate improvement.

Keywords: maturity profile of innovative development, innovative potential.

The given research work has been carried out with the financial support from the Krasnoyarsk Regional Fund of Support of Science and Scientific-Technical Activity and also the Federal Purpose-Oriented Program «Scientific and Scientific-Pedagogical Personnel of Innovational Russia» for the 2009-2013 period.

* Corresponding author E-mail address: director.nifti@mail.ru

The Krasnoyarsk Region is one of the richest regions of Russia in natural resources. By January 1, 2009, its population has reached 2889 thousand people, consisting mainly of 27 nationalities and 42 nationalities, which were referred to native small-numbered peoples. The Region possesses a significant scientific-technical potential, which is mainly concentrated in big cities like Krasnoyarsk, Achinsk, Zheleznogorsk, Zelenogorsk, Norilsk, and others. In the Region there are some agricultural territories, which are well developed (the Nazarovo, Minusinsk and Sayansk regions), and also territories, being referred to the region of the extreme North. On the territory of the Krasnoyarsk Region one can also observe large financial-industrial groups acting, such as «Basic Element», «Alfa-Group», CJSC «Interros», OJSC «Gasprom», SCEC «Baykal Ugol» and so on (Suslov, 2010).

The authors of the article have carried out a research of the innovative potential of typical administrative-territorial units (ATUs), and according to its results, the following recommendations concerning territorial development have been formed.

For our research, we have chosen the ATUs of different socio-economical levels of development and situated in various climatic zones of the Krasnoyarsk Region:

- The Evenkiya Municipal Region;
- Minusinsk and the Minusinsk Municipal Region;
- Achinsk;
- Divnogorsk;
- Zheleznogorsk.

An important role in the innovative infrastructure development is played by the interaction of administrations of administrative-territorial units with business enterprises and the Siberian Federal University, as a center of innovations, integration of science, education and industry, formation of competitive humane resources (see references).

In Fig. 1, we represent a principle model of formation of the regional innovative structure on the basis of the business-incubators net.

All over the world, business-incubators are an effective instrument of the regional economy development, which is oriented to support innovative companies on the initial stage of their activity.

In the given model, the University stands out as an active participant of the innovative development of ATUs of various socio-economical levels. Cities' and regional administrations have got an opportunity to form their own innovative structure in correspondence with their own plans of development and using all the potential of the University (Verkhovets et al., 2010).

The Evenkiya Municipal Region
(Allington et al., 2001)

The Region is referred to the Extreme North of Russia. Evenkiya possesses a huge industrial potential, which is predetermined by its richness in natural resources (oil, gas, diamonds, coal, gold and so on.)

We can single out the following directions of perspectives of socio-economical development of the Evenkiya Region:

1. Formation of a new region of oil and gas producing industry;

2. Rational usage of natural resources, creation of economical and ecological preconditions, contributing to steady development of the Evenkiya Region, preservation of traditional forms of the native population's economical activity under traditional natural conditions, provision of ecological stability and safety of industrial territories, first of all of the regions of mining, processing and transportation of the hydrocarbon materials;

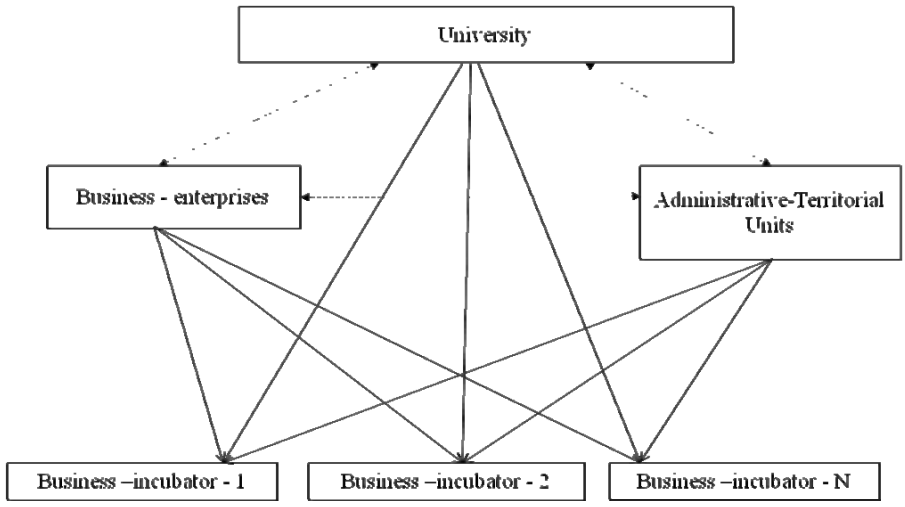


Fig. 1. the model of interaction of the University, ATU and business- enterprises

3. Development of agricultural industry and traditional fishing and hunting industries;

4. Creation of necessary transport infrastructure, taking into account of regional peculiarities, and provision of due transport connections.

Municipal unit urban district – Minusinsk City and the Minusinsk MD. (Administration of the Evenkiya Region)

Minusinsk City is the largest municipal unit in the South of the Krasnoyarsk Region. Its natural-climatic conditions have predetermined its agricultural specialization, wide-spreading of subsidiary personal husbandries, and also a well-developed complex of food-manufacturing industry.

Municipal unit urban district – Achisk City. (Administration of Achinsk www.adm-achinsk.ru).

Achinsk is situated in the western part of the Krasnoyarsk Region and is the third inhabited locality after Krasnoyarsk and Norilsk cities according to its population in the Region. Brown coal is the most important among the natural resources of the Western zone: the western part of the Kansk-Achinsk Coal Basin is situated in the territory of the given zone. There are also deposits of manganese and clays (including white clay), sand, zeolites and fluorites. Timber resources are also rather significant, and are mainly represented by dark coniferous species.

Municipal unit is referred to the most developed industrial zones in the West of the Krasnoyarsk Region. By the beginning of 2009, the industrial complex consisted of 17 large and middle industrial enterprises. Industrial profile of the city is defined by the nonferrous machine industry, petroleum processing, and consumer and food-manufacturing industries.

The main city-forming enterprises of Achinsk are OJSC «RUSAL Achinsk» and OJSC "Achinsk Petroleum Processing Plant of the Eastern Petroleum Company".

Municipal unit urban district – Divnogorsk town. (Administration of Divnogorsk www.divnogorsk-adm.ru).

Divnogorsk town is a satellite town of Krasnoyarsk and is connected with it through the federal vehicle route, rail- and water-ways.

Construction of Divnogorsk is connected to erecting Krasnoyarsk Hydro-Power Electric Station. Today, Divnogorsk is a modern industrial center. Its city-forming enterprises are: OJSC «Krasnoyarsk HEPS»; OJSC "Divnogorsk Plant of Low Voltage Automatic Machines»; «LMP «SKAD» Ltd; «Stroyresurs» Ltd; CJSC «Techpolimer», ICF «Pioneer» Ltd; «Divnogorsk Bread-Baking Plant» Ltd, «Divnogorsk Milling Complex» Ltd.

The CATU Zheleznogorsk city.
(Administration of CATU Zheleznogorsk www.admk26.ru).

Zheleznogorsk is a center of a closed administrative-territorial unit (CATU), of one of the territories, where military-industrial objects with special regime are situated in. Zheleznogorsk has got its special status because of its city-forming enterprises are the Mining and Chemical Combine, and the Scientific-Production Association of Applied Mechanics n.a. M.F. Reshetnyov (OJSC «Information Satellite Systems» n.a. Academic M.F. Reshetnyov »)

The main peculiarity of the city is that some unique high-technological enterprises are situated on its premises.

The FSUE «Mining and Chemical Combine» (MCC) is an industrial enterprise of a large scale and high-technological complexity, which was built in underground mines. At present time, the enterprise is developing steadily and is implying perspective conversion projects, the largest of which are: procedures and technologies of irradiated fuel handling improvement; creation of complex production of semi-conductive silicium; creation of energy-substituting capacities.

For today, OJSC «Information Satellite Systems» n.a. Academic M.F. Reshetnyov» (OJSC «ISS») is one of the most dynamically developing head enterprises of the Russian Aerospace Agency, which deals with development, production and exploitation of space facilities of communication, management, and information retranslation, television, navigation and geodesy. Portfolio of commercial orders of the enterprise is formed by its partners Sodern (France), Astrium (Germany), NEC/Toshiba Space (Japan), and Alcatel Space (France).

In order to research the innovative potential of the chosen territories, we have chosen to use the modified TACIS methodology in the present research (Allington et al., 2001).

The methodology is based upon the process of working seminars with specialists of the field, their questioning in a certain sphere and formation of a general indicator (maturity profile) and a certain scheme of analysis of the gained results.

The gained results are not assigned for comparison of the innovative potentials of separate territories (though, it gives a certain opportunity to correlate the levels of factors development). The conclusions are targeted to obtain a qualitative estimation (possibly, in dynamics as well) of scientific-technical and commercial potentials of a concrete territorial-administrative unit, its analysis and working out of recommendations, which will contribute to the innovative development of the ATU.

One of the key stages of the methodology is the process of drawing of maturity profile of the ATU's innovative development.

Maturity profile is constructed on the basis of analyzing the following:

- the information presented by the ATU's specialists in the process of the open seminar, wherein a small group of the territory administration's senior managers and local experts take part, representing ATU's business community;
- the questionnaires filled up by the ATU's specialists, whose duty is to deal with the issues of the territory development

(which are connected with the innovative activity).

Maturity profile estimates the level of the ATU development in various aspects on the basis of selected factors which define the development of the territory. Its results are presented as a diagram (a curve), which visually illustrates relative levels of various activity spheres' development. The form of the diagram also gives us an opportunity to compare the correlation of levels of factors development of a separate territory with other ATUs.

Proceeding from the set task, the authors have defined the following eight factors: four of them characterize the resources and four rest characterize organizational structures and technologies, as follows:

1. the strategy of ATU's development (presence of targets, their official documentation, possibility of correction, presence of tasks and targets achievement and measurements of their realization);

2. the leading role of the ATU's administration in the innovative development of the territory (if the managers are real leaders or just bureaucratic administrators; their knowledge and practical experience in the sphere of innovative management);

3. external factors (the degree of ATU's administration influence on the innovative development of the region, presence of inter-regional ties with the elements of innovative structure, possibilities of regular consultations with the federal organs of power, region's competitive ability on the innovative way of development);

4. material-technical base of the ATU's enterprises (if the material and technical resources of the ATU's enterprises meet the demands of its innovative development);

5. the level of personnel qualification (qualification level of the senior managers of ATU's administration and enterprises in the sphere of innovative management, personnel training opportunities);

6. financial support and risks (what the degree of financial institutes development on the given territory is, whether there is an opportunity to get concessional lending for small innovational enterprises, relations with financial-industrial groups (business enterprises), work with budgetary and extra-budgetary funds);

7. innovational infrastructure (presence of innovative infrastructure subjects in the given territory, the sufficiency of the innovative infrastructure's existing objects' support (OII) and the necessity of forming some new OII);

8. Support of the small innovational enterprises (on the federal, regional and territorial levels).

We have formulated questions for each factor (in the mentioned questionnaires), and the answers to these questions characterize it most precisely. According to these factors, the level of maturity is defined on the basis of the experts' answers to these questions according to a five-point marking scale.

Level 1 indicates «immaturity» in the given sphere and absence of any significant development.

Level 2 indicates a certain degree of comprehension of the corresponding questions and some little development.

Level 3 shows understanding of the questions and partial development.

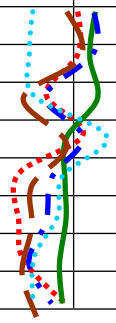
Level 4 shows good knowledge in the given sphere and significant level of development (competency).

Level 5 indicates full understanding of the given question and only small possibility yet to improve the level (superiority).

Results of the questionnaires analysis of the considered five territorial-administrative units are given in Table 1 as maturity profiles.

Table 1. Maturity profiles of typical ATUs

№	The level of development	1 (low)	2	3	4	5 (high)
1	Targets and tasks (strategy)					
2	The leading role of administration					
3	External factors					
4	Material and technical resources					
5	Personnel qualification level					
6	Financial support and risks					
7	Level of innovative infrastructure development					
8	Level of support of the minor innovative enterprises					



(dark-blue) Maturity profile of Achinsk.
(green) Maturity profile of Minusinsk.
(brown) Maturity profile of Divnogorsk.
(red) Maturity profile of Tura (settlement of urban type).
(blue) Maturity profile of CATU Zheleznogorsk.

All in all, we have questioned 96 specialists: 31 people in Achinsk, 17 people in Minusinsk, 14 people in Divnogorsk, 23 people in Tura and 18 people in Zheleznogorsk.

Definition of targets and tasks (strategy)

In Achinsk, the opinions of respondents have divided on the first question of the section (factor); for this reason we can come to the conclusion that the documents concerning ATU's designated purpose and their realizations officially exist, but they are accessible only to the ATU's administration and to the directors of large enterprises. It is also proved by the smallest number of points in the section of answers to the second question («Estimate the degree of participation of the scientific-technical public in definition of targets and tasks of the ATU's development» – 2.9), as long as scientific-technical public considers that it could participate in defining and solving of ATU's strategic problems more actively.

In the given section, the Minusinsk respondents have given the biggest number of points while answering questions 1, 3, 4 (targets precision, frequency of their correction, efficiency of the normative acts), and the question concerning orientation on the long-term perspective has got the smallest number of points. It means that all the respondents claim the necessity to increase the horizon of the long-term planning.

Various estimations of the territories have been given when answering the question «Define the degree of coincidence of your values and targets with the targets of ATU's socio-economical development». The Minusinsk respondents have got low rates, while respondents from Divnogorsk and the Tura settlement of urban type have got high rates. It means that the Minusinsk administration has to do a wide explanatory work with its population when accepting purpose-oriented programs of the region development, while the main part of the citizens of Divnogorsk and Tura agree with the existing documented designation of their ATU.

The respondents of CATU Zheleznogorsk consider that:

- It is necessary to attract scientific-technical community in the course of defining ATU's development targets (it is very close to the opinion of the Achinsk respondents);

- normative basis of the territory perspective development is accurately oriented to solution of the long-term strategic tasks, but the efficiency of the normative acts, laws and so on concerning solution of the internal tasks of ATU's development is not high enough, and it enables us to conclude that it is necessary to search for additional, more efficient mechanisms.

The leading role of the ATU's administration.

In the given section, Achinsk and Divnogorsk have got the highest rates in the answers to the questions concerning the quality and experience of the ATU's management personnel. After that we estimate their preparedness (including theoretical one) in the sphere of innovative management. The respondents also suppose that the administration does not pay enough attention to the problems of small business enterprises, and the issue of the ATU's administration influence on the financial-industrial groups for the purpose of their participation in socio-economical development of the region has got the lowest estimation.

The question «Evaluate the degree of the ATU's administration influence on the financial-industrial groups for the purpose of their participation in socio-economical development of the territory» has got one of the highest estimation in the given section by the respondents of Minusinsk and u.t.s. Tura, that is the ATU's administration works in the given direction and there are certain results, which are known to the population.

In u.t.s. Tura, all the questions of the given factor have got rather equal estimations, excluding the question about the ATU's administration influence on the financial-industrial groups (on businesses).

In CATU Zheleznogorsk, the results, which have been achieved by the innovative business, give us the grounds to state that in comparison with other territories, businessmen's requirements to ATU's administration (requirements, connected to the territory's innovative development) are much higher. The administration has certain managerial resources, it is proved by the highest estimation of the given factor of the question «Estimate the degree of ATU's governability» (there is only one estimation higher than 3 points).

Interaction with the external surrounding.

The respondents from Minusinsk, Divnogorsk, u.t.s. Tura and Zheleznogorsk share one opinion on the given section and mark that it is very difficult to develop innovative activity in the region without being supported by the State («Estimate the degree of the ATU's dependability on the governmental regulation in the sphere of innovative activity» – 3.65 points, 3.92 points, 3.78 points, and 3.71 points correspondingly). The respondents are also unanimous that it is necessary:

- to develop an additional legislative base of the RF and the Region, which will be connected to the development of their innovative activity;

- to search for external sources of financial resources for innovative infrastructure development and small business support on the initial stages of their development.

At the same time, some territories have already got some innovative potential. Thus, the question: «Evaluate the level of ATU's enterprises demand for scientific-technical products» has got 3.2 points in Achinsk; while the question «Define the degree of sufficiency of the personnel training and re-training in the ATU's industrial enterprises in the sphere of innovative activity» has been highly estimated in CATU Zheleznogorsk, and the question: «Estimate the degree of cooperation of ATU's organizations and

enterprises with HEIs and academic institutes in the sphere of new technologies» has got 3.41 points in Minusinsk (probably because of this very fact, only one territory has achieved the 3-d level of development in general estimation of the considered factor).

Material and technical resources of the ATU's enterprises and organizations.

Estimations of the considered ATU's enterprises and organizations concerning their access to informational resources of the Russian innovative system are rather high (3.58 points for Divnogorsk, 3.75 points for Achinsk, 3.53 points for Minusinsk, 3.78 points for Tura and 3.36 points for Zheleznogorsk), it also bespeaks of the fact that the following regions are informatively independent. Though, we need to pay special attention to the questions connected to technical maintenance, restoration and repairing of the instrumentation pool, as far as activity of the industrial and especially of small scientific-intensive enterprises is almost impossible without their solution.

The major part of the respondents understands the necessity of forming a municipal business-incubator; though, they consider that it is problematic to find territories and industrial premises for this purpose (probably, it is because of lack of corresponding information). This is the question to the ATU's administration.

Only a half of respondents from Minusinsk think that creation of a Regional business-incubator branch and a business-incubator jointly with SFU can give an impulse to the small scientific-intensive business development, while others underestimate the given necessity. At the same time, the other four regions consider creation of the Regional business-incubator branch and the business-incubator jointly with SFU to be a very good idea (3.75 points for Divnogorsk, 3.65 points for Achinsk, 3.35 points for Tura and 3.57 points for Zheleznogorsk).

Level of personnel qualification.

In correspondence with the table «Interpretation of the tables of qualitative estimation of innovative potential», the average value of the given Fig. corresponds to level 2 of maturity profile of the ATU's innovational development, and it means that:

- the average age of personnel of the ATU's administration, of the regional enterprises and organizations is 40 years old and older;
- personnel education and training (administration, regional enterprises and organizations) are mainly technical;
- scientific research activity on the ATU's territory is neither systematic nor successive;
- annually, ATUs carry out one or two territorial events (conferences, round tables, exhibitions and so on concerning the questions of the regional long-term development); besides, there is an especially acute problem concerning attracting of new specialists to ATU's enterprises, there is no constant collaboration with the specialists of HEIs and academic institutions.

Financial support and risks of innovative structure.

The lowest estimation of the section (and also among all the questions of the questionnaire) has been given by the respondents of the considered ATU's to the question of evaluation of the share of various funds' participation (The Fund for the Promotion of the Development of Small Forms of Enterprises in the Scientific and Technical Sphere – Bortnik's Fund, RFFS- the Russian Federal Fund of Science, PISA- the Promotion

of Innovative Scientific Activity and others.) in financing of the small innovative business on the territories of ATUs.

Level of Innovative Infrastructure Development.

According to the answers to the questions of the given section, the level of innovative development of the territorial infrastructure is estimated by the respondents as rather low. That is why the simplest thing to do is to collaborate with the already existing structures (questions: projects estimations, creation of conditions for development of small science-intensive enterprises, their financing and so on.) and adoption of the experience obtained because the neighboring ATU regions have already organized scientific centers, and they have already got certain experience of innovative infrastructure objects creation (The Tomsk Region: higher educational institutions, institutions of the RAS Siberian branch, more than 20 **municipal centers of business support and others**; The Novosibirsk Oblast: higher educational institutions, institutions of the RAS Siberian branch, technology parks and others; Krasnoyarsk: higher educational institutions (including SFU), institutions of the RAS Siberian branch, city and regional business-incubators and others.).

Level of support of small innovative enterprises by the organs of power and structures of different levels.

The respondents of the considered territories have shared one common opinion that the level of support of small innovative enterprises by the organs of power and other structures is insufficient; especially it concerns the material and technical resources and representation. Thereat, there has been raised a question concerning low activity and lack of interest from the side of financial structures, which, apparently, do not see any perspectives for their activity in the course of development of the small innovative enterprises.

According to the results of the carried research of the selected territories, we have worked out the following practical recommendations concerning their innovative climate improvement. Here, we single out the following common recommendations for all the ATUs:

- To run a complex of measures, involving wide public, in order to define the directions of the cities' development, including singling out of the innovative component. According to the obtained results, we recommend to accept an official document concluding concrete tasks and to control their execution (using the resources of the local mass media);
- To organize wide re-training of the top and mid-level managers in the personnel qualification programs, such as: the Federal program of re-training of the management personnel for national economy enterprises and organizations (Presidential program), the Executive MBA program and others;
- To organize round tables on the innovative topics with participation of scientists of the Siberian Federal University, of top-managers of ATU's administration and enterprises and involving well-known specialists from other regions (Krasnoyarsk, Moscow, Novosibirsk, Tomsk);
- To form a database of projects (including innovative ones) of potential interest and realization on the territories. To run an promotional campaign in mass media, in Russian and international informational nets, for example, such as RTTN;
- To contact and collaborate with the neighboring regions, having experience

of innovational infrastructure development (Tomsk, Novosibirsk, Krasnoyarsk), on the issues of innovational infrastructure creation and development.

Analysis of the gained results has proved the necessity and opportunity to create a regional innovational infrastructure on the basis of efficient collaboration of the University, business enterprises and the territories.

References

Verkhovets et al., «The Role of Federal Universities in the Regional Innovational Infrastructure Formation (on the example of the Siberian Federal University), *Innovations*, 10 (2010).

Dreshchinsky, «National Innovative System Formation Based on Business, Science and Education Integration», *Innovations*, 8 (2010), 63-66.

Bukharov et al., «On the Innovative Structure of University Complexes», *Innovations*, 7 (2008), 38-43.

Bukharov et al., «On the Innovative Structure of University Complexes», *Journal of Siberian Federal University. Humanities & Social Sciences*, 3 (2008), 318-327.

Kirko et al., «The Model of the Regional Innovative Platform of the Autonomic Educational Institution on the Example of the Siberian Federal University», *Journal of Siberian Federal University. Humanities & Social Sciences*, 1 (2011), 86-97.

Lur'e, «The areas of innovation development: experience of regions», *Innovations*, 2 (2009), 31–44.

Suslov, «Strategy of Siberia's Development: from Resource Economy to Innovation Economy», *Journal of Siberian Federal University. Humanities & Social Sciences*, 6 (2010 3), 940-950.

Allington et al., «Innovational Centers and Scientific-towns», the TACIS Project FinRus 9804, (Obninsk, 2001).

The Official Web-Site of the Krasnoyarsk Region http://www.krskstate.ru/krasnoyarskkray/about

Administration of the Evenkiya Region www.evenkya.ru

Administration of Achinsk www.adm-achinsk.ru

Administration of Divnogorsk www.divnogorsk-adm.ru

Administration of CATU Zheleznogorsk www.admk26.ru

Профиль зрелости инновационного развития административно-территориальных образований Красноярского края

В.И. Кирко,
А.В. Бухаров, А.В. Кеуш
Сибирский федеральный университет
Россия 660041, Красноярск, пр. Свободный, 79

В статье представлено исследование инновационного потенциала типовых территориально-административных образований Красноярского края: г. Минусинск, пгт. Тура, г. Ачинск, г. Дивногорск; г. Железногорск. Выбранные территории различаются уровнем социально-экономического развития и расположены в различных климатических зонах Красноярского края. Для построения профиля зрелости инновационного развития указанных территорий в работе была использована модифицированная методика ТАСИС.

Ключевые слова: профиль зрелости инновационного развития; инновационный потенциал.