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Adoption of Cartographic Method for the Assessment of Aggregate Tourism Potential

Organization of tourism and recreation presupposes the existence of certain prerequisites of the territory. These prerequisites may be involved in tourist activities, which is a multidimensional phenomenon. The difficulty lies in the accounting and knowledge of the prerequisites of certain territory. In the article it is come under review the adoption of the assessment of Aggregate Tourism Potential, which is based on the cartographic method of research, on the example of Kazakhstan. During the process of research, we made extensive use of statistical, mathematical, cartographic methods and the method of computer modeling of geographic information systems (GIS), as well as the methodology of the assessment of Aggregate Tourism Potential of territory, whose author is Stanislav R. Erdavletov. The methodology of the assessment of Aggregate Tourism Potential consists of logical fulfilling of several stages. The methodology is based on the method of grade bonitation of territory. In addition to that, we focus a lot on the cartographic method of research, which is aimed at a comprehensive vision of the research problems, while having a visual effect. In consequence of research, it was determined that the Aggregate Tourism Potential of the territory of Kazakhstan is 10003 points. Based on experimental and quantitative data taxonomy and allocation of oblasts and regions of the country were held according to the Aggregate Tourism Potential. The result of the research is the complex map of the development of tourism on the territory of the Republic of Kazakhstan.

Key words: the assessment, Aggregate Tourism Potential, Kazakhstan, cartographic method, GIS.

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Жиынтық туристік әлеуетті бағалауда картографиялық әдісті қолдану

Туризм және рекреациялық жұмыстарды ұйымдастыру көпөлшемді құбылыс болып табылып, туристік іс-шараларға тартылуы мүмкін белгілі бір алғышарттар аумағын көздейді. Белгілі бір аумақты зерттеуде есеп және дереккөздер алғышарттарын жинақтау күрделі болып табылады. Бұл мақалада жиынтық туристік әлеуеті бағаланады, яғни картографиялық зерттеу әдісін негізге ала отырып, Қазақстан территориясы мысалында жүзеге асырылды. Зерттеудің мақсаты Қазақстан Республикасының туристік әлеуетіне жиынтық баға бере отырып, картографиялық зерттеу әдісін қолдану. Зерттеу барысында статистикалық, математикалық, картографиялық, геоақпараттық компьютерлік модельдеу әдістері кеңінен қолданылды, сондай-ақ, жұмыстың әдістемелік негізі ретінде С.Р. Ердаuletовтың жиынтық туристік әлеуетті бағалау әдістемесі арқау болды. Бірнеше реттілікті орындалатын кезеңдерден тұрады. Бұл әдістеме балдық бағалау (бонитировка) қағидасына негізделген. Зерттеуде картографиялық әдісті басты назарға ала отырып, визуалды әсерге ие, зерттеу мәселелеріне кешенді көзқарасқа бағытталған. Зерттеу нәтижесінде, Қазақстан территориясының жиынтық туристік әлеуетті бағалау 10003 балға тең болды. Тәжірибелік және эксперименттік сандық мәліметтер негізінде таксономия жүргізілді және жиынтық туристік әлеуеті бойынша республиканың облыстары мен аудандары үлестірілді. Зерттеудің қорытындысы болып, Қазақстан Республикасы территориясында туризм дамуының кешенді картасы құрастырылды.

Түйін сөздер: бағалау, жиынтық туристік әлеует, Қазақстан, картографиялық әдіс, ГАЗ.

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Применение картографического метода для оценки совокупного туристского потенциала

В статье рассматривается применение оценки совокупного туристского потенциала, в основе которой лежит картографический метод исследования на примере территории Казахстана. Целью нашего исследования является оценка совокупного туристского потенциала Республики Казахстан, применяя для этого картографический метод исследования. В процессе исследования мы широко использовали статистический, математический, картографический методы, метод компьютерного моделирования геоинформационных систем (ГИС), а также методику оценки совокупного туристского потенциала территории, автором которой является Ердаuletов С.Р. Методика оценки совокупного туристского потенциала состоит из последовательного выполнения нескольких этапов. В основе методики лежит метод балльной бонитировки территории. В результате исследования было установлено, что совокупный туристский потенциал всей территории Казахстана составляет 10003 балла. Итогом исследования является комплексная карта развития туризма на территории Республики Казахстан.

Ключевые слова: оценка, совокупный туристский потенциал, Казахстан, картографический метод, ГИС.

**ADOPTION OF
CARTOGRAPHIC
METHOD FOR THE
ASSESSMENT OF
AGGREGATE TOURISM
POTENTIAL****Introduction**

Organization of tourism and recreation is a complex task that requires broad participation in its decision of experts from different fields (Butler R., 2015). The main role in the study and scientific substantiation of the rational use of tourism and recreational potential of the territory should belong to the professionals of tourism sector. Only a comprehensive analysis and assessment of the recreational opportunities of the territory, taking into account the historical, cultural, social, economic and geographic factors at the same time, will help to find the optimal solution to this problem (Kruzhalin V.I., 2006).

The purpose of our research is an assessment of the Aggregate Tourism Potential of the Republic of Kazakhstan, widely applying for this cartographic method of research (Jiang B., 2015). Considering the complex nature of tourism, which involves a wide variety of branches of economy, we have tried to take into account all the elements that involved in the tourist activities on the territory of Kazakhstan.

Many scientists and researchers study the issues of recreational assessment of territory. Among the foreign experts it may be noted Grand Girard V. and Quaranta G., Coratza P. and Gusti C., Rojsek D. and Rivas V., Panizza M., Frenchman Jean-Pierre Pralong (Pralong J., 2005: 189), Slovak specialists Jan Supuka and Roberta Štápanková (Supuka J., 2008), and others. Among the local researchers we note Mukhina L.I. (Mukhina L.I., 1973), Efremenko E.V. (Erdavletov S.R., 2010: 207), as well as Erdavletov S.R. (Erdavletov S.R., 2006).

A large number of papers are devoted to the assessment of the recreational potential of the territories, with a predominance of natural and resource direction and landscape approach (Vedenina U.A., Krasnoyarskaya N.V., Shevtsova N.S., Donchev A.V., Zhukov V.K., Kozhuhov U.S. etc.) (Bulashev A.Y., 2009). Insufficient attention is paid to the direction of the assessment and mapping of combinations of natural and socio-economic conditions for development of recreation. Virtually there are no works devoted to mapping of problems of recreational areas (except ecological and nature using directions considered by Yakovenko I.M.), as well as the level of development of recreational regions (Uvarova A.K., 2009: 28).

The issues concerning the suitability of geographical space for tourist movement is one of the major problems of geography of tourism (Erdavletov S.R., 2010: 132). If we consider these scientific problems in the applied aspect, the question of assessment of the territory of Kazakhstan for tourist movement is one of the key.

According to the received opinion of the citizens of Kazakhstan as well as foreign guests, the territory of our country has great tourism potential. This opinion and vision of the situation are not supported by empirical data and facts. Relatively not long ago, nobody made an attempt of the assessment of the Aggregate Tourism Potential of the territory of the Republic of Kazakhstan.

Material and methods

To achieve the objectives of the research and to assess the Aggregate Tourism Potential of Kazakhstan, as well as the level of development of tourism in the Republic of Kazakhstan as a whole, we used a variety of modern methods that are widely used in tourism. Currently there is no complete science on tourism, which would have own theoretical and methodological fundamentals. This science is in its infancy and has integral and synthetic nature. Therefore, science on tourism is appealed to operate with various methods of fundamental and applied sciences. At the same time, there are some specific features and characteristics.

During the process of research, we made extensive use of statistical (Vardeman S.B., 2003), mathematical, cartographic methods, the method of computer modeling of geographic information systems (GIS) (Qiu F., 2012), as well as the methodology of the assessment of Aggregate Tourism Potential of territory, whose author is Erdavletov S.R. In addition to that, we focus a lot on the cartographic method of research, which is aimed at a comprehensive vision of the research problems, while having a visual effect.

The cartographic method is the systematization and generalization of the results of geographical research in the form of cartographic models, maps, schematic map. Exactly map plays an important role in the research of spatial patterns of certain phenomena, and its drawing is also an important result of geographical research. Map in turn designed for scientific and practical reflection of phenomena, objects, for illustration and educational purposes (2011).

The development of modern methods of computer modeling of geographic information systems

and GIS technology in general have a great importance. It allows creating cartographic models of any complexity, spending much shorter period of time than it was before.

For computer modeling of the results of the assessment of the Aggregate Tourism Potential of the territory of Kazakhstan, we used satellite images and software package CorelDraw Graphics Suite X6, developed by Canadian company «Corel Corporation».

The methodology of the assessment of Aggregate Tourism Potential consists of logical fulfilling of several stages. The methodology is based on the method of gradation of territory.

The first stage is the collection, systematization and ordering experienced and quantitative data necessary for a comprehensive assessment of the territory. In accordance to the figure 1, Aggregate Tourism Potential of territory consists of the following three blocks of indicators: Natural Recreational Resources, Social and Economic Recreational Resources and Objects of Tourism Facilities. On the basis of statistical and experimental data, the total information is systematized in three blocks, each of which consists of a certain number of criteria indicators. In consequence of consolidation and integration of quantitative indicators of all three blocks, we get the Aggregate Tourism Potential of the territory in quantification.

The assessment of Aggregate Tourism Potential of territory has a relative character. Therefore, for the assessment of territory it is necessary to systematize the information on separate regions, which as a result will be compared with each other by the level of the Aggregate Tourism Potential. Hence, the most correct is the systematization of all the information in a two-dimensional table for each block with the resulting table of quantitative data of the Aggregate Tourism Potential of the territory.

The principle of systematization and accounting of statistical and experimental data for each block is the same. 1 point is assigned for every tourism object or phenomenon. An exception is the assessment of attractiveness of natural landscapes, where a separate landscape can get from 0 to 3 points. To assess the attractiveness of natural landscapes using landscape map area. For our research, we used the Landscape Map of Kazakhstan with a scale 1:5 000 000 (2010).

Considering four stages scale of values from 0 to 3 points, there are four types of territories (landscapes) with different degrees of tourist attractiveness:

- 3 points – very favourable;
- 2 points – favourable;

1 point –less favourable;
0 points – unfavourable.

The very favorable landscapes are the landscapes, having the conditions for long-term and all kinds of short-term recreation of all kinds, i.e.the landscapes, where there are all the components of natural complex (mountains, forest, hydrographic objects). The favorable landscapes are the landscapes where one of the components of natural complex is absent (for example, mountains). The less favourable landscapes are the landscapes where there is only 1 component of natural complex. And unfavourable landscapes are the landscapes where attractive components for tourism and recreation are missing completely (Erdavletov S.R., 2006).

As a result of systematization and accounting of the tourism objects and phenomena, we have received a two-dimensional matrix (table) of final data for each region of the territory. In our case, two-dimensional table of final data contains a quantitative assessment of the Aggregate Tourism Potential for

each oblast and each economic region of the Republic of Kazakhstan.

The next stage of a comprehensive assessment of Aggregate Tourism Potential of territory are the analysis of final quantitative data and the forming of the assessment scale, which, in turn, is the basis for zoning of the territory of the oblasts and regions of Kazakhstan on the extent of the Aggregate Tourism Potential.

The scale has a synthetic character, as the assessment lies in it. The scales show the evaluating relationship between subject and object. Each step of the scale is a measure of the intensity of property interaction of this object with condition of the subject. The intensity of interaction may vary from insignificant to strong. The four stages scale of assessment of natural prerequisites for recreation includes the following gradation: 1) very favourable; 2) favourable; 3) less favourable; 4) unfavourable. The zoning of territory is determined by the sum of points of every region.

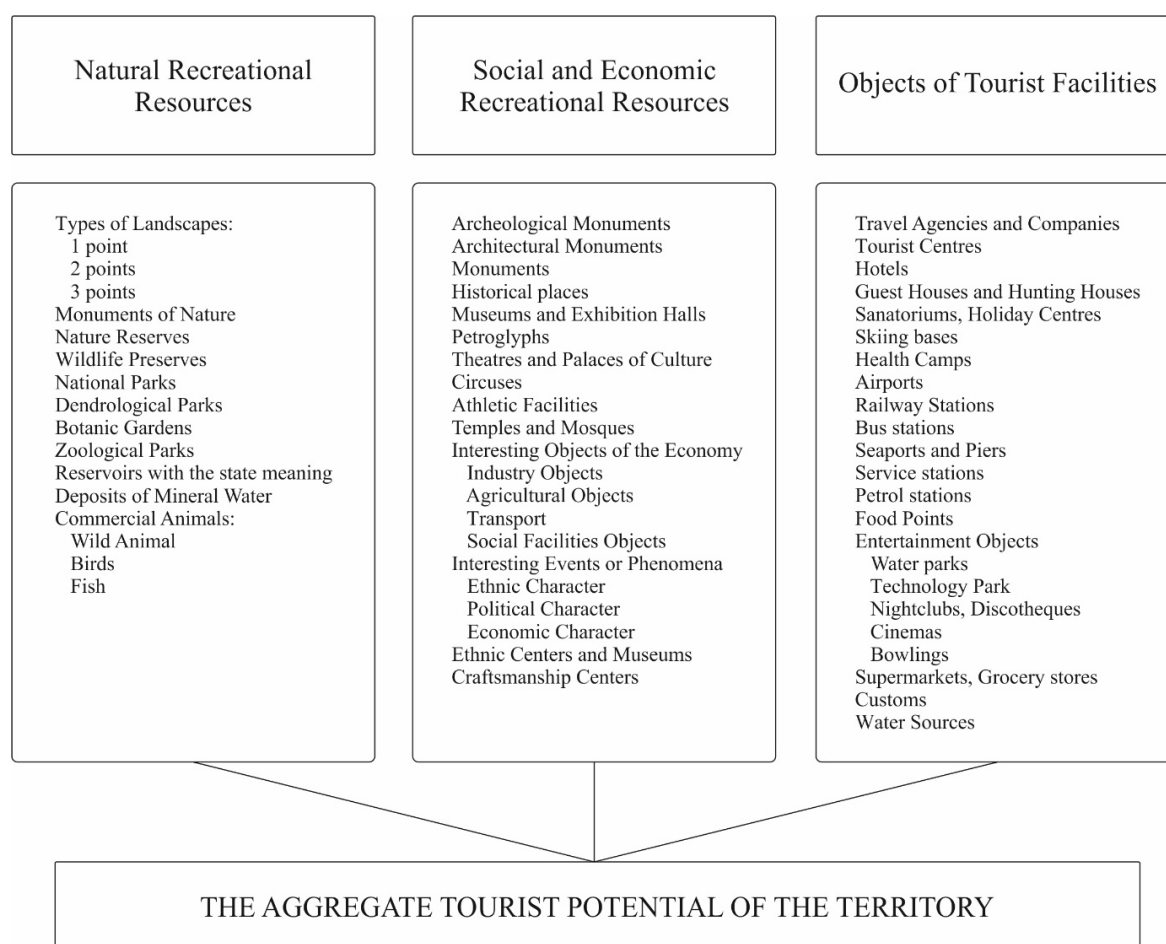


Figure 1 – The criteria (the Indicators) of the assessment of Aggregate Tourism Potential of territory (Erdavletov S.R., 2006)

Complex and little known issue is the question of the intervals value between steps. To answer this question, it is necessary to study the nature of the relationship between subject and object: they are linear or nonlinear. In our case, probably, better to take equal intervals.

Based on the analysis of data we are working out the final four stages to describe the scale of the Aggregate Tourism Potential of oblasts of the Republic of Kazakhstan and the country as a whole. Intervals between the steps taken equal. The highest rate is characterized by «high potential», follow – the «average potential», then – «low potential» and «extremely low potential». In this case the following scale intervals «high potential» (over 1200), «average potential» (800 to 1200), a «low potential» (400 to 800), and the «extremely low potential» (less than 400).

This scale is displayed on the map in the «Legend» and is painted in color. According to her, brushing areas being oblasts of the Republic of Kazakhstan.

This color should be chosen in the same key (in this case, yellow), and its intensity must point to a different degree of favorability – from bright yellow (more than 1200 points), light yellow (from 800 to 1200 points) and pale yellow (400-800 points) to white, that is unfilled, in the case of unfavorable resources.

The last step is the preparation and execution of a comprehensive map of the Aggregate Tourism Potential of the territory of Kazakhstan. Method of quantitative background area regions of Kazakhstan are colored in one color with different tonalities in accordance with our scale.

A comprehensive map of the total tourist potential applied method of qualitative background landscapes have the tourist attractiveness. This can be done by different shading. Thus, the landscape as if superimposed on a color background, characterized by different degree in the aggregate tourist potential of the region.

On the creating a color pattern, consisting of a painted landscape contours and shaded contours of the region, should be put out of scale conventional signs other objects. True, some of them (depending on the scale of the map), such as parks, wildlife sanctuaries and national parks can be visualized and scale marks (Erdavletov S.R., 2006).

In addition, a map of the total tourist potential of the area can be extended card-frame, on which the zoning for the totality of the tourist potential will be fulfilled is not within the area, and larger areas.

After that, the total comprehensive map of tourist potential of acquiring a finished look and thus, the complex assessment of the Aggregate Tourism Potential of the territory is completed.

Results and discussion

The result of our research is the map «The Aggregate Tourism Potential of Kazakhstan», which is shown in picture 2.

As a result of a comprehensive assessment of the combined high tourist potential have Almaty and Akmola oblasts, who scored 2062 and 1377 points according to diagram 1.

In this case, we note a significant advance of the Almaty oblast in terms of development of tourism, which is, of course, is the main tourist center of the Republic of Kazakhstan, with a rich natural tourist and recreational resources, and development of tourism infrastructure.

Akmola oblast also has a high potential for tourism. This is due to the rapid development of the republic's capital, Astana, and in connection with the multiplier effect, which applies to the entire territory of the region. In addition, Akmola oblast is relatively rich in natural tourist and recreational resources.

According to the figure 2 the average tourism potential characterized Karaganda and East-Kazakhstan oblasts, which gained respectively 1021 and 958 points.

East Kazakhstan oblast takes the leading position on the natural attractiveness of tourist and recreational resources, but also characterized by a slight development of tourist infrastructure.

Karaganda oblast stands out on any of the criteria, and has averages. A key factor is the territory of the area. Karaganda oblast is the largest region by area in comparison with other regions of Kazakhstan.

Kostanai, Pavlodar, West Kazakhstan, Aktobe, South Kazakhstan and Zhambyl oblasts have low tourism potential. Here separately distinguish the South Kazakhstan oblast, the total tourist potential which is 727 points.

Unfilled territories, those are the areas with extremely low potential, were the North-Kazakhstan, Mangystau and Kyzylorda regions, which lag far behind in terms of development of tourism in the country.

Considering the tourist attractiveness of natural landscapes, which are also marked on our map, we can distinguish two areas spread most of attractive natural landscapes. The first area of distribution, which has the most attractive landscapes – a territo-

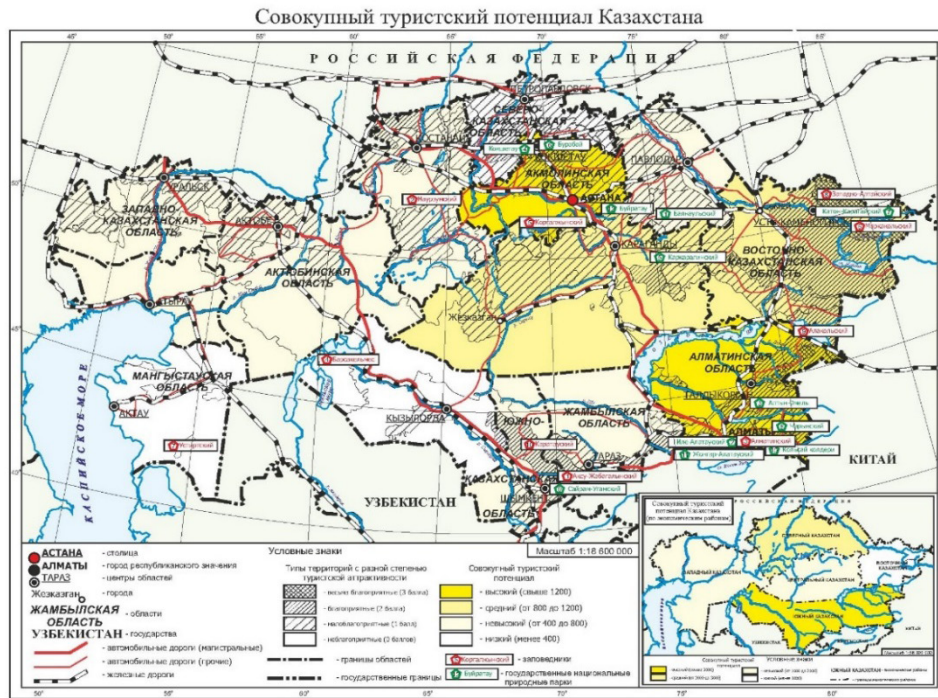


Figure 2 – The map «The Aggregate Tourism Potential of Kazakhstan» (compiled by the authors)

ry of the south-western and eastern Kazakhstan. The second area of distribution – a vast area around the Akmola region, which includes the area of northern and central economic regions of Kazakhstan.

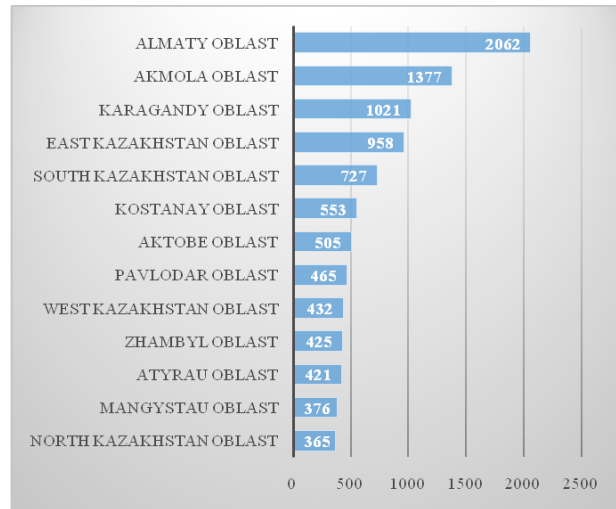
In addition, we have added a map of «The Aggregate Tourism Potential of Kazakhstan» punch-card-smaller scale, which is made on the degree of regionalization of the total tourist potential economic regions of the Republic of Kazakhstan.

Note the high potential, as well as a significant advance in the degree of total tourism potential of South Kazakhstan and East Kazakhstan low potential compared to other economic areas. This situation is explained by the small East Kazakhstan area of its territory in comparison with other economic regions of Kazakhstan.

During the investigation it was found that the total tourist potential of the territory of Kazakhstan is 10003 points. Among them more than a third from the South Kazakhstan.

The leading position of the Southern Kazakhstan in the distribution of total tourism potential among economic regions of the Republic of Kazakhstan spoke about both the natural attractiveness of the region and a higher level of development of tourism infrastructure.

However, on the natural attractiveness of the leading place among the regions of the republic occupies the East Kazakhstan region, which has great



The diagram 1 – Distribution of the Oblasts (Regions) of Republic of Kazakhstan on the Level of Aggregate Tourism Potential in 2015 (made up by the authors)

prospects in the future. The level of infrastructure development of the East Kazakhstan region leaves much to be desired. Therefore, it is possible to bring this area of Kazakhstan’s leading positions and attract additional tourist flows to the region.

In accordance with a comprehensive map of the total tourism potential should be noted that the residents of Western Kazakhstan and Kyzylorda oblast

are remoteness from the developed regions in relation to tourism, and hence demand for domestic tourism product is unsatisfactory. While the ability to pay in the cities of Atyrau and Mangistau regions is one of the highest in the country due to the development of the oil industry. This fact should be taken into account when planning the development of tourism in Kazakhstan.

Conclusion

Conduct a comprehensive assessment of the total tourist potential of the Republic of Kazakhstan, using the cartographic method of research, it allowed us to obtain a complete picture of the development of tourism in Kazakhstan.

Particular importance belongs cartographic method of research, using which the researcher can build logical-and-effect relationships and understand the nature and causes of the interaction of the studied processes and phenomena.

Suppose we would not have constituted a comprehensive map of the total tourist potential of the territory of Kazakhstan. As a result, we have received a huge amount of data that must be analyzed to identify trends and tendencies that will provide forecasts and generate any recommendations. Thus, to perform this work it would take much more time.

Hence, highlighted the following benefits of the tourist and geographical studies, which are based on a mapping method:

- 1) The vision of a holistic picture of the processes and phenomena;
- 2) Visualization of quantitative and qualitative data;

3) The possibility of operational, tactical and strategic forecasting;

4) Reducing the time for analysis and decision-making;

5) Clarity;

6) The ability to associate with other cartographic models of processes and phenomena.

Thus, the application of methodology for assessing total tourism potential was compiled comprehensive map «The Aggregate Tourism Potential of Kazakhstan» on the basis of experimental and experimental quantitative data.

As a result, the total tourist potential of Kazakhstan is 10003 points. Almaty and Akmola oblasts are leading and the most attractive and appealing.

By the number of points of total tourist potential of Almaty region takes the first place with 2062 points. The lowest score is the North-Kazakhstan region, which scored just 365 points.

The goal of the study was performed. Note the complex nature of the evaluation procedure that follows, and it is an advantage due to the multidimensional nature of tourism events and relationships. In addition, another advantage of this method is a mapping method, which is the basis of the technique, the author of which is Stanislav Erdavletov.

Further studies may be aimed at clarifying assessment methodology, as well as the account of the fact the area assessed territory. Also, it makes sense to assess in each of the regions of the republic for the planning and forecasting of tourist activity on the weekend, that is, the organization of tourism during the weekend due to the increase in the number of short trips, as well as current trends in the development of international tourism in the Republic of Kazakhstan.

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