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Moral values in family relations of youth in Arkhangelsk[1]

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Abstract. The article presents the results of a sociological survey conducted in December 2014 — May 2015 in Arkhangelsk. The aim of the study was to make an image of the perfect marriage and analysis of the role of moral values in family-marriage attitudes of contemporary youth in the Arkhangelsk. By using such methods as questionnaire survey, document analysis and expert interviews, data were obtained, largely duplicating the result of the survey conducted by FOM and important in predicting the change of the role of spirituality in family values of youth.

Keywords: *marriage, family, youth, morality, values, spirituality*

Introduction

Areas of the Arctic zone of Russia at the moment are the most promising in terms of the state. However, their development depends on the activity of socio-demographic behavior of young generations. The image of the "ideal young family" in the minds of both rural and urban residents determines the future of this region. Even in the recent past it was thought that every young person should be prepared and, most importantly, must be willing to become a father or mother. In today's world, we can see ambiguous picture: often frivolous attitude towards sexuality is formed in youth, their attitude toward marriage and children as a barrier to a successful career, which, in turn, is a benchmark of success. Someone may consider such attitude to the future immoral and selfish, but this way of thinking is not associated with the departure of the current youth from standard family values laid down by religion, and rooted in the minds of the older generation, but with the changes in the whole society (globalization, gender equality, economic situation).

[1] This article was prepared within the framework of the study, supported by a grant from the Russian Science Foundation — the project № 15-18-00104 “Russian Arctic: from conceptualization to effective model of state ethno-national policy in the context of stable development of regions”.

If we turn to the modern Russian society, and to the people of the Russian north in particular, it should be noted that young people tends to settle in life: to buy housing, to build a successful career, to ensure their old age. Marriage and children are now treated as "procreation" and "extra material costs." Our research is made on materials of Arkhangelsk, it is extremely important for the forecasting of demographic situation of the Arkhangelsk region and for the analysis of the changing role of moral values in family relations of youth.

Opinions of the reseachers of family and marriage

To draw a conclusion about changing family values, you must turn to the sources, and more specifically to the Bible. It contains the ideas of different positions of partners in marriage: "Wives, submit yourselves unto your own husbands, as unto the Lord. For the husband is head of the wife as Christ is the head of the church ... But as the church is subject to Christ, so also wives to their husbands in everything." "But I suffer not a woman to teach, nor to usurp authority over the man, but to be in silence. For Adam was first formed, then Eve; And Adam was not deceived"[1].

At the same time, a husband should love and cherish his wife as Christ loves the Church. Due to such statements of the apostle Paul, we can conclude that in Christianity such basic family values, as patriarchy, mutual respect, trust and mutual support are found. With the course of time, all values undergo certain changes, and the same refers to family values. Then we should apply to the works of researchers to specify these metamorphoses.

Researchers argue for a long time already about the cnange of the family and marriage image. For example, an outstanding scientist, Sorokin P.A., considering the institution of the family, came to the conclusion that it is going through a serious crisis. [2] As a proof of the coming crisis of matrimony Sorokin Pitirim gives following facts: a decrease in the number of registered marriages, increase of divorces, decrease in the birth rate, increase of the number of illegitimate children, the weak protection of marriage by the state, prostitution growth and destruction of the religious foundations of marriage. Sorokin P.A. condemns those families which unwilling to have children, because children, in his opinion, are the foundation of marriage. The author thinks that one more reason in family crisis is the loss of intercommunication between parents and their children. The family stopped to make functions of educator, school, and guardian. Now all of these functions are performed by different organizations [3]. The result of his statements — the value of family lost its importance for the people, now free relationships and view about children as a burden are in vogue.

It is Interesting, that Sorokin P.A. considered as marriage only relationships recognized by the state, that is officially registered. Thus, for example, a wedding in church he did not regard as marriage. This position is shared by most part of modern youth.

Golod S.I. compares women with the Jews. [4] Women are just as this nation which for a long time did not have any freedom, but then, having received it, were forced to very fastly prove their right to "otherness". Since the rules and laws were set by men, "ideal human beings", for women it was difficult to change anything here. But it was done with patient adoption by women of domestic violence and "one-sided" faithfulness in families. Since then the patriarchal family model was destroyed. Weakening of dependence of children from their parents and a wife from a husband suggests a new type of family. "Family Hearth" has now become a place where people can come to get everything they need, anything they could not get in rest social environment. Golod S.I. called such a family model as "conjugal" [4]. This family looks more like a family enterprise, whose agents profitably exchange by “social gifts", sometimes sacrifice by their well-being in favor of another family member, seek self-actualization. This represents a new model family. And this fact also proves the departure from traditional Christian family values.

All these arguments have contributed to carrying out sociological research to clarify the image of the perfect marriage for young people in Arkhangelsk.

Basic categories

It is important to consider the notion of “ideal” marriage. There is no clear generally accepted definition of marriage, so we shall consider a union of a man and a woman registered in Office of civil registrations, as a marriage. As for the "ideal" marriage, we shall regard it as marriage corresponding to ideal. Each person finds his marriage as ideal. And we with the use of the questionnaire have revealed averaged " ideal marriage" for the respondents.

Public Opinion Foundation, conducted a corresponding study, offers their version of the perfect family:

- Love, trust, mutual understanding.
- Two kids.
- Wife earns, if not more, then on the same level with her husband.
- Newly wedded couples live separately from their parents
- Both patners deal with upbringing of the children.
- Husband is older than wife in 4-5 years [2].

It is also necessary to define notion of "youth". Domestic social science currently often operates in boundaries 15 (16) — 29 (30) [5]. We consider the lower age limit of 18 years, because

[2] Fond «Obshhestvennoe mnenie». Obraz ideal'noj sem'i. URL: http://fom.ru/Rabota-i-dom/11024 (accessed: 27 May 2016).

by this age the human body ends physiological and psychological sexual "maturation", and starting from this age young people in Russia can get married. Many authors offer to consider the upper limit of 29-30 years, due to the fact that by this age marriage socialization is ended, which is important for the topic of this work. We stopped at the boundary of 29 years.

Moral values reflect the world perception of a human being, his understanding about good and evil, justice, love and relationships between people. They are for sure connected with the spirituality. This concept is often correlated with such categories as warm-heartedness, religiousity. By spirituality, we understand such stage of development of the individual, in which the highest values (family, love, morality) become the main regulators of behavior and human life in general.

Expert interview

Five experts took part in expert interviews: specialist of office of civil registration, university professor (family sociology), professor of social sciences, practicing psychologist, head of the social policy of the municipality. They were asked questions, the answers to which were to illustrate an expert point of view on the crisis of the family, the causes of the crisis and image of the ideal marriage in general. All the experts agreed with the thesis about changing of family image in the minds of today's youth, but minority of them agreed that such changes could be called the crisis ones. The experts think that the main reason for marriage is love. Another reason is the symbolic aspect of the wedding, and the material factor plays here one of the last roles. This position illustrates the appeal to traditional family values.

Introduction of a penalty for a divorce, punishing the party responsible for divorce, the transformation of the church marriage in the official registration of relations, according to experts, are not needed to be realized. This view does not show indifference of the experts to spirituality and moral values. The modern way of life, though varies, but in legal terms, the system is working properly, and it is not necessary to change anything in it. “We have a system, no need to touch it. When the instrument is playing, why to tune it?”, says one of the experts.

Questionnaire survey

Let's come over to the public opinion of young people about perfect marriage. Mainly the youth of Arkhangelsk was interviewed here. According to the Local Agency of Federal State Statistics Service of Arkhangelsk region, there are 60,782 of young people as per January 1, 2014[3]. Selection totality was calculated according to Paniotto V. table assuming 5% error. We will give

[3] Territorial'nyi organ Federal'noi sluzhby gosudarstvennoi statistiki po Arkhangel'skoi oblasti. Ofitsi-al'naia statistika. Naselenie. URL: http://arhangelskstat.gks.ru/wps/wcm/connect/rosstat_ts/arhangelskstat/ru/ statistics/population/ (accessed: 27 May 2016).

data on 406 young people questioned. We have defined the boundaries of age, which include young people, as 18-29 years. Single and married young people were interviewed. The received data were processed with the methods of descriptive statistics, making tables of contingence and factor analysis by means of IBM SPSS Statistics software. 52.5% of female respondents were interviewed, 47.5% of male.

The dependence of the preferred model of family relationships (the patriarchy, matriarchy or equality) from gender of respondents mainly clear: women (92%), and men (84%) were in favor of equal rights (Table 1.) It is noteworthy that matriarchy is not regarded as acceptable form of youth relations, and patriarchy, though less chosen, was more attractive for men. These results probably connected with reviving religiosity among young people.

Table 1

Preferred model of family

Model of family	Indicate your gender, please		Total
	Female	Male	
Patriarchy	18 (8%)	26 (16%)	44 (11%)
Matriachy	0 (0%)	0 (0%)	0 (0%)
Equality	195 (92%)	167 (84%)	362 (89%)
Total:	213 (53%)	193 (47%)	406 (100%)

Family obligations are considered by youth as following:

1. Bringing up children, household responsibilities, moral support are duties of women.
2. Bringing up children and earning money are men's obligations.
3. Together married couples should coordinate family budget, raise children and keep psychological family climate.

This allocation of responsibilities, without a doubt, can be described as traditional. A woman — keeper of the hearth, a man — earner. The idea of these roles, transmitted from generation to generation, at the moment remains unchanged. It is noteworthy that bringing up children is considered as a duty of husbands and wives. Preferrable number of children for the youth — "2 maximum" and "3 and more", the last is most common for older age. Thus, the arguments of the society that young people do not want to have many kids, are wrong.

Continuing the topic of the allocation of family obligations, it is necessary to find out who should have greater earnings. None of the respondents said that a wife should earn more (Table 2). In other cases, men and women shared the same opinion: a man must have wages higher than his wife or it does not matter who will provide money to support the family. These responses once again prove the desire of modern youth to have equil rights not only in interpersonal relationships, but also in the material sphere.

Table 2

Preferences of the respondents regarding the income of spouses

Whose income must be higher?	Indicate your gender, please		Total
	Female	Male	
Husband's	97 (46%)	78 (40%)	175 (43%)
Wife's	0 (0%)	0 (0%)	0 (0%)
Equal	28 (13%)	27 (14%)	55 (14%)
It does not matter	88 (41%)	88 (46%)	176 (43%)
Total:	213 (53%)	193 (47%)	406 (100%)

Love remains the main reason for marriage (Table 3). Respondents do not consider sufficient basis for marriage either improvement in the material conditions or pregnancy, or the desire of parents. Only the relations, based on love, can lead to marriage and become the foundation for a happy family. Such distribution of the respondents' answers can be considered as illustration to the above mentioned Bible description of the perfect relationship between husband and wife. Thereby the ideal age for women and men to get married is 21-25 and 26-30, respectively.

Table 3

Reason to get married

Ideally, marriage is result of…	Indicate your gender, please		Total:
	Female	Male	
love	207 (97%)	182 (94%)	389 (96%)
material inability	6 (3%)	0 (0%)	6 (1%)
Parents' wish	0 (0%)	11 (6%)	11 (3%)
Total:	213 (53%)	193 (47%)	406 (100%)

Now we come over to clarify the main reasons for divorce, according to the opinion of the youth. Life and daily routine may not be convincing reason for divorce. While cheating is considered to be a valid reason for applying for a divorce in the majority of cases. Also young people do not accept alcoholism and drug abuse in family life. Serious illness, inability to have children, financial problems in the family and the lack of intimacy are not the reasons for divorce, according to the opinion of the youth of Arkhangelsk. Thus, it is possible to confirm that the respondents are loyal to the "drawbacks" of their partners and ready to come to terms with them. Excluding alcoholism and drug addiction.

Moral values are important for family life, but they do not always come from religiosity of youth. So, young people answered the question about the necessity of church marriage in such a way: church wedding was necessary for the 14% of respondents, whereas for half of the respondents such a union does not matter, and only 23% are categorically against of such a union (Table 4). Also, the church is not an institution, which modern family would rely on. The majority of respondents do not need church support, or find it difficult to answer. consequently, the church

does not take a dominant role in the family and marriage relationships of the youth, but to a certain extent able to influence on them.

Table 4

Opinion of the respendents about church marriage

Is it necessary to register marriage in church?	Total
Yes	56 (14%)
No	93 (23%)
It does not matter	257 (63%)
Total:	406 (100%)

For the analysis of perfect spouse image, namely to reduce the number of variables, factor analysis should be applied. So, after all the calculations, variables relating to each of the factors were defined.

- The first factor includes all the variables, meaning humanity, sensuality ("selflessness").
- The second factor includes the spouse qualities related to the professional sphere ("professional capital").
- The third factor combines domesticity and appearance, which are formed in the parental family ("Dowry").

The main factor is the "selflessness", which means applying of young people to moral values, setting for the first place of sensual intimacy with a partner (the coincidence of the characters, attitudes to life), a sense of caring from a spouse. This conclusion again confirms the thesis of the dominance of the romantic feelings while choosing a partner for marriage and referring to spirituality.

Now we can summarize the analysis of public opinion of Arkhangelsk youth about perfect marriage.

1. For young people equality is the preferred model of forming relationships in the family, while matriarchy is absolutely not in their minds.
2. Young people think that bringing up children, household responsibilities, moral support are women’s obligations. Men's obligations are to earn money and to bring up children. Together married couples should coordinate family budget, raise children and keep psychological family climate.
3. Mutual understanding, mutual love and trust are key factors for perfect marriage. Perfectmarriage is not based on a material values, but and on the intimacy and harmony between spouses.
4. In young people environment while choosing a spouse, pursuit to spiritual closeness and true love dominate, which are the only valid reasons for marriage.

Conclusion

The aim of our work was to make the image of the perfect marriage in the minds of the youth of Arkhangelsk. So, perfect marriage is equality; adequate (approximate to the traditional) distribution of responsibilities in the family; the possibility of self-development for both spouses; 2-3 children. This image quite corresponds to the image of the all-Russian poll "Public Opinion"

Fund, which means that Arkhangelsk has no significant deviations from the Russian society on the issue as a whole.

The received data allowed to judgeabout growing role of spirituality and moral values in the youth environment, particularly in the area of family relations. Loyal attitude to patriarchy, the importance of harmony, mutual respect and mutual responsibility in relationships, traditional distribution of family obligations between husband and wife play a special role in making of perfect relationships.

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Migration intentions of the Arctic youth in the context of subjective evaluations of the social wellbeing

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Abstract. The purpose of this article is to present the results of the sociological study of the social well-being of young people who live in the North of Yakutia. This article focuses on two main issues: analysis of the migration intentions of youth and evaluation of the quality of life of Yakut Arctic. The authors are setting the relationship between demographics, migration intentions and social well-being. On the basis of sociological data in the article conclusions are made about about existence of dissatisfaction among young people and generally unfavourable situation in terms of maintaining the demographic balance in the North of Yakutia. In addition, the authors offer some recommendations aimed at fixation of the Arctic's population, which are based on the results of the questionnaire.

Keywords: *youth, Yakut Arctic, migration, quality of life, measures to improve the life in the Arctic*

Russian Arctic zone represents two spaces (zones) differentiated both economically and socially. In this article, the authors emphasize the features of the social development of the Asian zone of Russian Arctic, which, due to its inaccessibility and remoteness from the center, remains less developed economically and scientifically.

Within two years (2013—2014), the authors conducted research on topic "the Young Arctic: identities and life strategies of Northern Yakutia youth". As the result, huge sociological material about five northern coastal areas of Yakutia, forming the Russian Federation Arctic zone, was receieved [1]. In this article, the reader's attention will be focused on migration issues and the quality of life in the Asian zone of Russian Arctic in the context of young resident's views of Yakut Arctic.

Geography of research and methodology. The area of research covered five Arctic coastal regions of Yakutia: Allaikhovsky, Anabarsky, Bulunsky, Nizhnekolymsky and Ust-Yansky. The object of research is young people from 14 to 30 years. We decided to turn our attention to youth also because it is precisely that demographic snapshot of the population, which let, to some extent, determine the picture of the future, the changes of ethno-demographic composition of the

population, which may become visible in future. This article presents the results of the questionnaire, forming which formed basic foundation of the sociological part of research. Selection is quota and age-gender group. 510 respondents were interviewed during questioning (see Table 1).

Table 1

Sociological research selection (in % for region)

Marks/Region	Anabarsky	Bulunsky	Ust-Yansky	Allaikhovsky	Nizhnekolymsky
Gender:					
Male	47.1	49.0	45.1	43.1	50.5
Female	52.9	51.0	54.9	56.9	4.,5
Age:					
14-17	24.5	25.5	21.6	27.5	28.7
18-24	41.2	40.2	28.4	40.2	39.6
25-30	34.3	34,3	50.0	32.4	31.7
Nationality:					
Russian	-	19.0	14.7	19.8	33.3
Sakha	32.7	33.0	55.9	38.6	20.2
ISPN*	62.4	37.0	21.6	21.8	23.2
Other nat.	1.0	2.0	2.9	1.0	6.1
Mixed nat.	4.0	9.0	4.9	18.8	17.2
Education:					
Incomplete secondary	16.7	24.8	19.4	19.6	24.0
Secondary	18.8	20.8	32.7	20.6	26.0
Basic vocational	7.3	30.7	-	21.6	31.0
Vocational school	22.9	5.0	14.3	18.6	5.0
Undergraduate	9.4	18.8	9.2	10.3	14.0
Higher	25.0	-	24.5	9.3	-
Marital status:					
Single	49.5	50.9	52.0	60.0	60.0
Divorced	1.1	10.9	3.1	6.0	5.0
Widowed	2.1	-	-	-	-
Married	38.9	30.7	37.8	27.0	20.0
Civil marriage	8.4	7.9	7.1	7.0	15.0
Social stratum:					
very poor	2.1	6.4	7.3	6.6	5.0
poor	11.6	11.7	10.4	17.6	14.9
below average	21.1	23.4	14.6	17.6	18.8
average	31.6	29.4	35.4	26.4	34.7
above average	21.1	21.3	19.8	18.7	17.8
rich	12.6	7.4	12.5	13.2	8.9
Total number of persons	102	102	103	102	101

* here and further ISPN — Indigenous small-numbered peoples of the North

Migration intentions of youth. Appeal to migration intentions of youth of Yakutia north is not random, as it is well-known, and we fully share the view that the level of migration activity largely depends on the quality of life. Answeres to the question "Are you going to stay or to leave your region?" indicated high level of desire of young people to leave (see Figure 1).

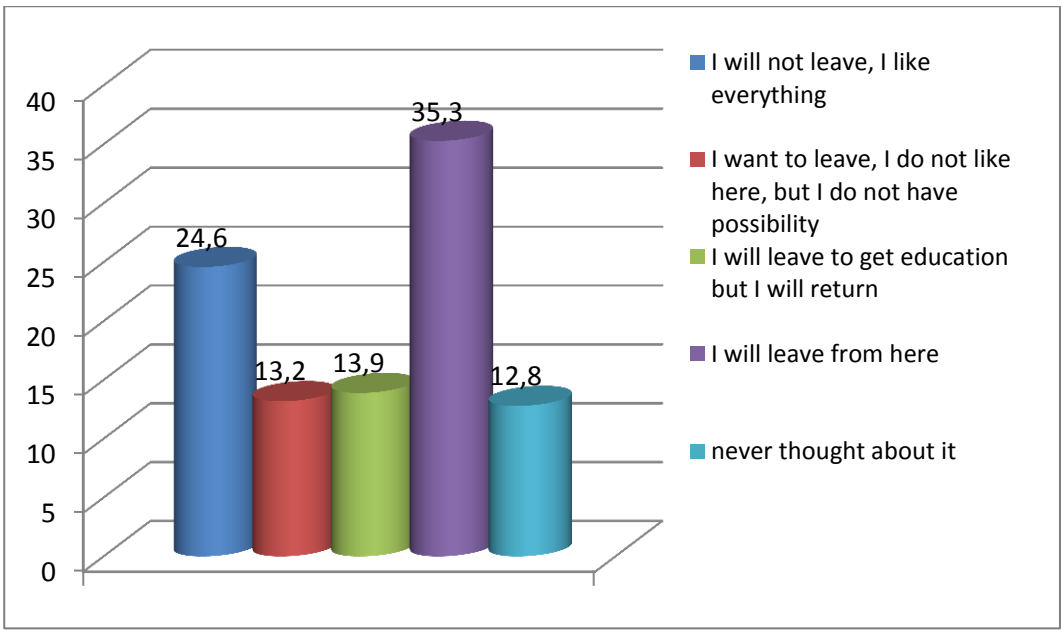


Figure 1. Migration intentions of youth (in %)

Only 37.4% of respondents did not intend to migrate. About half of the respondents (49.2%) intend to somehow participate in the migration processes. Rather high number of dissatisfied with their situation and unable to migrate (13.9%). Important component of the analysis in this case is the question which exactly groups of young people have migration intentions.

Sociology rather long ago set the fact that answers greatly vary depending on gender and age of responders. Therefore, first of all, we consider the gender and age characteristics of the respondents.

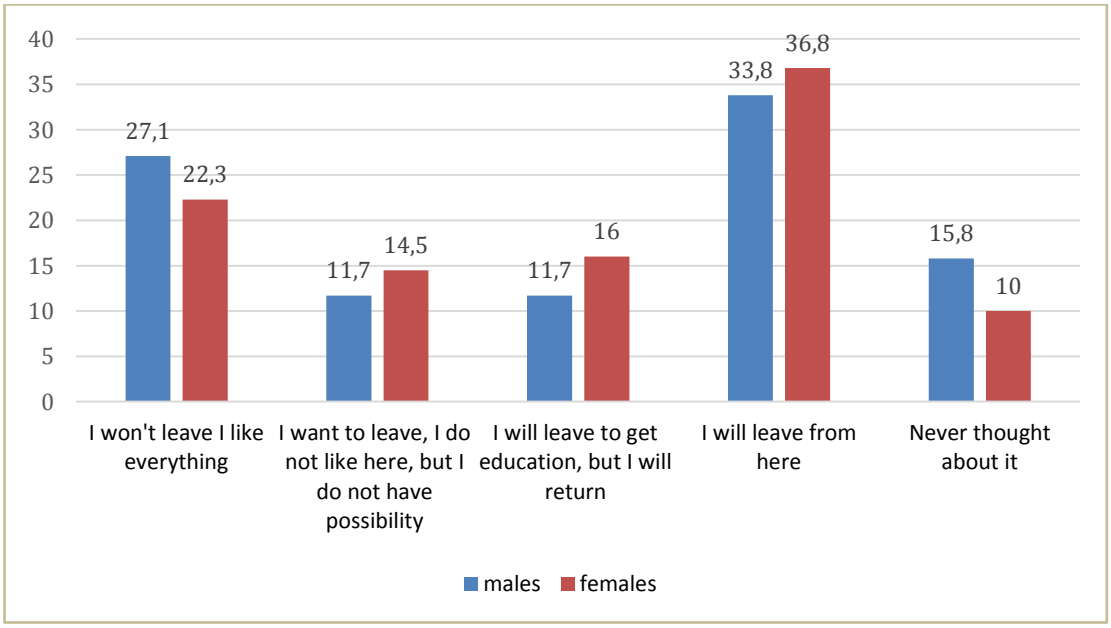


Figure 2. Gender cross-section of migration intentions of youth (in %)

As can be seen from Figure 2, females are more active in terms of migration. In scientific research it repeatedly emphasized that female migration is rather complicated, little-studied phenomenon that includes both labor and marriage migration. As for the results, a few facts should be mentioned in this respect: males are more flexible in choosing a place of future residence and plan to leave for both within the territory of Yakutia, and Russia in general. But females as a rule tend to be limited by the territory of Yakutia; males more often than females are set to stay at their native land and more seldom think about changing the place of residence. It seems to us, that revealed activity to migration among young women of ferile age is a dangerous trend that could lead to a change in the gender balance in the direction of reducing the category of fertile age women in the demographic structure of these areas and to narrowing of the possibilities of marriage choice.

Speaking about age peculiarities, it is necessary to mention that the highest desire of young people to leave is typical for the youngest age category of 14 to 17 years (see Figure 3). However, among the older age groups, the number of intending to go still remains around 30%. It is necessary to note that the peaks of trips according to statistics are typical for school-leaving age, as well as for age of 30-39 years. Furthermore, as shown in Figure 3, with the growth of respondents' age, the desire to stay in the area occurs, with position "I like everything".

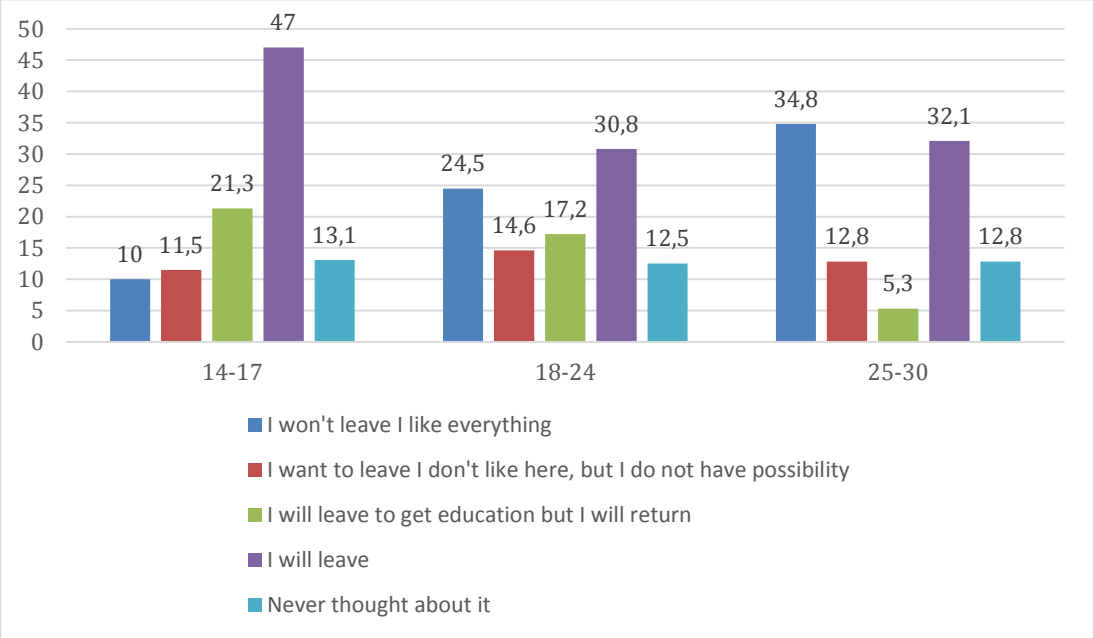
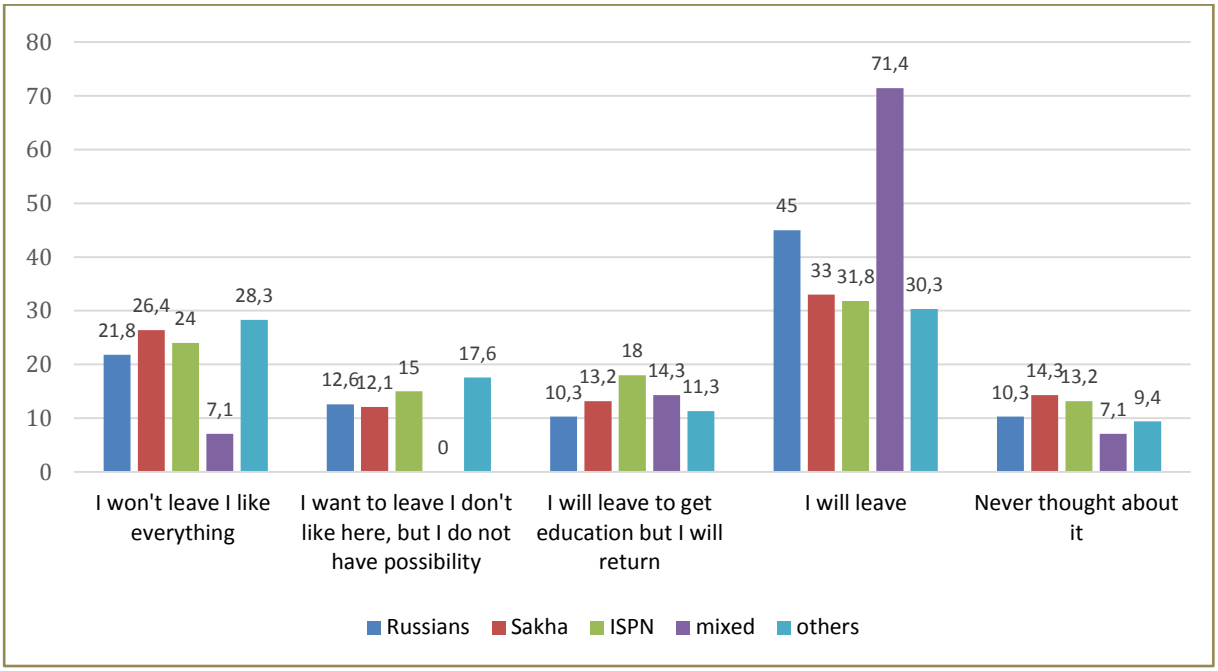


Figure 3. Age cross-section of migration intentions of youth (in %)

Yakut Arctic is not a mono-ethnic region. Since Soviet times, times of development of the Arctic, a kind of multi-ethnic environment appeared here, symbiosis of cultures happened. With the loss of the state interest in the Arctic territories resulted from political and economic reforms,

social sector of the Arctic began to come to "desolation" caused among others by mass exodus of the population. Expeditions into five analized regions have shown that inert development of social system attempting to operate on the principles of interaction laid down earlier, still changing rapidly. Thus today we talk about changing of ethnic structure in areas, observe new forms of ethnic groups adaptation to changing socio-economic conditions.

Undoubtedly the representatives of different nationalities have different migration intentions (see Figure 4). It is noticeable that the Russian youth is more disposed to leave, as well as the population defined as "mixed nationality". This shows that the change of the ethnic picture in the Yakut Arctic is still not finished. Currently, changing the ethnic composition of the population is typical for the district centers. If before there was dominance of the Russian population observed, now with the massive departure of last, there is a fairly active migration of indigenous small-nambered peoples of Yakutia from their settlements.



Fugure 4. Ethnic cross-section of migration intentions of youth (in %)

Summing up the analysis of migration intentions of youth, it should be noted that young people quite actively intends to participate in the migration process. And in the future we may deal with significant ethno-demographic changes in the Arctic regions of Yakutia.[1] First of all it will relate to the age and gender composition.

[1] Kompleksnaia programma Respubliki Sakha (Iakutiia) «Poetapnoe ustranenie defitsita meditsinskikh kadrov na 2013—2017 gody». Utverzhdena postanovleniem Pravitel'stva Respubliki Sakha (Iakutiia) ot 01 aprelia 2013 g. № 108. URL: http://docs.cntd.ru/document/473500659 (accessed: 31 May 2016).

So why do we have a high percentage of those wishing to leave?

The quality of life in northern Yakutia and social well-being. The quality of life is directly connected to the preservation of working population, in particular young people of the Arctic zone of Russia. Partial satisfaction of human needs has a significant impact on the decision to migrate. Respondents were offered to put value of the quality of life through the following social services: recreation and culture; health care; education. The estimation was made using ten-point scale, where 1 meant the lowest estimate, and 10 — the highest. In general, as shown reflected Figure 5, the average assessment of the quality of social services is not high, even low. The youth of Arctic regions of Yakutia gave the highest rate to the level of provided education among the other spheres of social life, then recreational services. Low rating was given to the medical care. Sociological data completely coincide with the statistical characteristics of the level of development of social spheres in the Yakut Arctic [2; 3; 4]. Hierarchy of the social areas obtained on the basis of average estimates on quality of service is almost identical with the rates of social services received as a result of sociological research in three regions of Arctic Yakutia (Ust-Yansky, Anabarsky and Allaikhovsky) among the population aged 18 and older, also conducted by the authors. Results for all ages research show that the population gave the highest rate to the quality of education (average rate 5.0), then — recreational services and culture (average rate 4.38). People are dissatisfied by health care most of all (average score 3.68). Thus, it can be noted that young people, inspite of typical for their age immaturity of consciousness, are able to evaluate adequately and according to the opinion of the older generation their surrounding social reality.

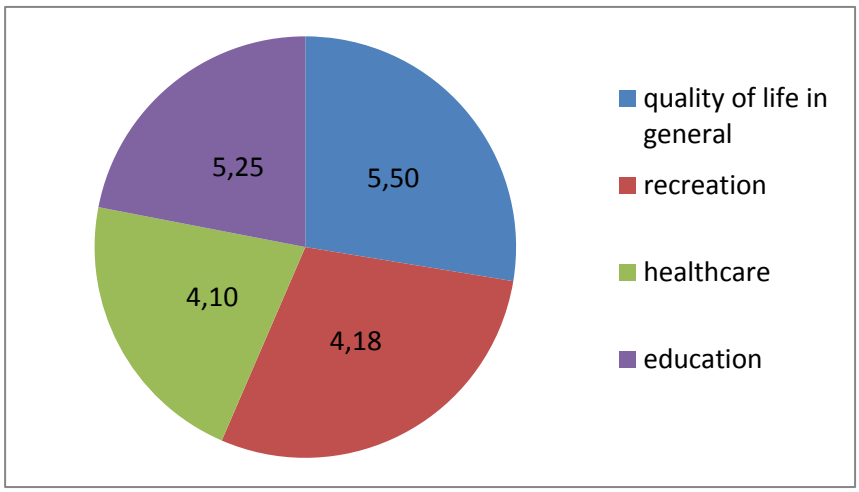


Figure 5. Average rates of quality of life in the Yakut Arctic.

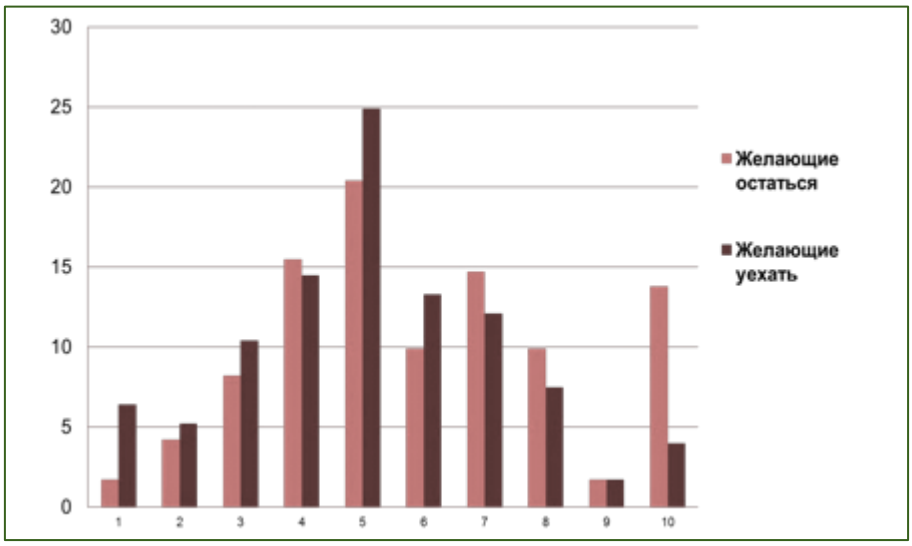
For a demonstration of more illustratory results and comparative analysis we decided to distinguish two groups of young people: the first group — those wishing to leave the Arctic territories, which amounted to 35.3% of the respondents; the second — those who indicated that they had no intentions of migration (24.6% of respondents) (see Table 2).

Table 2

Demographic indicators of two groups of respondents (in %)

Indicators/ Group	Do not want to leave	Wishing to leave
Gender		
Male	52	44.3
Female	48	55.7
Age		
14-17	10.4	32.4
18-24	37.6	33.5
25-30	52	34.1
Nationality		
Russian	15.4	21.8
Sakha	39.0	33.3
ISPN	32.4	29.9
Other nat.	0.8	5.7
Mixed nat.	12.2	9.2
Education:		
Incomplete secondary	13.9	26.7
Secondary	26.2	19.2
Basic vocational	17.2	16.9
Vocational school	14.8	12.8
Undergraduate	13.1	12.2
Higher	14.8	12.2
Social stratum:		
very poor	6.7	5.3
poor	7.5	11.2
below average	20.8	13.6
average	33.3	32.5
above average	23.3	22.5
rich	8.3	14.8

Thus, as it can be seen from Table 2 and to confirm above mentioned results, gender, age, and nationality are important characteristics of migration.



Fugure 6. Comparative diagram of rates of life quality in total in North of Yakutia (in % for each meaning)
Those willing to stay are indicated as red, those willing to leave are indicated as dark brown

Young people were also offered to put value to the quality of life in total in the north of Yakutia. Youth, which does not yet have migration intentions, is more optimistic in their rates of the quality of life in the north of Yakutia. Potential migrants express more dissatisfaction with the quality of life in general, in addition, they tend to give the average estimate that perhaps is indication of a certain inertia, detachment from the social environment due to the present status of "temporary worker" rather than those who does not yet have migration intentions (see Figure 6).

Referring to the characterization of the analyzed social spheres. Young people who have migration intentions tend to averaging as well when evaluating the quality of education received or obtaining in Arctic (see Figure 7). Moreover, if we compare the positive scale (rates of 6 and above), the total sum of answers of the youth, who plans to leave, shows that they often put a positive value for quality of education than the youth who is going to stay. The responses of young people wishing to stay, on the contrary, have "notes" of discontent by state of this social sphere.

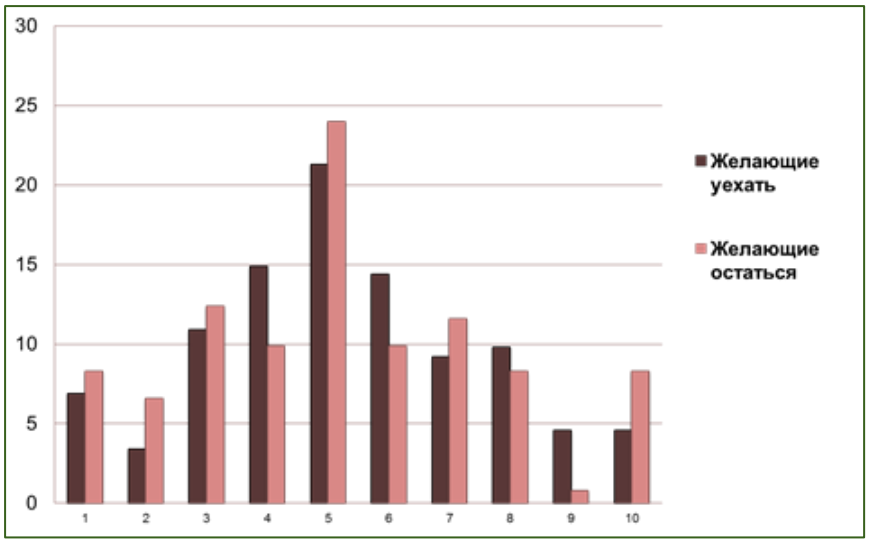


Figure 7. Comparative diagram of rates of the quality of education (in % for each meaning). Those willing to stay are indicated as red, those willing to leave are indicated as dark brown

Health care services and their quality in the Arctic are really low, that is, first of all, due to the low-skilled personnel, shortage of doctors[2]. The majority of respondents tend to put the lowest scores, and greater concern for the state of medicine is seen in young people who wish to remain in their native lands, which is quite logically sound (see Figure 8).

[2] Kompleksnaia programma Respubliki Sakha (Iakutiia) “Poetapnoe ustranenie defitsita meditsinskikh kadrov na 2013—2017 gody”. Utverzhdena postanovleniem Pravitel'stva Respubliki Sakha (Iakutiia) ot 01 aprelia 2013 g. № 108. URL: http://docs.cntd.ru/document/473500659 (accessed: 31 May 2016).

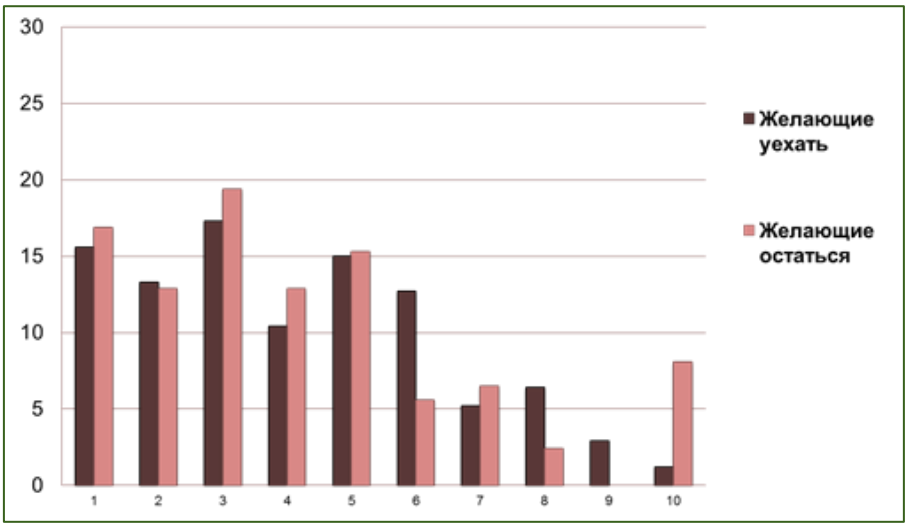


Figure 8. Comparative diagram of rates of the quality of healthcare cervices (in % for each meaning)
Those willing to stay are indicated as red, those willing to leave are indicated as dark brown

Referring to the rates of recreation — the most important social service for younger generation. High level of dissatisfaction with recreational area is typical for precisely those young people wishing to migrate. But negative evaluations were given as well by those who intend to stay, but frequency of positive rates was provided by those young people wishing to stay than those wishing to move (see Figure 9).

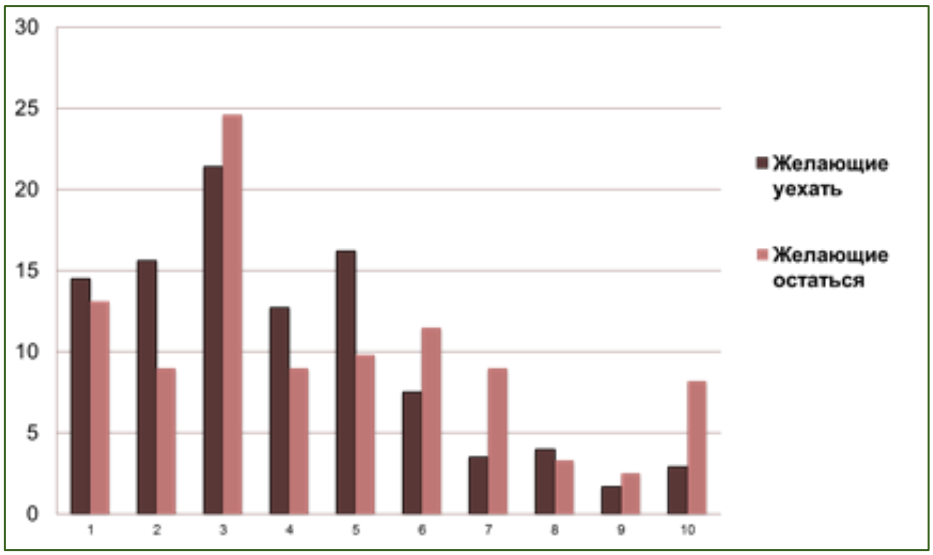


Figure 9. Comparative diagram of rates of the quality of recreation (in % for each meaning)
Those willing to stay are indicated as red, those willing to leave are indicated as dark brown

As you can see, there are different views on the living conditions in Arctic among young people, wishing to leave and stay in their native area. And the recreational sphere is the most burning issue of social development of the Yakut Arctic as youth here think, especially those who have migration intentions.

We also could not leave without our attention the questions relating to the definition of the desired vector of reforms in the Yakut Arctic. Respondents were offered to answer a closed

question: "What, in your opinion, is necessary to improve for quality of life in the North of Yakutia?", with a list of 16 possible answers structured in the following units: social and domestic; pricing and procurement; social policy; ethno-cultural development and support of traditional lifestyles; national and migration policy; development of the economic sector; staff assistance; international relationships.

We identified a hierarchy of priority measures to improve quality of life in Arctic, shown in Figure 10 in the light of the views of the two selected groups. As a result, it may be noted that anyhow to secure the population, in particular young people, in Yakut Arctic, it is necessary to satisfy at least primary needs of the population: the living conditions and quality of social services. At the same time young people wishing to stay emphasize that the return to the practice of state protectionism of the northern territories is the promising way of fixing population there.

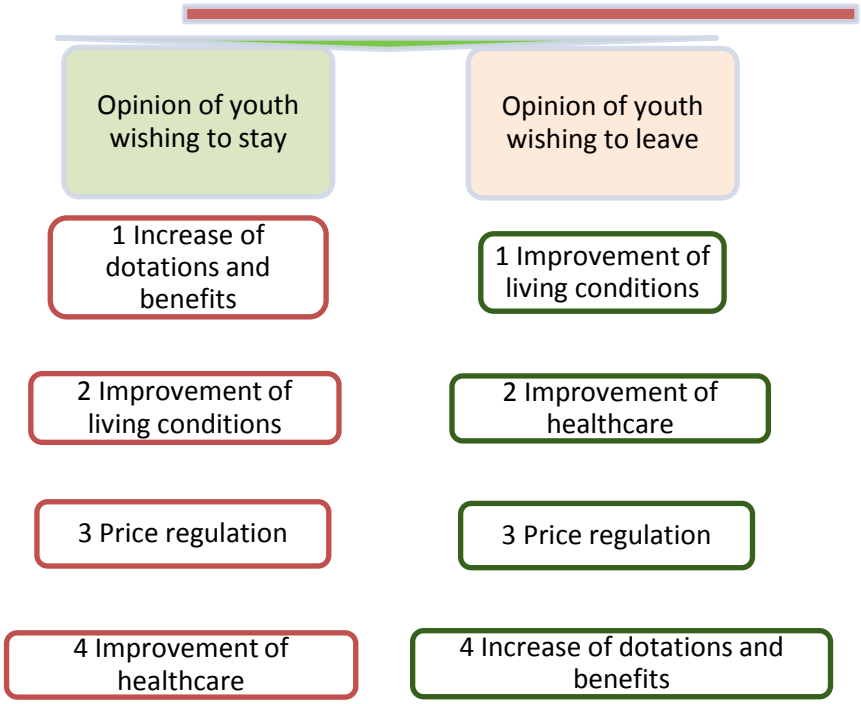


Figure 10. Hierarchy of measures to improve quality of life in Arctic.

Conclusion

System monitoring of the quality of life in Arctic, arranged not only on the basis of statistical indicators, but also on sociological studies, will provide more objective data on changes of the social well-being of inhabitants of the Arctic territories and their intentions, as well as the problems of management of social and economic development of the Arctic zone of Russian Federation.

The results of our sociological research show that young people living in the Yakut Arctic, is not satisfied with the social conditions of life. This gives a poor prognosis for the future in terms of

maintaining the demographic balance in this territory because dissatisfaction is directly connected with the migration intentions of young people. We tend to agree with fellow scientists, also from Murmansk that "crises come and go away. But the most effective investments — investments in human capital. It is people who are in the process of real activity: any "import substitution" or successful work and military service in the Arctic are not possible without their knowledge and skills" [5, p. 139]. Masloboev V., in turn, emphasizes the importance of the system of professional education: "We need specialists familiar with the specifics of use of theoretical knowledge and practical skills in conditions of the Far North, socially adapted to life in Arctic. The set of measures is needed aimed at promoting of the engineering education on the one hand, and keeping young people in the region as the formation, on the other hand, as well as modernization of existing regional system of professional education"[6, p. 96].

According to opinion of youth, the hardest situation is in the sphere of culture and recreation. It is no coincidence that young people who have intentions to migrate, estimated quality of leasure as very low, as opposed to the quality of education. Education is evaluated with more satisfactory quality in the opinion of young people. In fact, school is not only a source of knowledge, but also the only "place of entertainment" for the youth in Arctic, where there are no any leisure facilities. More positive situation in the sphere of education is connected also with that fact that for people wishing to leave, the continuation of education is the key, which gives them possibility to migrate. Those who stay for various reasons reconcile with situation and try to ignore the negative aspects in their daily life, putting relatively high values to the quality of life there.

It can be concluded that the activities in the maintenance of demographic balance of the Arctic territories should be carried out in two aspects: reducing migration and prevention of natural population decline. That is in order to reduce the outflow from the North it is necessary to modernize infrastructure in order to improve social and living conditions, and the policy of subsidizing of living in the Arctic regions of Russia is still needed to attract population.

As a practical outcome of the study it can be recommended for the state authorities to arrange the work on improving the cultural and leisure services, in particular to consider the matter of support of public organizations working directly in the Arctic regions and carrying out cultural and leisure activities, to develop ranked system to attract qualified professionals.

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Social-psychological well-being of rural population in the White Sea coastal area as a risk factor for the Russian Arctic policy

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Abstract. The article represents a generalized data from sociological survey of social-psychological well-being of the rural population of the coastal areas in Arkhangelsk region (included into the Russian Arctic zone) held in 2015. The data shows a critical level of social pessimism, assurance of residents in continuation of negative social-economic dynamics, deficiency of motivation and readiness for active participation and inclusion into the development of territories. Such a status is based on a deep degradation of local industries, infrastructures and social sphere, which has been confirmed by statistic data. The revealed indicators explain high migration preparedness, especially in groups of working ages, proceeding, in the middle-term prospective, to the risk of depopulation and disintegration of social carcass in the coastal areas which, in their turn, possess a significant resource potential. At that, residential population on these areas considered as strategic factor from the perspective of Russian geopolitical interests in the Arctic. A positive trend may be provided through implementation of spatial approach to the social-economic development, which has been already applied in activities held by the Russian State Commission on the Arctic Development. With that there is obvious relevance of correction of the Russian legislation toward transformation of residential population into the beneficiary party of the macro-regional development, which may be provided by establishing of special regimes and preferences in spheres of natural resource use, tax assessment, entrepreneurship and crediting for all groups indigenous (resident) population, including aboriginal people of the North.

Keywords: *Russia, Arctic zone, coastal rural areas, indigenous (resident) population, social-psychological well-being, migration, labor force balance, degradation of local economy, spatial development*

On March 9, 2016 the meeting of the Presidium of the State Commission for the development of the Arctic was held, where the decision was taken having strategic importance not only in framework of activities in the Russian Arctic, but also for policy of development of Siberia and the Far East[1]. Perhaps for the first time in recent history the limitedness of the sectoral approach to the formation and implementation of target programs of the development of territories was fixed. The Presidium of the State Commission at the meeting in Murmansk supported the area-oriented principle of the new version of the State program for the Arctic zone of the Russian Federation (AZRF), providing forming in macroregion of eight regional core delopment zones[2].

[1] Dmitrii Rogozin provel zasedanie prezidiuma Goskomissii po voprosam razvitiia Arktiki. 09.03.2016 // URL: http://government.ru/news/22162 (accessed: 17 May 2016).
[2] Protokol zasedaniia prezidiuma Gosudarstvennoi komissii po voprosam razvitiia Arktiki ot 9 marta 2016 goda № 1 // Ofitsial'nyi sait Gosudarstvennoi komissii po voprosam razvitiia Arktiki. 18.03.2016. URL: http://arctic.gov.ru/4370391e-a84c-e511-825f-10604b797c23 (accessed: 17 May 2016).

The approach based on a combination of interests and potential of sectorial companies in the Arctic, areas and public associations, gives grounds for confidence in the effciency of the decisions approved in the basic documents of the Russian Arctic policy 2008—2015, objectives to improve the quality of life of the population and arranging of social conditions for the economic activities in the Russian Arctic, to stimulate new development projects, processing of aquatic biological resources, marine biotechnology, testing of integrated coastal zone management (ICZM) models, the development of the Arctic tourism and resource potential of the fisheries[3].

The essence of the forming national Arctic policy of Russia thus objectively corresponds to the calls of representatives of the Soviet and Russian science who pointed out starting from 1970s about the necessity to refuse from resource-intensive, costly, and environmentally hazardous industrial rigid models of Northern Development [1; 2; 3; 4]. Then the necessity of using the principles of regional planning and development management in the Arctic regions, including ICAM, formation of regional industrial complexes and other solutions was motivated [5; 6; 7; 8].

The implementation of the priority guidlines of the development policy of AZRF is reasonable and possible only when you keep permanent population and sustainable livelihoods. The issue of correspondence of the measures taken by the leadership of the country to this criterion is the subject of longstanding difficult debates, become active by 2016 in connection with the next series of attempts of federal and regional authorities to develop the draft of the law about the Arctic zone. Providing of the positive demographic processes in the macro-region, including in countryside (rural) districts of the Arkhangelsk region must become the indicator of efficiency of such a law. Areas of this region are special part of the Arctic: the stretch of municipalities as part of AZRF is only 5% of its area, but here ≈28.2% of the total population of the Arctic zone (over 650 thousand of people) are concentrated.[4] According to 2010 Census, 659,921 people or 27.2% of the total population of the Russian Arctic: 2,424,421 people live in 7 municipalities of Arkhangelsk region, forming AZRF (municipalities: Arkhangelsk, Severodvinsk, Novodvinsk, Novaya Zemlya; MD: Mezensky, Onezhsky, Primorsky) [10, p. 154].

The study of the sentiments of the population of the White Sea part of AZRF

[3] Osnovy gosudarstvennoi politiki Rossiiskoi Federatsii v Arktike na period do 2020 goda i dal'neishuiu perspektivu (utv. Prezidentom RF 18.09.2008 N Pr-1969)// Rossiiskaia gazeta. 2008. Stolichnyi vypusk № 4877. 27.03.2009. Strategiia razvitiia Arkticheskoi zony Rossiiskoi Federatsii na period do 2020 goda i obespeche-niia natsional'noi bezopasnosti. URL: http://government.ru/info/18360. Postanovlenie Pravitel'stva Rossii-skoi Federatsii ot 14.03.2015 № 228 «Ob utverzhdenii Polozheniia o Gosudarstvennoi komissii po voprosam razvitiia Arktiki». URL: http://government.ru/media/files/Cozw5FAxCGc.pdf (accessed: 17 May 2016).

[4] Calculations of the author based on the data of Rosstat TOGS (www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog). See also [9].

The White Sea part of AZRF is historically the first area of the opening and development by Russians of the Arctic and Siberia, the Far East and Alaska. At present, significant factor of the implementation of the potential of this part of the Russian Arctic is a social and psychological well-being and unity of indigenous people, their willingness to live and work in the area, the presence of social solidarity, conjugate with the responsibility for the future of the territories.

During summer 2015 sociological study was conducted for the detection of indicators and evaluation of the relevant sentiments, involving 22 localities with a total population of over 12.7 thousand people[5] in coastal rural communities of Mezsky, Onezhsky and Primorsky municipal districts.

The study was conducted through individual formalized questionnaires of residents of these localities by random sample technique, over 18 years at the place of permanent stay of the respondents. According to the municipal passports of districts on 01.01.2013 the total number of people aged over 18 years in the localities where the study was conducted amounted to 10.58 thousand of people. Sample population was 577 respondents, maximum sampling error — 3.2%. As shown in the diagram, the age of some localities is two or more centuries (see Figure 1).

Figure 1. Diagram of position of studied locations.

[5] The study of the population and expert interviews were conducted in the framework of the Russian Humanitarian Science Foundation and the Government of the Arkhangelsk region № 15-13-29601 e (p) "The human and economic potential of coastal areas of the European part of the Arctic zone of Russia (by the example of the Arkhangelsk region)."Participants of the project: Cand Sc, Assoc. Prof. A.O. Podoplekin (head), prof., Dr. of Ec. V.I. Pavlenko, Cand. Sc. O.V Gubina, A.V. Ukhanova (Federal Research Center for a comprehensive study of the Arctic, RAS, previously — Arkhangelsk Scientific Center of UB of RAS); Cand. Sc. K.O. Malinina, N.P. Tsukanova (GAU of Arkhangelsk region "Public Opinion Research Center."); Dr of Sc. O.V. Ostroukhov, Cand. Sc., Assoc. Prof. P.S. Zhuravlev.

The results confirmed the high rootedness of the local population — the vast majority (84.1%) live in the territory of the coastal area for over 20 years, and in settlements of Mezensky district more than 92.3%, with the proportion living in the territory for a long time dominates in every age category. The most typical sentiment of the population is determined by people as "normal and stable" (71.1%), differences between gender and age groups are not identified; about 10% have constant uncertainty and irritation. More than half of respondents — 57.4% — describe their health as "average, satisfactory."

In general, the population of the inspected areas is economically active, most people are employed for regular jobs. 29.6% of local people indicate that they are retired. Next most popular sphere of activity — transport (10.4%), due to the objective need to ensure communication between distant villages. In Mezensky district there is significant predominance of pensioners — 40,1%. In addition, the second group share of unemployed people — 9.9%.

Indicators of population mobility greatly vary in municipal districts: the largest proportion of respondents (45.4%) in Primorsky district leaves the settlement 1 time per week, in Onezhsky district: 1-2 times per month (45.7%), and in Mezensky 1-2 times per year (57.7%), in this area there is also the highest proportion (20.3%) of those who does not leave their settlements during the year. In general, the distribution of the inspected area groups leaving the settlement 1 time a week, 1-2 times a month, 1-2 times in six months, 1-2 times a year and never leaving during the year is: 18.0%, 26.0 %, 18.4%, 27.9% and 9.7% respectively.

In general, 54.2% of respondents live in comfortable apartments, 42.5% have private houses as primary residence. Predominance of private houses is revealed in Mezensky district. 42% noted availability of private houses; of apartments — 54%, outbuildings — 72%, garage — 36%, the bathhouses — 49%, access to the Internet — 55%, personal computers — 65%, GPS-navigator — 7%, mobile connection — 75 %, satellite TV — 66%, chainsaw — 54%, boat — 18%, motorcycle — 23%, car — 34%, snowmobile and quadricycle — 16% and 4%, tiller — 10%.

The unity of people in the area is based primarily on the community with the inhabitants of their village and peers (by ≈40%), professional colleagues (32.2%), fellow citizens (24.1%) and people of the same lifestyle (19.4%). It is noteworthy that the villagers are positioned as the main source of information about the outside world (78.3% selection rate), while other options were chosen with much less frequency: own observations — 30.3%, local newspapers — 21.3%, advertisment board — 16.1%, Internet — 15.8%, local television stations — 7.6%.

Big number of people say that "in our village you can always rely on someone's help" (65.2%), "people talk to each other a lot" (71.6%) and "times have changed, but the relationship

between the people remain the same" (58.4%) indicates signs of continued social solidarity in the settlements.At the same time, citizens notice such processes as growing desire of people to take care of themselves only (74.2%) and closeness in the relationship between people (63.6%), while 60.3% of respondents do not believe they can count on help of authorities in emergency situations. Most of all, locals tend to rely on their own strength as a guarantee of personal well-being (96.5%), while 72.4% admit that it also depends on the social situation in general.Checking personal satisfaction with various aspects of personal and social life, the excess of positive responses in rural communities over the negative was observed only in part of the work (56.0% / 30.8%), their own life as a whole (72.8% / 26.3%) , the relationship between villagers (76.3% / 22.9%), living conditions (61.9% / 37.1%), education at school (71.6% / 27.6%) and safety (71,1% / 27.6%). At the same time, mostly personal dissatisfaction is shown in relation to the material conditions, opportunities to participate in decision-making of the life of settlement and employment, health services and conditions for the education of children, housing and communal services and improvement, the availability of sports facilities and the quality of bank institutions.The opinions about set of the priority measures to improve the situation in rural areas are divided as following: road construction and repair — 24.6%, rural area improvements — 15.9%, generating emplyment — 10.6% of the responses. Also the residents of coastal villages mark the presence and acuteness of environmental problems, the main ones from which are littering (over 84%), water pollution (34.7%), uncontrolled deforestation (21.1%) and forest fires (12.8%). Recognizing the structure and sharpness of settlement problems, a sense of personal responsibility of habitants is connected to the greatest extent with family (about 94%) and work (over 48%), while with the settlement, the region and the country — only 5.95%, 0% and 1.2% respectively. Personal abilities to influence on these spheres are estimated similarly: family and work — 92.9% and 41.1%, and with their settlement, region and country — only 6.4% and 0.5%, respectively. Similar gap is seen on the one hand between the declared willingness of people to stand up united for joint actions in the general interests and for the decision making of priority issues with villagers (68.8%) and local autonomous government bodies (64.4%), as well as the acceptance that "people should not rely on the authority, you need to take the initiative in your own hands" (66.9%) and that "many problems would be solved if people actively participate in their solution" (89.1%); and, on the other hand, with self-esteem of participation in such activities — in total more than 68% of the respondents admitted their own passivity in the social life of their settlement.

The social activity of population

The following variants were often chosen as the reasons preventing citizens' active participation in the development of residence areas: "lack of time, employment", "lack of faith in the possibility to influence on the decisions of the authorities" and "lack of knowledge, incompetence" — 32.6%, 28.1 % and 27.0% respectively.However, following opinions were expressed most often regarding total social activity: "the situation in the village is no longer dependent on the citizens, but on the situation in the country as a whole" (56.8%), "many citizens are not interested in decision-making participation" "(80.4%), and even that" the participation of the residents [in such decisions] can lead to conflicts "(57.7%).

Experts' opinions about economic and social activity of the population coincide with the self-esteem of the population, keynote of the majority of views is the ideas that the "population" is rather passive, many are waiting for someone else's decisions, instructions, or do not see any prospects; there is lack of knowledge, information", "inactive, does not want to work (and there are no jobs)."

Many people think that nothing depends on them, everything is decided "in the higher authority". Defining subjects that have the strongest impact on the socio-economic situation in the areas, the survey participants gave only the fifth place to the population (16.3%) while the greatest responsibility was given to heads of villages and districts (45.8% and 31.0%), local entrepreneurs and managers of enterprises (24.4% and 23.7%). Options "Governor" and "No one" got 11.8% and 12.5%, respectively.

Disbelief and often unwillingness to actively change life is manifested, in particular, in the fact that almost 80% of the owners of the above property do not try to use it to earn additional funds.3/4 of the respondents do not wish or do not see any need to learn new crafts as a means of earning. More than 91% do not keep and do not want to keep livestock or poultry, 84.9% of respondents said they did not engage in any crafts, and 79.5% will not even deal with it for material reasons. Miniscule share of respondents gathers berries and mushrooms for sale. More than 56% believe that there are no any objects of interest for tourists in their areas, and over 89% do not have a desire to participate in the reception of tourists and hospitality activities. Knitting (82.8%) and embroidery (14.9%) are the most popular crafts. The attitude to keep national crafts is apathetic — 75.2% expressed reluctance to study arts and crafts. 53.2% of people do not see the need for retraining which is an instrument of revival of economic activity, although the reverse point of view (53% and 51.1%, respectively) dominates in Mezensky and Primorsky districts.

Socio-economic situation on the White Sea Coast

43.7% of respondents of the whole White Sea coast believe that the socio-economic situation has not been changed for the last 3 years, though separately in Mezensky district 36.8% noted its deterioration. The second selection frequency answer (32.4%) indicates a negative vision of dynamics of the life quality, and 13.9% noticed improvement in the economical situation of the territories. Pessimistic public perception of socio-economic dynamics is reflected in the views of inhabitants of the rural settlements for the future: deterioration is foreseen from 41.1% in the Primorsky district to 58.8% in the Mezensky district, and 51.1% in general, for all rural settlements.

Experts also pointed out qualitative changes for the worse, highlighting such aspects as the outflow and an ageing of the population, low wage growth, increase of prices for products, services, fuel, electricity, absence or production curtailment, poor quality of roads, unemployment, lack of interest of the population in cooperation with authorities and rise in crime. Residents of all rural communities emphasized most frequently (25% or more cases) following socio-economic problems: transport inaccessibility of settlements, and the low level and accessibility of healthcare, the low level of income, low quality of housing and communal services and increase of tariffs for them [11].

The social and psychological well-being of the rural population of the coastal area of Arkhangelsk region corresponds to objective indicators of the state of their economic and social sphere. Taken together with the data of state statistics they allow to characterize the dynamics of agricultural and industrial production in the surveyed areas as a degradation. One of the key obstacles of economic, social and cultural development, adversely affecting the investment attractiveness and market competitiveness of the coastal rural setlements is a critical state of infrastructure, especially roads. Economic dynamics in the settlements corresponds to the state of their budgets, incomes of which are exclusively connected with uncompensated receipts from other levels of budgetary system of the Russian Federation [12].

Most locals get the material support at the expense of their permanent jobs, in total the indicator reaches the value of 45.2%. The largest share of respondents who have a steady job lives in Primorsky district — 58.9%, in Mezensky area — 33%. Besides, just in this minicipality the general trend is breaking and the prevailing share of the pensioners here is 40.7%. The highest percentage of working pensioners among regional clusters is observed in Primorsky district — 11.7%. In Mezensky district relatively high number of local residents prefer to have temporary work — 7.7%.

Among younger generation trade is the most popular field of activity, and in the middle age group the sphere of education and housing prevails. The unemployment rate reaches the highest values in the age group from 18 to 39 years. In Onezhsky district the share of pensioners is confirmed as 28,4%. The most popular field of activity is transportation. However, the group of non-working citizens is also numerous — 10.3%.

In general, the unemployment rate is the highest in the group of persons between 18 and 29 years old. The prevailing level of education among local residents is secondary vocational education, index value for the sample reaches 56.3%. 30.7% of the respondents have secondary education. The largest share of respondents with higher education is fixed in the Primorsky distrct (15.3%).

Migration sentiments in local communities

The general situation of the economy and the relevant social and psychological situation in coastal rural areas of the Arkhangelsk region naturally stipulate high migration readiness: almost a quarter of the residents plan relocation or do not exclude it in general. In groups of age 18—29 and 30—39 years more than 30% and 11% of respondents clearly planning to go respectively. Three years before the survey, the rates of natural growth and migration of all settlements are only negative, the share of working-age citizens among leaving was about 70%, and in some villages of Mezensky and Onezhsky districts in the range of 85-100%. In 2014 rates of population increase and migration increase averaged across in all rural settlements -11.1% and -22.87% respectively.

Migrants move with their families, which creates a threat to the reproduction of labor potential. The negative demographic trend is accompanied by a corresponding change of balance of labor resources. The share of working-age persons among those who left rural settlements in 2014 range from 65% to 100%, due to which high demographic burden ratios within ≈73-176,8 are marked in all municipalities. The main reason for the high values of the ratio is a big burden by pensioners. The main problems which pushed young people out from rural areas are the impossibility of getting good jobs — 79%, lack of modern leisure — 52%, lack of houses or apartments with all modern conveniences — 45%, economic insecurity — 32%, low income and lack of access to education — to 14%.

The results of the research, conclusions

The considered characteristics of the economy and the social and psychological well-being of rural settlements of three municipal districts of Arkhangelsk region give evidence about the process of depopulation of the White Sea coastal area of the Arctic zone of Russia against the background of

a critically high level of social pessimism of the population. These phenomena already implement the threat of collapse of historically the earliest socio-economic framework at a single in the Russian Arctic territory with a permanent (indigenous) Russian rural population, a high concentration of historical and cultural heritage and relatively favorable climatic conditions for economically viable development of commercial agriculture, fisheries and aquaculture.

The set of judgments of the participants of questionnaires and expert interviews about the reasons of the crisis in the surveyed areas is concentrated around two premises. First and not basic, is the consequences of socio-economic problems in Russia as a whole — the so-called "administrative barriers" preventing to the small and medium entrepreneurship, the pressure of the monitoring bodies, the unavailability of loans, the cost of connections to networks, tariffs and rents, and corruption. Expert assessments emphasize the need to "restore production, agriculture, and large enterprises, for operation of which large staff of experts is needed", in "recreation and entertainment center (bowling alley, movie theater, billiards),"which would make possible to spend time with friends, family or co-workers in "intelligent environment", "opportunity to purchase housing at reasonable price or to get company housing", in the issues of recovery of "the worn material base of available sports grounds".

However, the second group of mentioned reasons of degradation of life structures is connected with apparent "overmaturity" of issue about the diversification of the legislative framework and principles of social and economic development of the Russian Federation in accordance with the peculiarities of the regions and the interests of local communities. Namely, the experts and the population notice the fact that the degradation of the local economy can be overcome by the return and expansion of the rights of the local population in matters of coastal fisheries, marine fisheries, forestry and agriculture, the introduction of favorable business conditions for them. In this regard we can notice the current economic dynamics in Northern Norway, where coastal fisheries, aquaculture and fish farming stimulate the development of ports, coastal service infrastructure, local processing, and as a consequence, the growth of innovative enterprises, construction and alternative energy, influx of young people.

Thus among the economically active citizens of rural settlements there is a specific social demand for a return of preferences to indigenous Russian population in suck kind of activities which provided stable self-sufficient economic system, environmental management and social life in the coastal zone of the Arkhangelsk North centuries ago. These surveys, interviews, research and expert opinions equally indicate the potential complex effect that can be achieved by appropriate legislative and economic measures. [13] Overcoming the negative tendencies in the

coastal areas of the Russian Arctic, in the first place, such as the degradation of the social and economic structures, requires system changes in the national Arctic policy, its "Nordic likeness"[14; 15]. With regard to the Russian Arctic, especially to the most "lived-in" part of it — Arkhangelsk North, Belomoriye — these steps must be based on an approach, positioning the local population as the main "beneficiary" of projects of economic development of the territories. That in turn may require a proliferation of norms of the Russian acts providing preferential regimes of use of natural resourses to the indigenous small peoples of the North, in general, to the natives (permanent) population of the Arctic zone.

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The climatic conditions of the Arctic and new approaches to the forecast of the climate change

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Abstract. The properties of climate variability are represented resulting from the special statistical analysis of observations of the world meteorological network of stations, taking into account the features of the northern regions. By the example of air temperature free and forced oscillation of characteristics of the climate system in their interaction are considered. There are formulated new ideas about the structure of the oscillations and the possible causes of climate change. A statistical model of a periodic nonstationarity of climate is suggested for forecasting climate variations for next two decades and there is suggested a model for monthly and seasonal weather forecasts for the next year. The practical importance of predictive research is particularly high in the harsh climate of the north, where the climate is one of the limiting factors of industrial development of the northern regions.

Keywords: *climate change, climate variability, rhythms, climate forecast, long-term projections, the Arctic climate*

Introduction

The northern regions of the Earth play a significant role in the processes that affect on the environment on a global scale, and serve as indicators of the global natural changes, particularly climate changes. The changes observed in the Arctic, such as the increase of the temperature, the reduction of the ice cover, increase of river flows and degradation of permafrost, already show that the biggest changes occur in the territory of the Arctic in comparison with other regions of the Earth.

In the current strategy of development of the Russian Arctic one of the priority guidelines is the integrated socio-economic development of the region[1]. Harsh climatic conditions of the Arctic greatly hinder the forming of infrastructure there and development of discovered large reserves of mineral resources in the Arctic. At the same time the largest and currently the hidden problem is climate change and the uncertainty of its future condition. The successful development of the Arctic zone is impossible without reliable forecasting climate estimations for several decades in advance.

In all the Arctic countries exploration plans of the Arctic zone are based on the realities of today's abnormally warm climate, during the period of the global warming, in conditions of

[1] Strategiia razvitiia Arkticheskoi zony Rossiiskoi Federatsii i obespecheniia natsional'noi bezopasnosti na period do 2020 goda (utverzhdena Prezidentom Rossiiskoi Federatsii 13.02.2013 g.). URL: http://government.ru/media/files/2RpSA3sctElhAGn4RN9dHrtzk0A3wZm8.pdf (accessed: 18 March 2016).

reduction of the ice cover and opening of the Northern Sea Route and the West Passage, and also on the basis of assumptions about the further global warming.

In fact, we know a little about future climate of the Arctic region. This is due to our lack of knowledge about the reasons of modern changes of global climate and in connection with the special conditions of climate formation in the high latitudes of the Earth, which complicate the forming of reliable forecasts of the future state of the Arctic climate.

High latitudes of the Earth, the Arctic are the unique region in terms of formation of the temperature. The first feature — the Arctic climate is formed in much smaller inflow of heat from the sun than the climate of non-polar regions. On Earth, to the north of 70° latitude the sun does not appear for several months (polar night) and during few months it does not go beyond the horizon (polar day). Highly reflective ability of snow and ice, as well as predominantly low height of the sun above the horizon do not allow the temperature to form the temperature baseline which is observed in the Arctic. Heat of the Arctic region is largely determined by amount of the advective ending brought by ocean currents and air streams from the low latitudes. The amount of advective ending in the Arctic depends on the global oceanic and atmospheric circulation processes. The second feature of the Arctic — this is a region with climate most sensitive to changes in amount of so-called greenhouse gases in the atmosphere (water vapor, carbon dioxide, methane, etc.) and the amount of cloud cover. Radiation balance at high latitudes is preferably negative, and temperature conditions are mainly determined by the ability of the atmosphere to prevent emission of heat to go to space of coming advective ending. In middle and low latitudes, the situation is different, there the temperature mode is determined primarily by the amount of incoming solar radiation to the surface of the earth, and depends less on the greenhouse effect. In the process of anthropogenic increase of greenhouse gases in the atmosphere this feature of the Arctic has a particular importance. The third feature — near the geographic pole there is geomagnetic pole, which creates at high latitudes favorable conditions for the invasion of charged solar and cosmic particles. The intensity of the flow of these particles depends on the variable solar activity. There are many publications over the past few decades confirming connection of weather and climate changes with variable particle flows during change of solar activity, but the mechanism of this connected is not explained.

The Arctic climate changes are strengthened by feedback connections, the degradation of the sea ice in the Arctic Ocean, sensitive to climate changes, attracts special attention. Removal of fresh water from the Arctic Ocean influnces upon the expansion of sea ice, thermohaline circulation in the adjacent waters of North Atlantic and through them to the regional and global

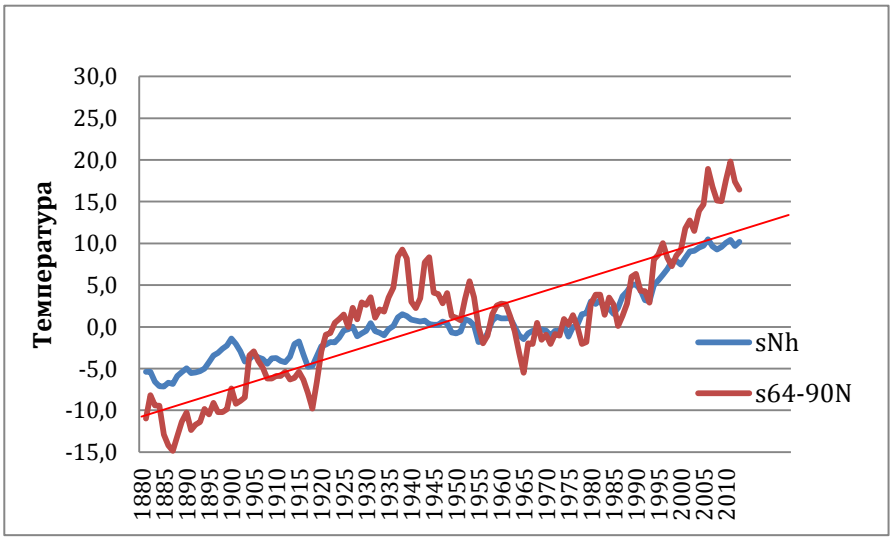
climate. Presence of several variable heat sources, as well as feedback connections between them makes the Arctic as region of greatest changes and climate variability. Many features of interrelated processes remain poorly explored.

Climate changes

For a long time in the modern history climate was considered unchanged in nature. But in the 1920s many reports about signs of warming in the Arctic came out. Knipovich N.P in 1921 said that the Barents Sea waters became noticeably warmer [1, p. 10-12]. At first it was considered that the warming is related only to the Arctic region. Later it was noted that it was global warming. A feature of warming was the fact that at high polar latitudes of the Northern Hemisphere it was expressed more clearly and vividly. For example, in West Greenland temperature increased by 5 °C, and at Spitsbergen even by 8-9 °C for the period of 1912—1926 to until the end of the 30s. The greatest increase in average global temperature near the Earth's surface during the highlight of warming was 0.6 °C. The Arctic was figuratively called the "weather kitchen".

After the 1940s the tendency to cooling started to appear. The ice in the Northern Hemisphere began to attack again. It was mainly reflected in the growth of the ice cover area of the Arctic Ocean. Since the beginning of the 40's and until the end of the 60's the ice area in the Arctic basin has increased by 10%. The first warming gave way to brief and gentle cooling in the middle of the XX century.

Since the middle of 1970s the second glabal warming in the history of instrumental observations started, and it received very different explanation connected with strengthening of greenhouse effect from anthropogenic increase of the concentration of carbon dioxide and other greenhouse gases in the atmosphere.



Fugure 1. Air temperature in the Arctic at 64-90° north latitudes in the northern Hemisphere.

In Figure 1 two waves of woarming can be seen: first in the 1930s and the second since 1970. But in some authoritative publications the mere appearance of the second wave of global warming was disputed for a long time, until the early 1990s, when the fact of global warming has become generally accepted.

And the hypothesis of anthropogenic warming became the main one. After accept of anthropogenic hypothesis the prognostic scenarios of expected one-directional and inevitable catastrophic climate changes appeared by the end of the XXI century. Such scenarios are still considered the main ones. However, starting from the beginning of the XXI century the global warming was suddenly changed by the so-called pause in warming — increase of global temperature stopped, as it was earlier in the peak of first global warming in 1930—1940s. The problem was especially acute if we observed the change or variation of climate?

Instrumental observations of temperature appeared preferably not earlier than the end of the XIX century, but in central England the information about the temperature are known from the XVII century. According to these data long-term variations of temperature always happened.

For example, temperature in central England before the pre-industrial era in XVII—XIX centuries, three full waves of century variations were observed, and in the second half of XX century the phase of 4^{th} wave of warming started, but after that there was a pause that lasted for more than 15 years.

What will be next? If to extrapolate the natural fluctuations in coming decades, then the transition to the phase of decrease of temperature can be expected, and if anthropogenic hypothesis is correct, then the warming continues.

According to satellite observations since the second half of XX century till the present time, the highest temperature of the troposphere of the northern hemisphere was observed in 1998, and then there is a pause. It is important to compare the regional features of the climate changes until 1998 and later. We calculated the value of the coefficients of the linear approximation (linear trends) of changes in air temperature over land and ocean surface temperature for two separate periods of time for 1976—1998 and 1999—2014 years. Calculations were made according to observations at meteorological stations in the northern hemisphere and to the values of ocean surface temperature in the geographical grid centers of 5x5 degrees. In period of 1976—1998 years the warming was observed in the whole territory of the northern hemisphere. In large areas, mostly over land, the greatest warming was 1,5÷2,0^{o}C/10 years. After 1998, there was a pause in global warming, the temperature increase was only in the Russian part of the Arctic and in

Greenland area. But a decrease in temperature occurred in the Canadian Arctic for the last 16 years.

This development of events is not consistent with predictive scenarios of climate change, based on physical and mathematical climate models [2], which are often presented as the most complete and reliable for estimates of future climate. These models are based on the assumption about greenhouse nature of modern climate changes under increasing anthropogenic greenhouse gases in the atmosphere. Other possible factors of climate changes were not taken into account in these models due to lack of understanding of the mechanisms of their impact on the climate. But there are many publications, in which the external factors are considered.

Reasons of climate changes

The problem of reasons of the modern climate changes remains disputing. At the present time only four possible factors of modern climatic changes occurring in the global and regional scale are accepted more often:

a. Anthropogenic effects of greenhouse gases — the main factor.

b. Increasing the flow of incoming solar radiation (usually ignored).

c. Reducing of the role of aerosol scattering.

d. The internal fluctuations of the climate system consisting of the atmosphere, ocean, hydrosphere, land and cryosphere (ignored or treated as a minor factor).

Regional changes in air temperature are always connected with changes in atmospheric circulation. Changes in the general circulation of the atmosphere are often considered as a climate factor. Atmospheric circulation not only redistributes heat around the planet, but also creates such new conditions in the global atmosphere, which are accompanied by fluctuations in the global climate. Changes in atmospheric circulation can be long — of climate scale, so the atmospheric circulation can be considered as a factor of climate. But here the question about the reasons of change of the atmospheric circulation arises. In the atmospheric circulation natural oscillations as well as changes or fluctuations under the influence of external factors can be present.

The warming of 30s of XX century came in history as the "warming of the Arctic," was associated with an increase of duration of the zonal circulation. The increase of the total length of the Atlantic cyclones moving along the coast of Eurasia contributed to increase of the air temperature in the coastal weather stations in the Arctic basin and in the temperate latitudes. Maximum duration of zonal circulation was observed in the decade of 1931—1940. These are the first years of the global warming.

The second global warming begins from the 1970s and is well coordinated with increase of length of the group of circulation with cyclones at the poles. With these macroprocesses in the northern and southern hemispheres cyclones come from low to high latitudes, which is accompanied by increase of the temperature in the middle and high latitudes.

The first warming was zonal and most evident at high latitudes. The second warming was more spreading in different latitudinal zones. It reached the peak in 1998. Cooling began after duration of circulation group with cyclones at the poles reached maximum in 1997.

The observed current climate changes are well coordinated with the rearrangements in the general circulation of the atmosphere. Kononova N.V [3, p. 11—35] found that changes in the average global temperature during the XX century — beginning of the XXI century are in antiphase with the changes of the summary annual length of the blocking processes and in phase with the duration of a particular type circulation on the poles. Currently there is increase of duration of the blocking processes [3, p. 11—35] and observed decrease in ocean surface temperature [4, p. 98—104] contributing to a further reduction in global annual average air temperature.

Disturbances in the atmospheric circulation may be the result of forced or natural oscillations in the climate system under the influence of external forcing fluctuations or episodic external impacts.

The atmosphere is less inert component of the climate system and is subject to multifactorial influences in the process of interaction with other components of the climate system as well as under external factors. Because of the low thermal inertia of the atmosphere, long-term processes in it can only be formed under the influence of external energy sources.

The closest source of long-period atmospheric disturbances is heat exchange: ocean — atmosphere and ocean circulation processes. Academician Monin A.S pointed out that the climate is formed under the influence of number of factors, which can be divided into three groups:

a. External or astronomical factors — the luminosity of the Sun, the position and moving of the Earth in the solar system, the inclination of the Earth's axis to the orbit plane and the speed of axial rotation, determining the impacts on the planet by other bodies in the solar system, its insolation and gravitational effects of the external bodies, creating tides and fluctuations of the characteristics of the orbital motion and proper rotation of the planet;
b. geophysical and geographical factors — number of features of the planet, from which the most important for the Earth's climate are the properties of the underlying surface, which define its thermal and dynamic interaction with the atmosphere;
c. atmospheric factors — the mass and composition of the atmosphere.

Perhaps the list of these known and suspected factors of the climate changes is not complete.

Anthropogenic warming factor. In recent decades the largest attention was paid to anthropogenic change in atmospheric composition as a possible factor of the strengthening of the greenhouse effect of the atmosphere and global warming in the second half of the XX century. In the publications of the Intergovernmental Panel on Climate Change (IPCC) the conclusion was made about the anthropogenic nature of the modern warming connected with increasing concentrations of CO_2, methane and other greenhouse gases in the atmosphere: "With a high degree of certainty it is possible to confirm that the observed increase of the anthropogenic greenhouse gas causes a major part of the global warming of the second half of XX century. Carbon dioxide through the greenhouse effect in the atmosphere makes the main contribution to global warming" [2]. Judging by the large number of publications, the output obtained on the basis of model estimates was received that the rapid growth of greenhouse gas emissions is a result of the intensification of human activities. As before and especially recently, more and more publications appear in which the alternative hypotheses are offered.

IPCC conclusions are based on estimates received from the physical and mathematical modeling on the assumption that the models take into account all factors and adequately reflect all the processes with their multilateral and direct feedback connections for all components of the climate system. Though it is certainly known that the models are far from being perfect. The first doubt in the unconditional anthropogenic nature of the modern warming is based on historical facts about the climate in the past, according to which these and stronger warmings were observed many times in the past and then each time later they were followed by coolings. It happened in the pre-industrial era.

According to the academician Kotlyakov V.M. data, concentration of greenhouse gases and global temperature in the past varied concurrently, as it follows from the analysis of ice cores for a few centuries, and the level of gases in the atmosphere really increased dramatically over the past 100 years, but recent changes in temperature do not go beyond its natural historical fluctuations in the pre-industrial era. The concentration of CO_2 in the atmosphere is subject to natural fluctuations. According to known laws of physics, depending on the upper ocean temperature, CO_2 is heavily disolved in the ocean during colling or released from the ocean into the atmosphere during warming. According to these data, the change of CO_2 concentration in the atmosphere can be regarded as a consequence of warming but not as its reason.

According to data of academician Nigmatulin R.I. [5, p. 1—8] values of natural CO_2 flows from the ocean into the atmosphere and from the atmosphere to the ocean are many times greater than the CO_2 emissions resulting from human activity. Can we be sure that the existing

imperfect ocean models with such comprehensive accuracy describe the state of the upper layer of the ocean, in order to properly estimate the balance of the natural long-term fluctuations of CO_2 concentration and evaluate the impact of the exclusively anthropogenic CO_2 additive in climate change? Recognizing the anthropogenic component in current climate changes, we can not reject the existence of natural climate variabilities which always took place and still exist.

According to opinion of academician Kotlyakov V.M. [6, p. 44—47], " No matter what anthropogenic climate changes are , they are superimposed on its natural variations, the scale of which is still greatly exceeds the impact caused by greenhouse gas emissions… Understanding and prediction of the effects of increase of the greenhouse gases in the atmosphere (so-called global warming due to the greenhouse effect) requires an understanding of the natural variability of natural processes on which human influence is overlapped. "

According to observations at fifteen hundred Russian meteorological stations by the author [7] the research of contribution of increase of CO2 concentration in the second half of the twentieth century in changes of the air temperature was carried out. Statistical experiments were made in which the influence of heat advection, the greenhouse effect of water vapor and clouds in the air temperature changes at different latitudes and in different seasons were leveled out, and dependence of the remaining changes in temperature from radiation balance of the earth's surface was estimated. After excluding these natural factors, changes in temperature and radiation balance could occur, mainly due to changes of CO_2 concentration in atmosphere. It turned out that share of CO_2 in total temperature variability was about 25%. These observations confirmed the influence of increased concentrations of greenhouse gases on the climate, but at the same time demonstrated that the assessments of physical and mathematical models of the dominant role of the increase of greenhouse effect in climate warming in the second half of the twentieth century were too much overreported.

Solar Activity. The Earth's climate is primarily the result of the impact of solar energy in existing astrodynamics parameters of the Earth. Therefore, the first two terms of the constancy of climate are to keep the luminosity of the Sun and Earth's orbit parameters. In fact, neither one nor the other remains strictly constant, there are small variations. At the beginning of the 1980s the variability of the solar constant was discovered with an amplitude of 0.1-0.2%, related to the 11-year solar cycle. Reduction of the solar constant is connected with appearance of very large sunspot groups in the Sun, and slight increase — with solar torches. If solar activity is high, the number of spots (sunspots — dark formations) on the Sun increases, the solar constant to some extent depends on area of them. Appearance of sunspots and torches in the Sun disc explains only

50-70% of the observed variations in the solar constant. Possible reasons for the cyclic variability of the solar constant may also be changes in the Sun's diameter. According to data of Abdusamatov Kh.I., [8], changes in the solar constant are 0.07%. The effect of such small variations in the solar constant remains controversial and is reduced to the question of the sensitivity of the climate system to such variations.

The phenomenon called as changes in solar activites are not limited by changing the luminosity of the Sun. The sun is also a source of streams of charged solar particles and modulator of cosmic ray flows that affect the magnetosphere and upper atmosphere of the Earth, especially in high latitudes, and are able to create a disturbance in the atmospheric circulation with consequences for weather and climate.

Astrodynamics factor. The amount of radiation absorbed by the Earth's surface plays also important role in climate variations. From the astronomical point of view, the absorption of Solar energy by the Earth is determined, above all, by the angle of incidence of sunlight to the surface of the Earth, which depends on the angle of inclination of the Earth's axis to the ecliptic. As a result of the interaction of the Earth with the Moon and planets the variations in the parameters of the orbital motion of the Earth and tilt of the Earth's axis arise. At this the conditions of solar radiation absorption are changed, as well as the duration of the seasons and, therefore, the total annual influx of solar heat in the climate system. Astrodynamics conditions are the basis of the formation of the radiation of the planet's climate components. Variations in the parameters of the orbital motion of the Earth and the tilt of the Earth's axis may be accompanied not only by radiation but also dynamic perturbations in all shells of the Earth. The Earth is always experiencing recurring variable gravitational effects from other bodies in the Solar system. As a result of these actions components of the Earth's movement never remain constant. Disturbances can vary greatly in value and have different temporal scale from a few days up to many thousands of years. The values of the perturbation parameters of the Earth’s motion depend on the mass of the perturbing bodies and the distance from them to the Earth. That is why the strongest perturbations are determined by closest bodies such as the Moon, Venus, Mars, and massive Jupiter. Influence of the huge Saturn is weaker due to its great remoteness.

The gravitational interaction of the Earth with the planets and the Moon creates variations in the Earth's orbital velocity, in the north-south and radial deviations from normal orbit, creates precession and nutation of the Earth's axis, changes the Earth's rotation around its axis. In the process of interaction, the distance from the Earth to the sun is changed. These are the parameters which define the space (main) part of processes that form the Earth's climate. The

question is whether these variations are so essential to significantly influence on the Earth's climate fluctuations.

Resonances in sun and climate systems. The climate system in all its parameters is manifested as a complex oscillatory system with many nonlinear interactions. For millions of years the climatic oscillatory system has passed a few stages of the evolution. Regardless of its nature, nonlinear oscillatory systems during the dynamical evolution tend to go on a special synchronous drive mode. From the theory of vibrations, it is known that the collection of isolated objects vibrating with different frequencies, when applied with very weak bonds, go into such driving mode in which the frequencies of the objects become equal, divisible or being in rational ways. In synchronization process beside commensuration of frequencies also certain phase relationship between the oscillations are set. [9, p. 34—48].

During the synchronization process certain phase relationship between the oscillations are set besides commensurability of frequencies [9, p. 34—48]. Commensurabilities between the frequencies are very common in the real solar system. The hypothesis about the resonant structure of the solar system is the part of the general theory of behavior of complex oscillatory systems. Resonances may occur in the fluctuations of characteristics of the climate system. In this case they may become the basis of rhythms of different duration and frequency in the climate system, as well as the reason of long-term changes in the climate system parameters (hypothetically could be one of the causes of climate variability).

During the study of the evolution of nonlinear vibration systems, it is necessary to take into account dissipative forces existing in real conditions. These forces are directed to neutralize the interacting vibrations, chaotic to each other. But these same forces lead to the resonant amplification of the oscillations, which are interconnected in judicious mix. Forces of interactions may be more or less (speed of evolution depends on their values), speed of way out of the system into stationary resonant mode depends on it. The final stationary state of the system, achieved by end of the evolution, have to be resonant. Evolutionary mature oscillatory systems are inevitably resonant, and their structure is set, like quantum systems, by set of integers. In real time dissipative forces can be ignored, but in the evolutionary time scale cumulative effects of small dissipative forces become determine [9, p. 34—48].

By analogy with the resonant structure of the solar system, small variations in the Earth's orbit and as small external interference on the climate system must bring in result of long evolution the vibrational characteristics of the climate system to some resonant state, synchronized with the planetary configurations and cycles of the Solar activity (hypothesis). First of

all, synchronization must occur between cyclic external influences and frequencies of any of the components of the climate system or more of them. And then inside the climate system as a result of interactions, the vibrations of the own (resonant) frequencies should be established in the individual components of the climate system.

For the Solar system evolutionary time scale consists of billions of years. It can be assumed that for the climate system the evolutionary time scale is much smaller, taking into account the stronger external and internal communications. If synchronization of fluctuations between the elements of the climate and the solar system already happened, then they must have commensurate oscillation frequencies with the absence of direct energy relations. Confirmation of this hypothesis can be numerous reports about the statistical relationships of the climate variability with the external factors with the absence of the energy supply relationships. Lack of energy for the direct impact of external factor on climate can be replaced by multiple weak resonant effect.

This opinion about the nature of the fluctuations in the climate system significantly expands the ideas about cause-and-effect relationships, necessary physical and mathematical correlations of interactions in the climate system and the impact of external factors on the climate system.

Prediction of the climate change on the basis of physico-mathematical modeling

According to the conclusion of Intergovernmental Panel on Climate Change [2] in the second half of XX century. anthropogenic increase of CO2 concentration in the atmosphere created the conditions for increasing the air temperature due to strengthening of greenhouse effect. If this statement is true and the warming is a result of anthropogenic impact on the climate system, then further industrialization of society will inevitably lead to catastrophic consequences. In connection with this the problem of the forecast of the future state of the climate has become one of the major problems of the mankind today.

The conclusion of experts was built on the basis of climate change scenarios resulting from making of physical and mathematical models of the climate. A few dozens of fifth-generation models were already made in the world which claiming rightness. Figure 2 shows graphs of global temperature, received as per ensemble of the third-generation models (CMIP3) and fifth-generation models (CMIP5), and also graph of the actual global temperature, calculated by the observations. Deviation of scenarios from the prognostic trend temperature is ±±0,4^{o}C. Taking into account that the warming of the global climate for 100 years was 0,76^{o}C, with range of variation of possible scenarios in comparable value (±0,4^{o}C), it is possible to say that the reliability of such predictions of climate change does not correspond to their strategic importance.

With such a wide range of possible scenarios, the value of the forecasting trend of climate change has no sense. It is important to define at least the direction of future changes. In XX century further exponential increase in temperature was surely predicted until the end of the XXI century. But over the last 17 years the global warming has slowed greatly, a pause has occured in temperature increase. This pause started after 1998. The expected increase in temperature to 1,1°C by 2015 did not take place (see Figure 2), later 2000 the red predictive curve on the chart is significantly above the black curve of actual temperature values. And what will be by the end of XXI?

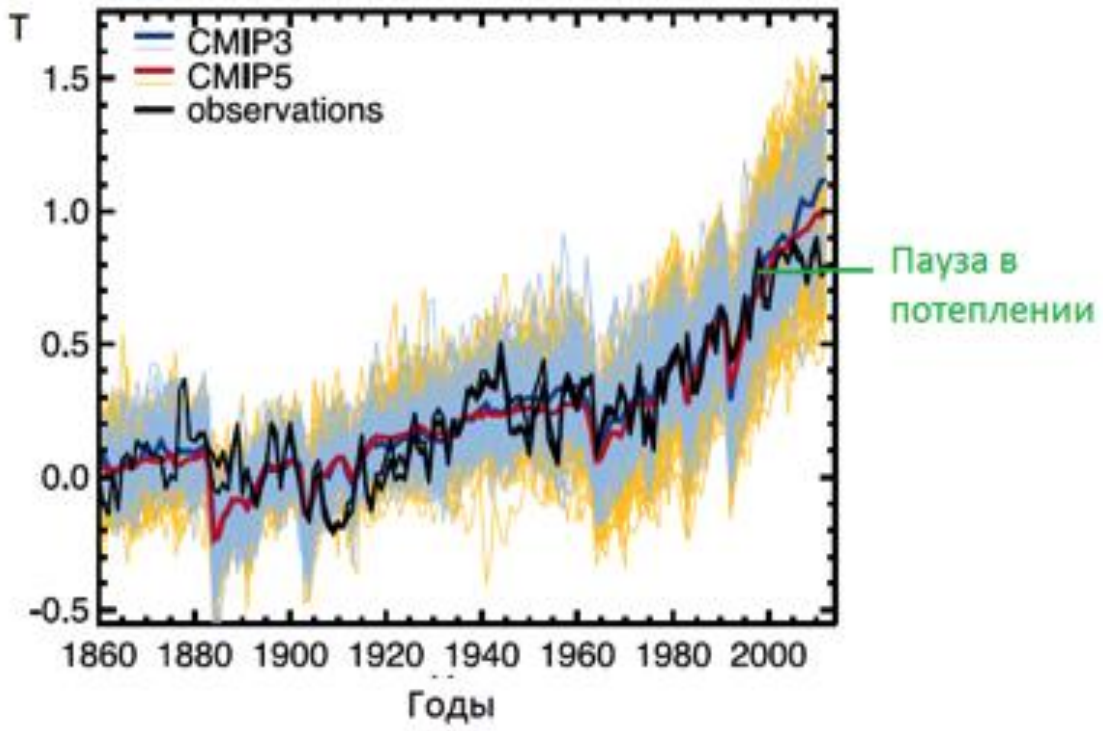


Figure 2. Global temperature (T), calculated as per physical and mathematical models of the third-generation (CMIP3) and fifth-generation (CMIP5), and also real global temperature, resulted from observations for 1860—2015 years [3]. Pause of global warming is marked with a green line.

According to opinion of IPCC, the unprecedented warming is expected by the end of XXI century. Figure 3 shows the trend of the expected climate change according to the IPCC version and the corridor of uncertainty of such forecast, resulting from the uncertainty of the model and the uncertainty of human impact on the greenhouse gases [2]. Figure 3 shows that the width of the corridor of uncertainty is 2 times more than the value of the forcasting increase in global temperature. The situation is similar for the regional forecasts, including the Arctic. Is it possible to make strategic plans for development of North on the basis of such uncertain forcasts? Gaps in deep understanding of some processes in the climate system and factors affecting it, are the main cause of significant uncertainty in predicting tends of climate cnanges using modern models. In such circumstances different approach is reasonable — the study of laws of the changes in climate variability, according to observations and their extrapolation.

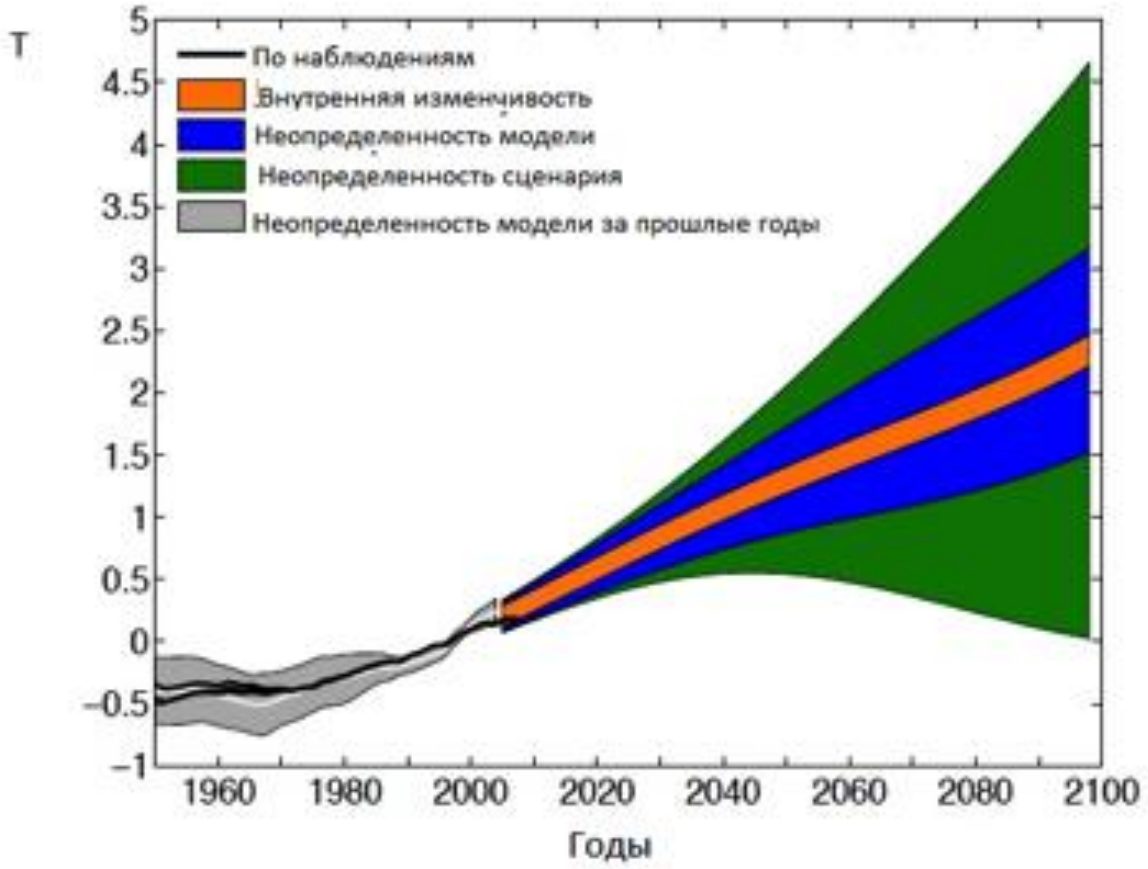


Figure 3. Forecast of global climate change trend as per IPCC version [3] and climate variability due to different reasons.
Dark line = observations. Orange = inner changes. Blue = uncertainty of a model. Green = uncertainty of a scenario. Grey = uncertainty of a model in past years.

Statistical model for the prediction of climate variability

Physico-mathematical models are desirable purpose of description of all physical processes in the climate system, but currently they are limited to insufficient knowledge of the physical processes and mechanisms responsible for oscillations climate variability. The search of the objective laws in time series of meteorological characteristics goes for a long time and not successfully enough. The lack of clear ideas about of the reasons of formation of fluctuations in atmospheric characteristics and unsuccessful experiences of search of objective laws in climate oscillations led researchers to hasty conclusions about the randomness of all processes in the atmosphere. Indeed, there no simple laws in nature, which for many years been the subject of research in the statistical analysis. For example, if the hypothesis about recurring disturbances in the time series appeared, then the accuracy of periodic processes was evaluated by the method of spectral analysis. At the same time for greater reliability of results in the analysis the maximum possible time series was used. As the result, statistically significant but systematically incorrect conclusion was received that the fluctuations in the time series are not periodic and it means that

they are random. There were several methodic errors in this analysis. *Firstly*, repeating perturbances should not be necessarily periodic — it may be a series of interconnected perturbances in different time intervals. *Secondly,* even the periodic perturbances should not exist endlessly long while, as it is desirable to obtain reliable statistical estimates. *Thirdly,* periodic oscillations with imposing of additional factors may eventually change the sign or phase, their period can gradually stretch or shrink. For example, at the boundary of ocean-atmosphere inevitably slow changes of heat flux oscillation period occur together with changes in the thermal inertia of the upper layer of the ocean interaction with the atmosphere, and the inertia is changed depending on the changing thickness of the top layer of mixing and volume of the upper layer of water involved in the heat exchange.

By now, a lot of information is received about the behavior of the climate system, which implies the need to create other methods to find patterns and to make a statistical model.

The theoretical assumptions of the model. Global and regional climate on different time scales can be characterized by the change in its status and fluctuations. It should be noted that fluctuations in the atmosphere can be natural and forced ones and their properties are different. Free fluctuations are those which are made by the system near the position of stable equilibrium after the initial disturbance. The frequencies of these fluctuations are determined by the properties of the system and does not depend on the frequency of repeating impacts on the system. Free fluctuations occur only due to the internal forces to counter the initial disturbance (presence of a perturbing factor is required). This is the most important property of the independence of the natural frequencies of the fluctiations of the climate system from a period of external influences usually was not taken into account.

Forced fluctuations are those which happen under influence of the variable external forces. While investigating fluctuations, it is necessary to take into account that forced fluctuations have a frequency of disturbing forces, and free fluctuations have their own frequencies inherent to the system, and they are connected with disturbance only from the start time. This is the fundamental position to make a statistical model.

Atmosphere is the least inertial component of the climate system and that is why it is more readily reacts to external changes (impacts). Reaction of it is manifested across the spectrum of its own frequencies. The impact on the atmosphere of every disturbance from the different components of the climate system and external factors, every time is accompanied by starting a new series of its own disturbances in the atmosphere. Fluctuations on natural frequencies at every new startup have a new phase of the fluctuations (it fundamentally affects the method of allocation of

periodicities). New fluctuations impose on dying out the previous ones. At the same time the interference, beats, etc happen. It is not always possible to separate periodic changes from them.

With all the complexity and multifactorial dependence of processes of the climate system, fluctuations in the atmosphere in some way are self-coupling, and there are rhythms that are easier to separate. The atmosphere has climatic memory for about two weeks, so long-term climate variations can not be accreditied only by vibrations at its natural frequencies. The long-term stability of the atmosphere is supported by other components of the climate system. The ocean can be hypothetically considered as possible nearest source of long-period rhythms which define a series of non-periodic disturbances in the atmosphere as a result of interference, beats and resonances. At the same time, we can not exclude other potential sources of direct rhythms in the atmosphere, such as irregularity of the angular rotation of the Earth, perturbations in the orbital motion of the Earth and other geodynamic factors and external influences.

The main source of knowledge about the climate system consists of observations and accumulated data sets of such observations. At any given point of time the original field parameters of the climate system, including the ocean, contains gradients, which in some initial point set the push to all system processes in the direction of levelling of gradients, like a pendulum, which was rejected before running from the vertical, and began to move. In this movement, the system as well as the pendulum, passes the equilibrium point by inertia and goes from equilibrium to the other side. Then the movement in the opposite direction begins, again towards equilibrium. In this way the initial gradients set dying fluctuations of the climate system on their own frequencies. The appearance of the initial gradients in the climatic characteristics of the system is always preceded by some external influence. The statistical model should extrapolate the moments of occurring of the external influences and coming after that sets of dying oscillations. Different components have different inertia, that is why fluctuations of different duration occur in the climate system. In the deep ocean processes and in the ice cover the periods of fluctuations can reach thousands of years.

Research of the rhythmic structure of the climate characteristics (primarily of temperature) on the basis of the data of the world meteorological observation network has allowed the author to make the statistical model of the regional climate, which coveres all regions of the Earth. Prognostic base of the model is the method of allocation of hidden periodicity, proposed by the author in 2007 [10, p. 14—26].

Model of periodical nonstationarity

In atmosphere, as well as in all non-linear systems, as a result of long-term external effects, short-period perturbations occur at the natural frequencies of the atmosphere. The superposition

of several oscillations at the natural frequencies is manifested in the atmosphere as a series of disturbances which arise with apparent chaotic nature on the interval from one external action to another. With every forthcoming external influence, the whole series of seemingly chaotic fluctuations can be repeated. Such perturbations are called rhythmical. Rhythm is the alternation of any elements that occurs with a specific sequence. In nature there is polyrhythm. However, many of the rhythms in the climate system are weakly expressed and can be detected only with special analysis. During alteration of processes new dominant rhythms can arise which have never been before. The superposition of rhythms makes complex form of fluctuation values in the time series. Thus, statistical modeling should be directed to the description of the laws of long-term influences and to the description of free oscillations stepping after them at natural frequencies. In this problem formulation it is assumed that during model's output there will be oscillations with frequencies different from the frequency of the external (relative to atmosphere) disturbances. It is assumed that after every external influence on the atmosphere a series of non-periodic disturbances in a certain strict sequence will arise (the result of superposition of vibrations at the natural frequencies). After each new external action in the atmosphere a series of new disturbances will occur, starting from the new phase.

From the statistical point of view, the forced fluctuations can be described by the model of the periodical nonstationarity (the terminology from [11]). Periodical forcing fluctuations in each period set a series of non-periodic forced disturbances.

It is widely accepted that [11] that the time series has a periodical nonstationarity if the whole series, and any of its segments are not stationary, but series is divided into such equal segments of duration τ, in which each value of meteovalue on one segment there is equal or near value through the τ units of time in the next interval:

$t_1 \approx t_{\tau+1}$; $t_2 \approx t_{\tau+2}$; $t_3 \approx t_{\tau+3}$; . . . $t_\tau \approx t_{2\tau}$ etc.

If periodical nonstationarity exists in the parameters of the atmosphere, then the temperature prediction task is to identify the period of nonstationarity τ – the period of forcing impacts. Forcing impacts on the atmosphere at regular intervals sets the rhythms for the series of fluctuation characteristics of the atmosphere on nature frequencies. In practice, the forcing powers are truly unknown. According to meteorological observations we have only series from the superposition of natural oscillations of complex shape. And according to these series of disturbances it is necessary to allocate the period τ of hidden forcing rhythm-making fluctuations.

If τ is known, then time series can be divided into intervals with duration τ, where τ is the period of forcing fluctuations. That is if we know τ, series can be divided into a few intervals in

such a manner that every member of series t_i will be equal or close member $t_{i+\tau}$, where τ is the period of forcing impacts. The series of values t_1, t_2, … t_n of meteorological value (temperature) can be of any complexity – periodical or non-periodical with variable phase and amplitude.

τ period must be found empirically, through all its possible values by checking the similarity of disturbances in neighboring segments of the time series. In general, the work begins with the search of period τ of the repetition of a series of non-periodical perturbations of meteorological values, which are the result of forcing impacts. As a rule, rhythms in the atmosphere can be traced 2-3 times and then are washed out, so testing is done at the last interval of the time series of observations lasting 3T in total. Other data is not used at this stage. The elements of this series-interval will be values from t1 to $t_{3\tau}$. In every tested value of τ analyzed series is divided into three segments with τ duration. If number 1 is to identify the first element of series t, and increase the number by 1, the following segments of series of elements will be received: the first segment — t_1 to t_τ, the second segment — from $t_{\tau+1}$ to $t_{2\tau}$, the third segment — from $t_{2\tau+1}$ to $t_{3\tau}$. The meaning of $t_{3\tau}$ is the last member of series of observations. According to the first and second periods of time the average etalon of the temperature perturbation on the test interval of time duration τ is calculated. The meanings of this etalon are:

$T_1=(t_1 + t_{\tau+1})/2$; $T_2=(t_2 + t_{\tau+2})/2$; $T_3=(t_3 + t_{\tau+3})/2$ etc. to $T_\tau = (t_\tau + t_{2\tau})/2$.

The temperature changes t_i on the third (last) time interval were compared with the Ti changes T_i in the received tested etalon ($i = \overline{1,\tau}$). Their similarity was estimated by the correlation coefficient. After similar calculations for all possible test values of τ, the duration of the interval T was determined, in which the similarity of changes in the first segment and in the tested etalon was maximum in value of the correlation coefficient. If the best correlation coefficient is statistically correct, then according to the hypothesis of rhythms, the period τ — is the time through which a series of non-periodic oscillations is repeated on the interval τ. At that the entire complex overall picture of fluctuations becomes predictable for τ values in advance. Isolation and extrapolation of the rhythms is the essence of the statistical climate model.

In practice it turned out that the allocation of one meaning τ is not enough. A lot of different factors with their system of rhythms affect the regional air temperature. The set of these rhythms varies depending on the season, circulation, physical-geographical and other conditions. Therefore, multiple search of rhythms is arranged and such a set of rhythms is selected that describes in the best way the temperature change for the years, prior to the last forecast.

Each forecast is based on the rhythms allocated for the particular station and month. Sets of rhythms are different. Preliminary analysis showed that in January the rhythms of 5, 13, 18, 35-

37 years dominate at the stations of Russia, in December — 8, 11, 18 and 35-37 years, in other months, as a rule, 5-6 rhythms in range 3-18 years occur. 18-year rhythm has the highest frequence in January, July — August, in September — October, and in December, it is sometimes changed by the strong rhythm of 17 or 19 years. In cases when there is no 17-19-year rhythm, there is 16-year rhythm, it usually happens in the first half of the year. 10-11 year rhythm in all manifestations corresponds to 10-11-year cycle of the solar activity. The rhythm of 10-11 years can be traced only during cold half of the year. It is a well known fact described in the literature—the solar-atmospheric connections are more resistant during cold half of the year. Increase of the frequence of the 11-year rhythm in March — April is in line with the known fact that during these months, and in October-November the favorable conditions of interaction of the geomagnetic field with the interplanetary magnetic field in which the invasion of solar corpuscles in the Earth's atmosphere become easier with strengthening solar activity. 8-9-year rhythm for stability is similar as 18-year cycle, sometimes (in June and August), 8-9-year rhythm is replaced by 7-year one. Both these rhythms coincide with the features of the interaction of the Earth and the Moon. 4-year rhythm sometimes turns into 3- or 5-year rhythm.

Basing on duration of mentioned rhythms the hasty conclusion can be made that by chance any rhythms can be allocated in range 4-18 years or more. In fact, the state of the climate of any particular month of the year is described by some limited coherent ensemble of rhythms, the duration of each can vary slightly over the years. The ensemble of rhythms is always not much different from the set of 4-6, 8, 11, 18, 35 years whose origin is to be studied. A wide variety of rhythmic wave motions in the atmosphere is stipulated by the influence of forces of different origins.

So basing on the analysis of these observations of climate variations, the author formed a new idea at the properties of the natural oscillation characteristics of the climate system, and the statistical model of hidden rhythms in the atmosphere and their subsequent extrapolation in time is developed. Research of forecast air temperature values with this model showed that the model allows us to make prognostic assessments of climate fluctuations 2 decades in advance.

Forecast success rate of climate fluctuations

The above mentioned pause in warming of the global climate since XXI century, which was not predicted by the best physical-mathematical models of the climate. In fact, based on the statistical model, delay of the global warming was predicted already in 2007. The forecast was published in printed form in the monograph [7] (available on the website http://meteo.ru/publish_tr/monogr2/glava7.pdf) and in the abstract of the author's thesis [12].

Chapter 7 of the monograph [7] dated by 2008, shows that on the basis of extrapolation of natural rhythms the delay of warming is expected in interval till 2025. Figure 4 depicts a predictive temperature graph, which was published in 2008. In the chart the trend line showed the expected pause in warming, bold curve — the forecast of year-by-year temperature changes. Now the forecast can be evaluated.

The best independent test of the accuracy of the forecast of the climate change is the comparison of the previously published forecast with new data of observations. Such opportunity was received — the forecast till 2025, published in 2008 in the monograph, in the abstract of the thesis and on the official website "Russian Research Institute of Hydrometeorological Information-World Data Centre" (RRIHMI-WDC), this forecast was compared with observational data published at NASA website in January 2016. The forecast was made in 2007 on the basis of observational data until 2006. Calculated on the base of the author's model, the trend of delaying of warming was completely confirmed in the interval of 2007—2015. The pause is highlighted in Figure 2 as per modern observations and in Figure 4 as per forecast made in 2007.

Besides, the comparison of year-by-year forecast and actual values of the temperature in the interval 2007—2015 showed the matches of the major peaks of anomalously warm years 2009—2010 and 2015, as well as match of conditions during less warm 2008, 2011-2013.

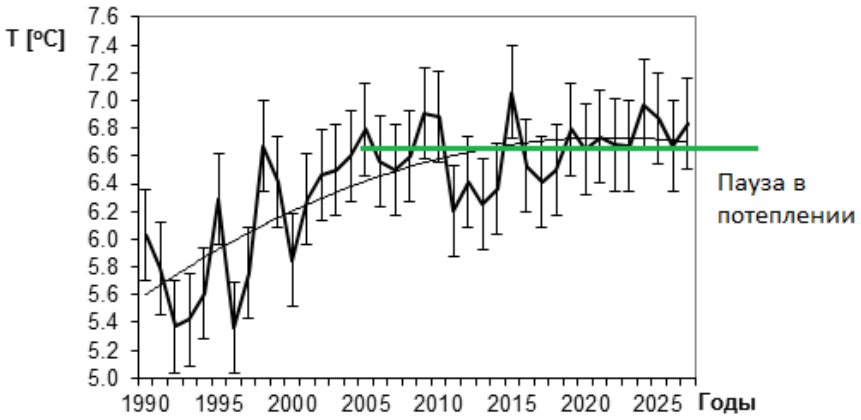


Figure 4. The average annual air temperature of the northern hemisphere based on observational data for 1990-2006. and the author's forecast for the period 2007-2025 gg. (from publication of 2008 [8, 13]).

The diagram (Figure 5) shows the actual temperature values of the northern hemisphere (Тн) according to NASA for the period of 1961—2015 and published in 2008 prognostic values of the air temperature (Тп) for the period of 2008—2025, obtained by the author's statistical model.

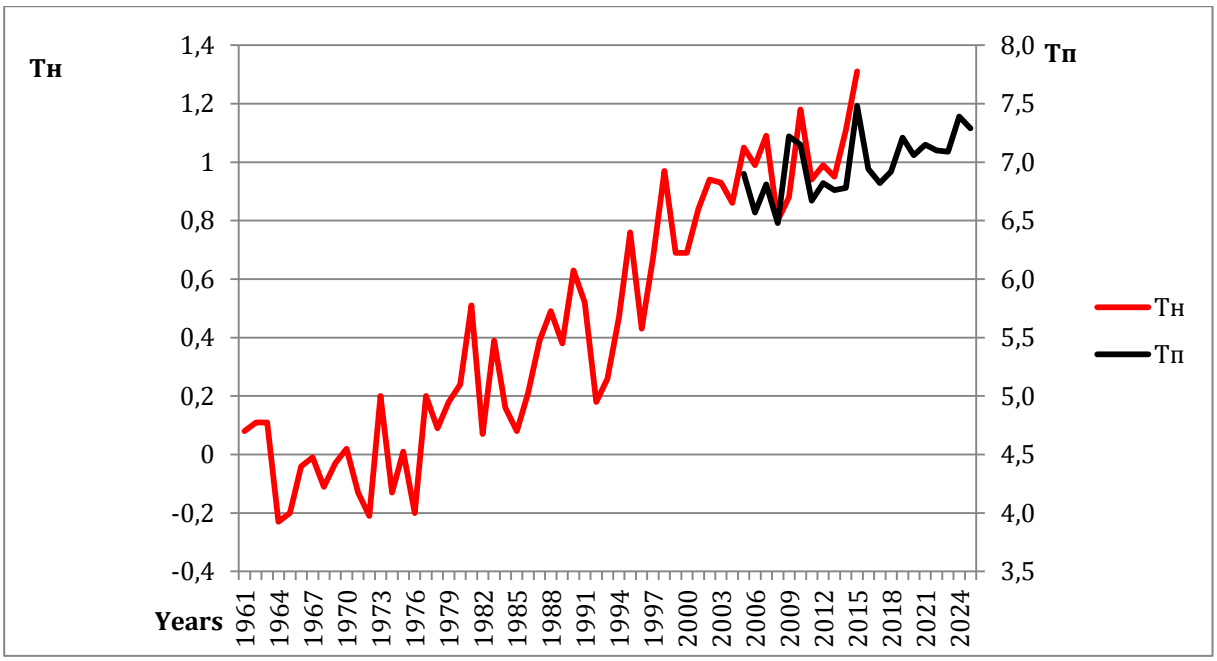


Figure 5. The average annual temperature over the continents of the northern hemisphere of the Earth: the forecast from [8, 13], made in 2007 for period of 2007—2025. (Тп) and the actual temperature values as per observations at meteorological stations in the northern hemisphere [16] till 2015 (Тн)

Comparison of the forecast values with the actual data showed that the on the interval of the first decade of forecast, the statistical model allowed us to predict all the basic features of interannual fluctuations of the average climate of the northern hemisphere and the long-term warming trend of the warming delay in the northern hemisphere of the Earth at the beginning of XXI century. For comparison it should be pointed out that the best physical-mathematical climate models did not predict warming delay at the beginning of the XXI century they are not intended for forecasting of interannual climate variability. In the basis of the described model there are new ideas about the structure of fluctuations in regional climate and observation data from 8,000 stations of the northern hemisphere. The model allows to calculate the expected climate changes with quantitative estimates for each meteorological station of the Earth.

Seasonal and monthly weather forecasts with a year lead- time

The theoretical suppositions mentioned in the section about forecast of climate variability, were suitable also for the shorter time scale prediction of the air temperature and elements. Seasonal and monthly forecasts with one-year lead- time turned out to be successful.

Despite the smooth progress of the annual average daily insolation, the general circulation of the atmosphere keeps throughout the season the main directions of main air flows and the position of the centers of atmospheric actions, and then suddenly switches to another mode corresponding to the next season. One can figuratevly say about this known fact that the atmospheric circulation can be quantized according to seasons. The ability of atmospheric circulation to be quantized seasonally is well known, it is usually referred to as the atmospheric

circulation ability to abruptly switch from one mode of circulation of one season to different mode, specific for the next season, the essence remains the same. The second example of quantization is the circulatory era — it is the largest stage of the process of the development of the atmospheric circulation with a specific character of interannual and annual micro-transformation of circulation, formation and distribution of thermobaric fields in the hemisphere.

For a long time, seasonal forecasts were based on the analysis of succession of atmospheric circulation types from season to season. Asknaziya A.I. [16] wrote in 1936: "Can we assume that approximately the same conditions of hydro, litho- and atmosphere in one season will lead to approximately the same conditions of the next season, or on the contrary, ... close initial states can… lead to completely different weather patterns. If the first assumption is correct, then sooner or later the problem of the long-term forecast will be solved. If the second is correct, then you need to have courage to say openly that the problem of long-term forecasts is, at least in our time, insoluble." Until recently, such a philosophy of prognostic ties remained. Now it is clear that such arguments are not quite correct.

One of the reasons of the lack of the quality of the long-term forecasts may probably be neglect of quantization of the atmospheric circulation features seasonally, spacely and rhythmically over the years. Despite the fact that within the year inter-seasonal connections are very weak, while for the month forecast special importance was given to the data for the last month or decade. The forecast of the average air temperature for coming month was usually based on an extrapolation of the atmospheric processes, immediately prior to the forecast. In fact, succesfull approaches were used to the methods of long-term forecasts, taken from the experience of the creation of short-term and medium-term forecasts. But lead-time of the forecasts with this approach was limited by one month.

Weather conditions in the region are determined to a large extent by the type of coming air mass. Tradewind zones of northern and southern hemispheres are served as centers of formation of the tropical air, limited by belts of subtropical anticyclones in both hemispheres. Polar air of the northern hemisphere is formed in the Arctic and sub-Arctic regions and the polar air of the southern hemisphere is formed in the Antarctic and sub-Antarctic regions. The air of the moderate latitudes occupies the space between zones of polar and tropical air. Air masses are different not only in values of the meteorological elements but also in factors of forming, with a different set of cyclical components and various statistical and prognostic properties.

Seasonal differences in the atmospheric circulation of the moderate and high latitudes create a kind of oscillation frequency filter. This filter differentiates fluctuations depending on the

proximity of a period to the value divisible the duration of one year. Oscillations with even period of years have advantages in comparison with the periods of the other values. Fluctuations with periods aliquant to year are transformed into long-period perturbations. External influences on the atmosphere with periods T_1 aliquant to year, can be manifested in the extratropical latitudes with periods T with n times longer than the initial tropical disturbances: $T = nT_1$, where nT_1 — integer number of years with minimum integer of n.

Thus, basing on the known properties of atmosphere, it is clear that long-term external impacts to atmosphere can lead to one type weather changes of the extratropical latitudes only in the corresponding seasons, under identical seasonal conditions of the atmospheric circulation. External cyclical impact on extratropical atmosphere is possible only at certain frequencies divisible to one year or in time interval nT. This means that the impact with the period, for example, of two years will be manifested in the atmosphere in 2 years; impact with the period of 2.5 years will be manifested in the atmosphere of the similar season only in 5 years, and impact with a period of 2.2 years — in 11 years etc. The availability of the peculiar frequency filter results in situation when the fluctuations with frequencies of the forcing oscillations are not detected in the atmoshere, but the rhythms occur with intervals of several times greater than the periods of forcing fluctuations. For example, if in the ocean depths there is a cycle with the period of 18 months, then it will be manifested in extratropical atmosphere not every 18 months, but only in 3 years (36 months), similarly, cyclic impact with the period of 20 months — will be manifested only in 5 years (60 months), etc. Bearing in mind this seasonal filter it is not possible to expect that approximately the same conditions of hydro, litho- and atmosphere of one season will lead to approximately the same conditions of the next season. But it is possible to find patterns of occurrence of rhythms, divisible to one-year period, and a series of disturbances in the atmosphere following for each rhythm. Frequency of one year cycles automatically gives lead-time of the forecast starting from one year. This approach was used in the author's method of seasonal and monthly temperature and precipitation forecasts with lead-time of one year.

To check the quality of forecasts of air temperature anomalies including its sign and value following method published in [17] was used as described in the guidance document[2]. According to [17], the quality of the forecast is considered satisfactory if its error is less than the climate forecast error. The forecast can be satisfactory only as per the sign of anomalies, satisfying only in the deviation from the actual level or satisfactory as per two of the indicators. In the latter case,

[2] Metodicheskie ukazaniia. Rukovodiashchii dokument. Provedenie proizvodstvennykh (operativnykh) ispytanii novykh i usovershenstvovannykh metodov gidrometeorologicheskikh i geliogeofizicheskikh prognozov. RD 52.27.284-91. // Komitet gidrometeorologii pri kabinete ministrov SSSR. M., 1991, p.149.

the quality of the forecast is accepted as good. If none of the terms of comparison with climate forecast is not fulfilled, then the forecast is taken bad.

The essence of evaluation as per "value" is that forecasts are considered to be satisfactory in which the standard error is less than the natural variability of the series. It means that satisfactory forecast can reduce the uncertainty of our knowledge of coming meteorological values. Calculations of evaluations of the quality of the had been conducted by the author's forecasts for 400 stations in Russia for 10 years. 400 evaluations were received for each month, each season and year. Based on these evaluations, the number of stations was calculated in % with different quality of the forecasts of temperature anomaly in three variants: a) match of actual and prognostic anomaly in sign and value; b) match in sign; c) match in value. In all variants the total number of stations — 400 was taken as 100%. The sum of the evaluations of three variants for month can exceed 100%, as the evaluations as per variants are calculated independently. The number of stations with "good" and "satisfactory" forecasts are shown in the table 1 and 2.

Table 1

The number of stations (%) with "good" and "satisfactory" forecasts of anomaly of the monthly air temperature

Suitability mark	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Average
a) In sign and value	55,7	45,3	28,8	11,4	19,6	22,5	29,8	22,8	34,2	25,3	31,0	5,7	27,7
b) In sign	76,3	72,5	66,8	59,5	58,9	55,7	80,1	72,5	73,7	71,2	57,9	30,7	64,6
c) In value	71,8	63,6	44,6	27,2	25,0	30,7	36,1	28,8	39,9	33,9	42,4	25,0	39,1

Table 2

Forecast success rate (%) in sign and value of anomaly of the average season and average annual air temerature

Suitability mark	Winter	Spring	Summer	Autumn	Year
a) In sign and value	96,2	66,1	74,1	67,4	90,2
b) In sign	96,5	73,4	86,7	72,2	90,2
c) In value	98,7	90,5	86,1	84,5	97,0

Estimates detailed per months (Table 1) show that the forecast success rate of monthly temperature is always better in sign than in value. Forecasting method has smoothing properties, the sign of anormaly is often predicted correctly, and the value is understated. Better quality of forecasts is observed in January — 76.3% of the stations with forecasts satisfactory in sign and 71.8% — in value, and also in July — satisfactory forecasts in the sign were at 81.1% stations. Forecasts satisfactory in sign on more than 70% of stations were observed in January — February and in July — October. During other months there were less stations with satisfactory predictions.

According to summarized estimates for all months, it turned out that on the average in Russia at 24.0% of stations the forecasts of the average month temperature were poor, at 64.6%

of stations evaluations showed satisfactory forecasts in sign of average month anomalies, at 39.1% of stations satisfactory forecasts in value of anomaly were observed, and at 27.7% of the stations the predictions were good both in sign and value.

Forecasts of average seasonal and annual avalues were more accurate (Table 2). Such predictions were satisfactory in sign or in anomaly value more than at 70% of the stations. Better quality of forecasts was in winter (more than 90% of the stations with good forecasts) and in summer (over 80% of the stations with good forecasts). In the spring and autumn about 70% of stations with satisfactory forecasts in sign, and 84-90% of stations with satisfactory predictions in value. While forecasting the average seasonal values, the negative smoothing method properties are not manifested, as the series of actual average seasonal temperature values are more smooth and probably more amenable to statistical modeling. There were about 96% of stations with good seasonal forecasts in sign and value in winter, 74% in the summer, and in spring about 66%. Average annual values are predicted well at 90% of stations (Table 2).

The price of forecast of the climate change of the Arctic

Significant changes in the characteristics of the ice cover in the Arctic [18, p. 814—818; 19, p. 59—65] open new economic prospects for the development of resource-rich Arctic shelf rich and for sea transportation of goods along the Arctic coast of Russia. Life and human activity in the Arctic is much complicated by severe climate conditions. Transportation of life-supporting cargo in the Arctic is only possible on the open water during periods of low ice concentrations in northern seas away from the multi-year ice. The seasonal sea ice cycle affects the human activities and life environment of biological species. In recent years, sea ice area decreased [13; 14]. Ice melting in the Arctic Ocean in summer gives the access to fossil energy sources in the shelf zone. This contributes to the development of the Arctic.

Current plans of the Arctic exploration and extraction of mineral resources technology are built on the assumption of expected continuation of global warming. But there is great uncertainty regarding climate forecast. In the case of climate cooling new technologies of subglacial exploitation will be required.

Nowadays for the development of the North a new transport system is needed. It is already planned to create in the north of Siberia the transport system with access to Northern Sea Route. The main drawback of Northern Sea Route — period of navigation there is possible for 2-4 months a year in conditions of today's abnormally warm climate. In the case of climate cooling Northern Sea Route will be lost.

Even today huge funds are invested in the development of the Arctic. Hoping that warm climate will be preserved, at Yamal Peninsula Sabetta port is under construction now. It is planned to build 700-kilometer railway line from the south to port Sabetta. Plans for building of new supporting Arctic port at the Barents Sea coast near Indiga Bay are considered. It is also planned to build liquefied natural gas plant, terminals for large tankers, oil terminals, to provide a basis for minor ship repair.

It is important to know whether the climate conditions of the future meet today's technology of extraction and transportation of mineral resources in the North. The future of the North depends largely on the future climate.

Conclusion

The severe climate of high latitudes is a limiting factor of the development of the north. Current warming has become favorable for the development of mineral resources on the continental shelf of the northern seas and for the use of Northern Sea Route as a major transport way along the entire northern part of Eurasia.

Based on the climate system observations and long-term research of fluctuations of the climate system as well as external disturbing factors, new ideas about the structure of the fluctuations and the laws of appearance of rhythms in the characteristics of the atmosphere were described, which made it possible to make the statistical model of air temperature fluctuations basing on new principles. The statistical model allows to obtain new prognostic evaluations of climate change for the next two decades. The regional temperature values are predicted as per observation points, in small and large regions. This model is multifunctional and can be applied to any region and for different characteristics of the climate system.

Model has been taking copyright test since 2007. The pause in global warming observed since the beginning of XXI century has been predicted by the model in advance before the reveal of the pause (the forecast for each year up to 2025 of the average annual air temperature in the northern hemisphere was published in 2008).

Interannual variations of climate anomalies forecasted in 2008, coincided in sign with year-by-year values of temperature anomalies of the next observations up to 2015. Abnormally warm 2009—2010 and 2015 were forecasted (above trend values), and also less warm 2008, 2011—2013 (below trend values).

The prognostic model for seasonal and monthly air temperature forecasts and amount of precipitation for one year in advance has been developed with including of the seasonal features

of transformation of the rhythms. Estimates of the quality of forecasts made on independent data, have demonstrated their informational content.

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The Arctic Twenty:
12 observer countries of the Arctic Council

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The Arctic policy of the UK

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Abstract. The article describes the evolution of the British Arctic strategy, the role of the British political institutions in this process, as well as the interests and policy priorities for the region. It is noted that currently the focus of the UK is addressed to the study of the environment state in the Arctic, as well as on climate change. In the future, with the development of the Arctic technology and increasing scrutiny of the area the interest of the Kingdom to natural resources of the Arctic zone will increase, as well as its military and defense interests in the region.

Keywords: *Great Britain, the Arctic, the Arctic Council, the Arctic Ambassador, Arctic policy, the British Petroleum Company, the Scientific Council for the Exploration of the environment*

Britain is seized by a “cold rush”. Analysts believe the Arctic is “the last frontier for new claims to possess natural resources and strategic position: from the comparative isolation and relative inaccessibility it becomes the part of the global geopolitical, commercial and legal network” for the situation in which the struggle is going on[1].

The UK has the following priorities in the Arctic: 1) the study of climate changes in the region and their impact on flora, fauna and human activity; 2) the prospects for the use of new shipping routes; 3) discovery of new sources of mineral and fishery resources; 4) the possibility to influence the decisions of the Arctic Council, using permanent observer status, as the geopolitical significance of the Arctic increases.

Evolution of the Arctic policy of the UK: from the framework policy to the Arctic strategy

Until now Britain has not developed a strategy for the Arctic, it has no long-term government program. The Arctic issues were discussed in the House of Lords in 2007 and 2010.

[1] Responding to a changing Arctic / Select Committee on the Arctic — Report of Session 2014-15**.** HL paper 118. URL: http://www.publications.parliament.uk/pa/ld201415/ldselect/ldarctic/118/11806.html#footnote-1158-123 accessed: 30 May 2016).

[2]. The report of the Environmental Audit Committee of the House of Commons "Protecting the Arctic" was published in 2013. The issues of protection of the Arctic from the effects of oil and gas field developments for the environment [2].

Small department in the Ministry of Foreign Affairs of Great Britain deals with the region, which emphasized: if Britain wants to be taken in the Arctic seriously, its research should be supported by the diplomatic and commercial endeavors: itself proximity to the Arctic (topographical or topological) does not provide the influence in terms of increased competition. It is necessary to strengthen bilateral relations with the Arctic countries and observer countries in the Arctic Council (Japan, Singapore), constantly work in its working groups.[3]

The fact that Britain starts more active policy in the Arctic can be confirmed by the fact that in February 2015 the House of Lords published the first in the history of the House report about the Arctic[4]. In the House of Lords, the question was raised broader than in the report of the House of Commons: instead of "protecttion" the Arctic, the upper house was more interested in the question of how the changes in the Arctic are forced Britain to rethink the attitude towards the region. The report pays a significant attatention to higher degree of involvement of the UK in the issues of the Arctic, to conducting more proactive policy, and the current policy is characterized as "too hesitant and cautious"[5].

The essence of the problem is that British bureaucrats still are not sure exactly how to negotiate about the access to the Arctic for the British scientists, business people, environmentalists. The appearance in the 1980—1990s. of circumpolar countries block made Britain to promote their interests in the region more delicately [3]. This was evidenced by the adoption in 2013 of the Arctic 'Policy Framework', rather than a strategy, and the British Ministry of Foreign Affairs considered it as the provoking proposal.

Observers note that the British policy in the Arctic should not be taken as a continuation of the neocolonial policy [4]. Claims on the privileged status of Britain's interests over the interests of "less Arctic countries" because of its proximity to the region can also cause resistance [5]. Britain will be welcomed in the Arctic just as a partner [6]. Indeed, the report says that activation of

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[2] Protecting the Arctic / Environmental Audit Committee — Second Report. URL: http://www.parliament.uk/business/committees/committees-a-z/commons-select/environmental-audit-committee/inquiries/parliament-2010/protecting-the-arctic/ (accessed: 30 May 2016).

[3] Adapting to Change. UK policy towards the Arctic / Polar Regions Department. FCO. 2013. URL: https://www. gov.uk/government/uploads/system/uploads/attachment_data/file/251216/Adapting_To_Change_UK_policy_towards_the_Arctic.pdf (accessed: 30 May 2016).

[4] Responding to a changing Arctic / Select Committee on the Arctic — Report of Session 2014–15. HL paper 118. URL: http://www.publications.parliament.uk/pa/ld201415/ldselect/ldarctic/118/11802.html (accessed: 30 May 2016).

[5] At the same place, p. 6.

Britain in the Arctic is justified not geographically or historically, not by the natural topography, but topologically: Britain's ties with the Arctic are scientific, commercial, international-legal. Activity to study the Arctic, financial services of the City of London — the true vehicles of the relations Britain — the Arctic, the geographical proximity is not enough: Britain should “contribute to relationships with the Arctic in order to benefit for the United Kingdom and for the common interests of the international community" [6, p. 103].

The main recommendation of the House of Lords is that Britain should follow other non-Arctic countries, appointing "Arctic ambassador" to pay more attention to the Arctic and the coordination of the British Arctic policy. It is noteworthy that the committee of the House of Lords has started to deal with energy security and diplomatic relations with Russia. Regarding the first question, the British government for a long time supported the development of hydrocarbons on non-discriminatory basis of in order to stabilize the global markets of energy and ensure the supply of hydrocarbons in the country. However, due to the sharp decline in prices for hydrocarbons Committee found necessary to call for the development of hydrocarbons on the basis of the principles of sustainable development and to think of the necessity of their development in the region.

The committee's recommendations can be summarized by the following: Britain should hold not reactive and but active policy in the Arctic: to appoint "Polar Ambassador," to support organizations of indigenous peoples, Indigenous Peoples' Secretariat, to send their representatives to academic institutions in Britain, to business trips to the British public authorities; to expand the program of scientific research of the Arctic; to ensure full representation of Britain in the Arctic Council bodies, including representatives of industry; to participate in discussions of the future fish resources in international waters of the Central Arctic Ocean in order to establish a moratorium on fishing until the way of fishing is coordinated. Particular attention is expected to be paid to the development of panarctic system of sea search and rescue operations with the Arctic countries, strongly support the provision of the observer status in the Arctic Council to the European Union.

British interests in the sphere of energy

United Kingdom is oil- and gas-extracting country, but it faced with significant shortage of hydrocarbons, which is covered by import. The country takes one of the first places in the world in terms of import gas and oil volume. Britain use its reserves of hydrocarbons carefully, as they are not very significant in the international comparison: hydrocarbon deposits are situated mainly off the coast of Scotland, and they are almost worked out. If earlier the kingdom had been supplying natural gas to Europe for twenty years through the pipeline, now it has turned into an importer of

the natural gas (gas production is declining since 2007). Britain itself imports natural gas from Norway.

At the same time, the British oil and gas companies are among the most powerful in the world, some of them are among the 500 largest companies in the world. According to data for 2014, Royal Dutch Shell took the third place in the world in terms of turnover, and BP — the sixth[6]. International prestige and financial indicators of BP suffered due to major disaster on the oil platform in the Gulf of Mexico in 2010. The accident has caused major expenses of the company in the amount of 19 billion dollars[7], and this figure is not final. However, it still leads the international activities on a large scale. This TNC is developing hydrocarbon production throughout the world, with 4 thousand branches of oil extractation and 5.6 thousand of natural gas extraction. BP has reserved a position in the Arctic through the acquisition of 19.75% of "Rosneft" shares (they acquired the package by selling the company TNK-BP which belonged to BP before).

BP and English-dutch company Shell before announcement of sanctions closely cooperated with Russian companies and made plans to use the Arctic deposits. Shell launched a test drilling in the Alaska offshore in the Chukchi Sea. However, they decided to slow down corresponding works after the accident on a drilling platform Kulluk, which ran aground at a distance of 250 miles from Anchorage which threatened to spill. The platform was carrying 140,000 gallons of oil and 12 thousand tons of lubricants. In 2015 Shell confirmed to leave from Alaska. They spent 7 billion of USD, but only one deposit was found in the Chukchi Sea at a distance of 80 km from the northwest coast of Alaska, which was recognized by unpromising for use. Test drilling in Baffin Bay also was not successful, although drilling was carried out in great depth — more than 6,000 feet.

The plans of two major oil and gas companies of the Kingdom: BP and Shell still include the study of hydrocarbon production capacity in the Far North. British insurance companies are interested in the possibilities of the insurance of the Arctic activities, but the largest insurance company of UL — Lloyds is showing restraint and does not promise to insure Arctic risks, because they find them unpredictable.

UK Research activities in the Arctic

UK claims to be considered as subarctic powerhouse, which can not be excluded from the Arctic "club". The arguments in favor of justification of the role of England are that its travelers from the XVI century made a significant contribution to the study of these harsh lands. In addition, the northern boundary of the economic zone of the Scottish Islands comes to the Arctic Circle.

[6] In accordance with the rating of the magazine «Fortune» for 2015.
[7] According to «Fortune» for 2015.

Britain has a long tradition in the study of the Arctic. Natural Environmental Research Council — NERC is the main organizer of the research in this area. Its functions include financing and coordination of research activities of the British scientific organizations. The Council has the Bureau for the study of the Arctic nature — NERC Arctic Office. These studies are based on the necessary infrastructure, in particular, on the research station in the village of New-Ollesund at Spitsbergen. The scientists have the opportunity to use several planes and four research vessels: Ernest Shacklton, James Clarc Ross, RRS Dis-covery, RRS James Cook, whose technical characteristics let them go in the Arctic seas, observing and studying the environment and Arctic climate. Britain is involved in the work of the Arctic Information Centre, which was organized by the EU in 2011, in Finnish Lapland. British interests in this center are represented by the Polar Institute of Cambridge University. Several British universities and institutes are engaged in the study of the polar regions. In particular, Scott Polar Research Institute in Cambridge is studying both polar regions: The Arctic and Antarctic. A number of the British universities take part in various projects of the Arctic, namely the Russell Group, University of Southampton, Aberdeen and Cambridge, National Oceanography Centre Southampton — NOCS, located in Southampton. In Swedish city of Kiruna, which is located above the Arctic Circle, there is British laboratory to analyze the interaction of the Earth and the Sun, which is part of the European Scientific Association (EISCAT). Along with the British laboratory in this association research institutions of China, Finland, Norway, Sweden and Japan cooperate. Using radar surveillance, they observe over the processes that occur in the lower, middle and upper layers of Earth's atmosphere.

Like the other EU members, the United Kingdom, in addition to carrying out its own research projects, is actively involved in projects and programes implemented jointly with European partners. This allows the use of parity financing, to avoid duplication and to use synergy. This activity is financed partly or in full through the EU Seventh Framework Program and /or other EU programs. Very popular subject of research in the united Europe is a program of study of the environment and the climate in the Arctic, including the impact of the changes there on the economy and society (ACCESS), in which almost all the EU members are involved. On the part of the UK the British Research Council for the study of the natural environment, the Scottish Association for Marine Science and University of Cambridge are included in this program. The program receives funding from two European programs, namely the Seventh EU Framework Program and the program "Ocean Future".

Plymouth Marine Laboratory — participant of the project NETMAR, which aims to create a European maritime information system (EUMIS). This information system is supposed to combine

the observations obtained from satellites, from the sea and coastal areas and to provide information to interested parties.

On behalf of the Ministry of Defence of Britain the University of Exeter joined the project “Page 21”, which aims to review and analyze how the melting of the eternal ice affect the planet's climate and how these processes are associated with the increase of greenhouse gas emissions.

Department of Applied Mathematics and Theoretical Physics at Cambridge University is included in the project SIDARUS, in which they watch the movement of ice in the Arctic and Antarctic. The relevant information can be provided to interested persons and organizations, primarily to ships that sail in the Arctic waters. The project is funded by the EU.

The James Hutton Institute is a leading member of the project HUNT, whose task — the study of the economic, environmental, social and cultural consequences of hunting animals. This project also includes a study of commercial extraction of Arctic species.

The faculty of Cambridge University is busy in the ATP project (Arctic Tipping Points), the contents of which — to identify changes in the marine ecological systems of the Arctic, as well as the factors that cause them. In addition, the aim is to determine the economic consequences of these changes, and it kindles the interest of many European countries.

Nine British universities and research organizations cooperate within the project EPOCA (European Project on Ocean Acidification), in order to study the increasing acidity of the world's ocean, as well as to identify its biological, ecological and biochemical effects.

University of Sheffield is the member of the interdisciplinary project MONARCH-A aiming to monitor and to study regional climate change, which occur in high latitude and the Arctic (Monitoring and Assessing Regional Climate Change in High Latitude and the Arctic). At the same time, they explore the sea and the air currents, changes in global sea level and the carbon cycle, as well as their causes.

Thus, before to start any economic activities in the Arctic seas, the United Kingdom, as well as other countries which have acquired the status of the Arctic Council observer, prefers to study the region.

Military and defense Britain's interests in the Arctic

The Arctic has not been mentioned either in Strategic Defence and Security Review or National Security Strategy 2010.

However, in the UK National Strategy for Maritime Security [8] it is said that new shipping routes constitute a danger for the security of Britain and along with the cooperation, it is necessary to recognize the importance of anti-submarine operations in the Arctic, and constantly monitor the situation together with NATO allies. [7]

The report of the Ministry of Defense "Global trends in the strategy — up to 2045" noted that the economic development of the region will cause disputes over access to the Arctic and control over its resources, although they do not lead to the armed conflicts[9]. With regard to Russia the Defense Ministry report says that Russian military presence in the region is enhanced by due to its extent of the Arctic boundaries and the area of the exclusive economic zone, but does not pose a threat. Nevertheless, the concerns about the threat to neighboring countries intensified in connection with the Ukrainian crisis. The report expresses uncertainty about the predictability of the policy of Russia and, accordingly, that the peaceful co-existence in the Arctic will continue in the long term. Britain, like other Arctic countries should protect Arctic cooperation from the "non-Arctic disputes." However, we note the wider defense and security considerations permeate the region. Strategic interest of Britain to the northern regions of Europe, including the Arctic, has increased.

So already in 2012 the defense ministers of Britain and Norway signed a Memorandum of Understanding “On the Enhancement of Bilateral Defence Co-operation”[10], which provided the political basis for bilateral cooperation in the sphere of defense and security, including the interests of NATO. The memorandum was signed after the agreement "Bilateral and global partnership", signed by the Prime Ministers in 2011. [8].

This measure indicates that changes in strategic thinking have occured, especially in the Arctic, which requires more attention to the planners of the British defense. After a significant reduction and reform of the armed forces David Cameron coalition government tried to provide security guarantees at the expense of bilateral and multilateral partnerships. Units of the British Armed Forces are training in a cold climate in Norway and take part in NATO exercises in the Arctic in Norway, as well as in security cooperation on bilateral and multilateral basis, including the

[8] The UK National Strategy for Maritime Security / HM Government. May 2014. URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/310323/National_Strategy_for_Maritime_Security_2014.pdf.

[9] Ministry of Defence, Strategic Trends Programme, Global Strategic Trends: Out to 2045, fifth edition (2014): URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/348164/20140821_DCDC_GST_5_Web_Secured.pdf

[10] Memorandum of Understanding (MoU) “On the Enhancement of Bilateral Defence Co-operation”.

Northern Group of countries (Britain, Poland, Germany, the Netherlands, northern countries and the Baltic countries). Only two of them — Sweden and Finland — are not members of NATO [9]

Speaking about the bilateral, the relationship with France in particular grabbed most attention. However, a week after the conclusion of the agreement with France about cooperation in the sphere of defense, Britain publicly promoted the defense cooperation with the Northern and Baltic countries, as well as with Germany, the Netherlands and Poland. At the first meeting of defense ministers of North group in November 2010, the Minister of Defence in Britain L. Fox said: "Britain is too long looking in every direction but his own backyard"[11].The creation of the Northern Group was the part of the broader plan to deepen bilateral and multilateral relations with its northern neighbors. In January 2011, Cameron talked about British interests in the north, especially an alliance of common interests (including economic growth, the environment and welfare) across the northern Europe[12]. Bearing in mind the importance of cooperation of Britain with the northern and the Baltic countries, namely the cooperation with Norway progressed more. Similar memoranda of understanding were signed in 2010 for exploration of oil and gas, offshore wind farms, cooperation in the North Sea, biotechnology and scientific research in the polar region. The memorandum lays the groundwork for the second defense cooperation support — with Norway after France. Both supports stand on the basis of NATO and transatlantic cooperation with the United States. The Memorandum also indicates the degree of confidence to the northern European allies and more — to NATO, unlike many of its European partners, which do not fulfill their obligations in the field of defense (their defense expenses are less than 2% of GDP).

It should be noted that since 2010 the British Armed Forces Training in Northern latitudes decreased, Britain is limited in its actions in the polar latitudes: surface ships do not come into the waters of the Arctic and the opportunities to conduct maritime air patrols are insignificant since maritime patrol aircrafts "Nimrod - MR.2"were taken out of service in 2010, which does not allow the UK to carry out search and rescue operations in the Arctic, and to provide assistance to Denmark and Iceland. Norway performs maritime air patrols of the North Sea instead of Britain, which is limited to naval forces. It is assumed that in the documents of the government's national strategy in the field of defense and security in 2015, the question of the maritime air patrols both for defense and search and rescue operations will be revised as well as expansion of operational capacities, expertise and resources in conditions of cold climate.

[11] Defence Secretary launches new forum of northern European countries // Defence News, 10 November 2010. URL: http://bit.ly/agvbxw

[12] Cameron calls for northern European alliance', BBC News Online, 20 January 2011.

Attention of defense community in the Arctic is increasing due to changes in the physical, political, social and economic nature. 8 countries have territory in the Arctic, 5 of which are seeking to establish sovereign rights on the basis of an exclusive economic zone and continental shelf, which reaches North Pole. Approximately 4 million people inhabit the region and still 500 million live along its frontiers or close to them. As the ice are melting the region will inevitably be included as a part in the economic, political and legal system. Consequently, the British experts need to find out how these changes will affect the judgments about future risks and opportunities of the country in the region to evaluate the strategic consequences. Britain stand behind in the strategic assessment and in knowledge about the Arctic [10], as British experts believe, fearing that such a "gap" won't allow the country to determine its interests and develop a strategy for "first partner" and to contribute to the defense of the northern regions of Europe. There is also the question whether Britain has the resources to be an important player in the northern latitudes, maintaining commitments regarding other vital defense problems. Analysts wonder also if Britain takes into account when creating weapons their further use in the Arctic [11].

In the British Arctic policy, the Scottish factor may occur, as most of the British oil is produced in the Scottish sector. The position of Scotland was not deferred enough while developing the British policy in the Arctic [12]. However, it is expected that in connection with the probability of the second referendum on Scottish independence, the opinion of the region will be taken into account, since Scotland stands for withdrawal of nuclear weapons from its territory and disposal of North Sea resources.

With regard to relations with Russia, Britain joined the hard course of EU and the United States in connection with the Ukrainian crisis, joining the sanctions, hindering the development of Russian oil fields in the Arctic. Committee of the House of Lords urged to take all possible measures to protect the Arctic from the effects of the Ukrainian crisis. It is possible to interpret the Committee's recommendation also so that the government should revise the sanction regime in terms of Russia's interests in the Arctic. Ultimately, the House of Lords would like to see Britain the "first partner" of the Arctic countries and other players in the Arctic.

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New comers of the Arctic Council open the Far North

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Abstract. The article is devoted to the study of the elaboration and realization of the Arctic policy in three countries-members of the EU. These are Netherlands, Poland and Spain. Up to now Spain is not very interested in the Arctic, but now it is very interested in the development of the arctic tourism. Netherlands possesses the wide experience in offshore extraction of hydrocarbons, which may be used in the Far North. Poland is very active and aims to unite the observer countries of the Arctic council. The study of the climate change and environmental conditions are the main objects of the interests of these three countries.

Keywords: *arctic policy, global worming, the threat of the flooding of the coastal areas, Svalbard, arctic tourism, arctic technologies for extraction of mineral resources, sustainable development of the Arctic*

Due to the increased attention of the whole world to the Arctic, the European Union countries — Spain, the Netherlands and Poland — in the XXI century are also interested in the Arctic region, which is primarily directed at the study of changes in the Arctic climate and the state of the Arctic environment. This is a common thing that unites these three countries. Identification of features of formation of Arctic policy of these countries, their specific interests in the Arctic, positioning and the role of the Arctic Council are actual. In preparing the article for publication the scientific methods of analysis and synthesis, observation, methods of political and social sciences, statistics were used.

Spain

Unlike Germany, Britain and France, Spain does not have a long tradition of scientific research in the Arctic zone. Spain's interest in the region woke up due to global warming, the threat of rising sea levels and the potential to gain access to its natural resources, especially energy. It is also important that that Spain is the energy-dependant country, therefore, it needs to diversify its fuel supply sources and access to new reserves. The Spanish company Repsol YPF which provides employment for 30 thousand workers and employees is consistently among the top 500 TNCs, while Spain is one of the world's largest importers of oil and gas [1].

However, Spain's interest in the Arctic is not so intense as in circumpolar countries or countries that have been studying the region for a long time already, as almost all opportunities widely discussed in the international media that are opened in the Arctic have a potential character. In this regard, currently the interest of Spain to the Far North is mainly focused on

scientific research purposes: first, it is aimed at the study of climate change and the environment. The decision of some EU member countries to participate in the work of the Arctic Council influenced on the position of Spain, and it acquired the status of observer in the Arctic Council in 2006. Spanish representatives take part in functioning of the Arctic Council working groups, in particular, in the working group on conservation of Arctic Flora and Fauna (CAFF), the Emergency Prevention, Preparedness and Response Working Group (EPPR) and the Arctic Monitoring and Assessment Programme (AMAP) [2, p. 25].

In Spain, the national body for the development and implementation of the national Arctic policy was created: Spanish Polar Committee [1]. In the Arctic policy of the kingdom on the forefront, as noted before with enumeration of purposes, there is a research policy conducted with the aim of finding opportunities that are truly open to countries in the Far North. To conduct Arctic research projects Spain has a research vessel named "Hesperides", which can go to the Arctic waters, and it is operated by the Spanish Navy. Spain also has one auxiliary ship Las Palmas. The results of observations and studies come to collect, store and analyze in National Polar Data Centres, the data from which are also used for exchange with partners in scientific cooperation. Fifteen Spanish research centers, most of which are located at universities take part in the Arctic research. The focus of Arctic research in Spain is studying climate change, the state of the marine environment, biological resources and their changes, the impact of ongoing processes in the Arctic on economic activity in the high latitudes. Spanish scientific researchers are participating in five research programs of the European Union, which receive full or partial funding from the EU Seventh Framework Programme.

Higher Scientific Research Council of Spain (Consejo Superior de Investigasiones Científicas) participates in the European ATP program (Arctic Tipping Points) within which the study of marine ecosystems is made.

The Spanish Ministry of Science and Innovation is included in SIOS (Svalbard Integrated Earth Observing System), which has a support base on Svalbard.

Polytechnic University of Catalonia participates in program ACCES, aimed at the study of the climate and the natural environment of the Arctic, including the observation of impacts of these changes on the economy and society (Arctic Climate Change, Economy and Society / Climate Change and the Arctic environment WG).

[1]-COMNAR. Comite Polar Espanol. URL: https://www.comnap.aq/Members/spain/SitePages/Home.aspx (accessed: 08 June 2016).

Madrid Polytechnic University, the University of Barcelona, the company Navantia SA, number of other European partners are involved in the multilateral European program JOULES (Joint Operation for Ultra Low Emission Shipping), which aims to design, construction and commissioning of ships with ultra-low emission of greenhouse gases, primarily carbon dioxide.

Several Spanish scientific institutions (Institute of Environmental Science and Technology, University of Barcelona and iInstituto de Investigación en Recursos Cinegéticos) take part in HUNT program. Within its framework the economic, social, cultural and environmental aspects and the consequences of hunting, including Arctic species, are studied.

Another feature of the Arctic Spanish policy is its interest in the development of the Arctic tourism, moreover, it is going to develop it on the basis of the principle of sustainable development. Spain takes part in the communitarian Program for northern periphery [3, p. 65-78]. The program aims to develop cooperation between different administrative units, located in the north of Europe, in particular, to promote the development of Arctic tourism. The program is aimed at those northern countries and territories like Greenland, Iceland, Norway, Northern Ireland and the Republic of Ireland, Faroe Islands, Finland, Sweden, Scotland. The program also involved the Arctic indigenous peoples (Inuit, Saami, Scottish and Irish Celts). The program is funded by the European Regional Development Fund in order to implement principles of sustainable development in the tourist business. To create the infrastructure needed for tourism, the EU developed and implemented the project the Northern Sea Route in 2005. It provides a link between the northern coastal areas of Norway and Russia with the continental Europe by environmentally friendly sea transport.

The representatives of the countries and territories listed above, as well as Spain also participate in the activities of the Association of sustainable development of the Arctic tourism (SATA), as well as in the project "Sustainable Model of Arctic tourism» (SMART). This participation reflects the specific interests of Spain, which specializes in the development of international tourism and has a well-developed tourist complex.

There is a certain interest in case when point of view of Spain coincided with the position of Russia. This happened in the following situation. By submitting application to the UN Commission of the Limits of the Continental Shelf, Norway introduced shelf of Svalbard as part of the Norwegian continental shelf, ignoring the special legal status of the archipelago. In principle, this is contrary to the spirit of the Paris Agreement of 1920, which provided Svalbard a special legal status and allowed to all countries that signed the agreement, to conduct economic activities there. Four countries sent diplomatic notes in response to the claims of Norway for Svabard shelf,

but only two countries (i.e Russia and Spain) pointed out that these countries had the right to the shelf, arising on the basis of Svalbard Treaty. Spain in that note indicated that it reserves the right for natural resources of the continental shelf, which can be opened around Svalbard. It seems that the Spanish position on this issue quite clearly characterizes hopes of Spain.

Spain as well as the EU in whole, depends on external energy supplies. One of the Spanish petroleum company «Repsol YPF» belongs to class of TNCs, and it is engaged in exploration and extraction of hydrocarbons outside the borders of the country. Accordingly, it is interested in the prospects of development of Arctic hydrocarbon resources, such as at the Svabard shelf. In Spain there is also strong interest in the Arctic fisheries, including 200-mile zone around the archipelago. [1]

Summarizing the above, it should be noted that the main Spanish interests in the Arctic are to conduct scientific research, cooperation in this sphere, the transition of the kingdom together with other countries towards sustainable fishery in the Arctic seas, the development of transparent and mutually agreed rules of fishing. Since Spain imports energy resources, it is interested in the development of mineral resources of the Arctic shelf in the long term, in particular, around Svalbard. Spain considers that it has a legitimate right for it, because it participates in the Treaty of Paris of 1920, which does not extend the jurisdiction of Norway on the shelf and allows economic activity in the archipelago for all the member countries of the Paris agreement. The peculiarity of the Spanish position in the Arctic is the interest in the development (along with the riparian countries) of the Arctic tourism and fishery in a sustainable way.

Activities of the Netherlands in the Arctic

Interests of the Netherlands in the Arctic are determined by the fact that it is a maritime power, which plays the important role in the maritime industry, as well as in the production and export of hydrocarbons. The golden rain of oil revenues spilled on it, which had deep impact on the economic development. It is just here a negative economic effect was manifested which was called "Dutch disease". This effect is manifested in the fact that high oil revenues cause the outflow of investment resources in the production of hydrocarbons, followed by the lack of investment resources for other sectors of the economy, the corresponding change in the structure of the economy and the impact on the economy in whole. Currently, however, the country has faced the prospect of depletion of hydrocarbon reserves. The Netherlands is still the large producer and exporter of gas (the country is among the top ten exporters of the world), most of which is sold to neighboring countries, but its position in oil export is more modest. However, many fields have been already worked out (according to some estimates up to 2/3), especially oil

resources. According to expert estimates export of gas and oil from that country will be reduced. At the same time, the country has much experience in the offshore production of hydrocarbons, including deep-sea drilling technologies, which can be adapted to the arctic conditions. The Dutch companies consider them as technological capital, which should be used not only at home but also abroad. The Netherlands also has experience in the dismantling of obsolete oil and gas platforms in the North Sea, which can be used in the conditions of northern seas [3, p. 65—78].

The Netherlands give higher priority to the preparation of the scientific basis of economic activities in the Arctic. All the research activities are carried out within The Netherland's Polar Program[2], which is arranged under control of The Netherland's National Research Council. The Arctic Centre, in which the majority of the Dutch scientific research on polar issues are made, is The Willem Barentz Polar Institute[3].

The Arctic Centre, located at the University of Groningen, was founded in January 1970 and initially studied the languages and culture of the Arctic sub-Arctic peoples. Then the scope of interests was extended to the archeology, biology, geography, and then to the Antarctic. Currently it conducts research on a wide range of scientific spheres. The Arctic Centre of Groningen represents the interests of the Netherlands in the Council of the International Arctic Science Committee (IASC).

Also it is represented in some working groups of the Arctic Council (flora and fauna, pollution of the Arctic, Sustainable Development of the Far North), enumeration of which identifies the directions of the Arctic cooperation, which are most important for the Netherlands. In addition, the Arctic Centre of Groningen participates in EU Arctic information center created by the EU in 2011 at the University of Lapland, Finland (Arctic Information Centre). It also manages the scientific research at the permanent scientific station of the Netherlands in Ny-Ålesund at Svabard, participates in Ny-Ålesund Science Manager Committee. Arctic Centre conducts training for undergraduate and postgraduate students.

From the organizational point of view, the Arctic Centre of the University in Groningen is a association of several institutions of the country interested in conducting of the Arctic research. This association includes major scientific organizations of the kingdom that specialize in the Arctic research, namely the Free University of Amsterdam, the Wageningen University, University of Groningen, the Royal Netherlands Institute for Sea Research, the Royal Netherlands

[2] Netherlands Polar Programme. URL: http://www.nwo.nl/en/research-and-results/programmes/Netherlands +Polar+ Programme (accessed: 08 June 2016).
[3] Willem Barentsz Polar Institute. URL: http://www.rug.nl/research/arctisch-centrum/arcticcentre/willem-barentsz-poolinstituut (accessed: 08 June 2016).

Meteorological Institute. Arctic Research Center of the University of Groningen participates in the Arctic Information Centre, created by the EU in 2011 at the University of Lapland in Finland. In addition, in the village of Ny-Ålesund on Spitsbergen there is the Dutch research station, which operates only during the warm season.

Scientific organizations and universities of the Netherlands are involved in several European research programs funded by the EU Seventh Framework research program. Among them it is worth mentioning the following programs and projects.

University of Groningen participates in the European program SIOS (Svalbard Integrated Earth Observing System), under which the infrastructure for global monitoring of climate change in the Arctic and the impact on the Earth's climate is developed and optimized[4].

The research organizations, manufacturing plants, engineering centers and bureaus participate in the European project "Joel" (Joint Operation for Ultra Low Emission Shipping), namely: Centre for Concepts in Mechatronic, Imtech Marine, MTI Holland BV, Nether-lands Organisation for Applied Scientific Research , NyGear Fuel Cell Systems BV, the Stichting Maritiem Research Instituut Nederland, Technical University of Delft, WAERTSILA NETHERLANDS BV[5]. In the framework of this project, the issues related to the design, manufacture and operation of vessels with low emissions of greenhouse gases. The large number of participants in this project shows the great interest of the Netherlands — the important maritime power — to this problem.

The European project Epoca (European Project on Ocean Acidification) aims to study the process of increasing of the acidity of sea water and its impact on the biological, ecological, biochemical and social consequences of these processes. Some organizations of the Netherlands participate in it, namely: University of Utrecht), Koninklijke Nederlandse Akademie van Wettensvhappen — KNAW, together with other Dutch organizations involved in marine research and patent activity (NIOZ, WOP)[6].

University of Twente and the Faculty of Geo-Information Science and Earth Observation participate in EU CoreClimax project, which coordinates the research work in climate change and registers the relevant information for a long time to be able to identify trends and to forecast climate.

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[4] Svalbard Integrated Earth Observing System. URL: http://www.slideserve.com/cleveland-orlando/svalbard-integ-rated-arctic-earth-observing-system-sios; http://faro-arctic.org/fileadmin/Resources/ DMU/GEM/faro/2013_Nicole__ SIOS_for_FARO.pdf; http://soa.arcus.org/files/sessions/2-2-design-and-optimization-integrated-arctic-observing-system/pdf/ hansen.pdf (accessed: 08 June 2016).

[5] Joint Operation for Ultra Low Emission Shipping. URL:http://cordis.europa.eu/project/rcn/109269_en.html. (accessed: 08 June 2016).

[6] EPOCA. URL: http://cordis.europa.eu/project/rcn/87798_en.html (accessed: 08 June 2016).

University of Amsterdam (Vrije Universiteit Amsterdam) is involved in monitoring the process of reducing the permafrost, which are studied in the framework of the European project “Page 21”. It is aimed at the study of global climate change and greenhouse gas effect on melting of the eternal ice.

The Netherlands take part in the activity funded by the EU Commission (through the Directorate of International Relations), which aims to explore the different aspects of the transformation of the Arctic region and the development of policy in these areas. This relates to shipping, fishing and offshore hydrocarbon production. For this purpose, some working groups were established, in which the Netherlands Institute for Maritime Law and the University of Utrecht participate. The Netherlands participate in the Arctic Forum for NGOs, which discusses various issues of cooperation on the non-governmental level. The forum focuses on questions of environmental protection, it is a place of exchange of ideas and serves as an advisory body to develop the Arctic policy.

Due to the fact that the arctic conditions are very different from those of the North Sea, where currently the Netherlands produce hydrocarbons, research institutions of the kingdom carried out research and development works with purpose to adapt their existing technologies to the Arctic latitudes. The Dutch research organization IMARES Wageningen UR, which unites the scientific departments of Wageningen University and DLO foundation, is engaged in the development of innovative marine technology, including methods of environmentally friendly production of oil and gas from the sea shelf. In this country there are also technologies of clean of sea and sea coasts from oil spills, however, they are not intended for the northern regions, where lower temperatures require the use of other treatment technologies. It is planned to continue this work to improve the offshore hydrocarbon production technologies [1].

As a maritime country, which goes across the North Sea to the Atlantic Ocean, the Netherlands is very concerned about observed melting of the Arctic sea ice in conditions of some warming of the climate and about the prospect of flooding of coastal areas resulting from it. The concern about such a prospect is so serious as part of the country is below sea level. In this context, the Dutch research organizations primarily pay attention to the study of climate change in the Arctic. In addition, the prospects of oil and gas fields operation in the Arctic zone are also studied as well as possible impact of economic development in the Arctic on the environment [4].

Some fundamental aspects of the Arctic policy of the Netherlands were set out by Mr. Maxime Verhagen, Minister of Economic Affairs, Agriculture and Innovation of the Netherlands, speaking on August 27, 2012 at the International Conference on Energy in Stavanger, the capital of

the offshore economy of Norway. He noted that he is confident that the oil and natural gas extraction near the North Pole is only just a matter of time. The problem is how to achieve the exctraction of the hydrocarbon resources in a responsible manner, that is, without any harm for the environment. In order to arrange this, the Dutch Minister proposed to develop international rules governing the development of Arctic hydrocarbon fields, and added that it is not necessary to rely on the statements of energy companies that they will be careful enough and called for a high degree of responsibility in this matter [5]. For this purpose, the Netherlands cooperate with Norway in the development of safe and environmentally friendly technologies of oil and gas production in offshore fields of the Arctic.

Having important sea ports with large turnover, the Netherlands are much interested in the development of new northern route, as this would lead to an increase in turnover through major Dutch ports of Rotterdam and Amsterdam, which serve the needs of the whole western Europe. Therefore, the Netherlands are interested in the operation of the Northern Sea Route, in security and maintenance of the stable situation in the Arctic for the northern sea routes to function smoothly [3, p. 65—78].

The Netherlands vigorously develop the cooperation with Norway, as the kingdom is very interested to participate in the development of fields in the Norwegian sector of the Barents Sea. In particular, 26 Dutch companies participated in the exhibition in the Norwegian oil capital — Stavanger. The Dutch association of IRO, bringing together the suppliers of oil and gas companies of the country, develops cooperation with the Norwegian company Statoil and with several other smaller Norwegian oil and gas companies. In 2010, the Dutch Ministry of Economic Affairs, as well as the company Gasinue reached an agreement with Gazprom on the strategic partnership and the implementation of the joint project, which was planned to carry out with a focus on the Russian part of the Arctic shelf. However, due to the introduction of sanctions in the West against cooperation with Russia in the oil and gas sector, this cooperation has been frozen. Gazinue is a Dutch transport company that distributes natural gas through pipelines in the Netherlands and Germany. It owns the gas pipe line network in length of 12,000 km in the Kingdom, and 3,000 km in Germany. Previously there were 3 company owners: Shell, Exxon Mobil and the Dutch state, but now it has become a state-owned company. In possession of one of the world's largest gas and oil company Royal Dutch Shell there is a share of the Netherlands. This company is of TNC-class and last year it took the third place in world in terms of turnover, and it shows interest in the Arctic fields. However, having spent 7 bln. dollars, the company decided to suspend oil exploration in the Chukchi Sea and Baffin Bay, where it acquired licenses for drilling, but it did not lead to the

positive results. Despite the fact that the drilling was carried out in great depth, only one oil field was found at distance of 60 km from the coast of Alaska, which is not interesting for the operation by its characteristics. The company has a broad international activity, leads the production of hydrocarbons in 70 countries.

Thus, the Dutch interest in the Arctic is stipulated by the fact that they hope to find here the use of their deep-water drilling technologies, which, however, have to be adapted to the arctic conditions. A number of Dutch organizations deal with it, in particular, they work on environmentally friendly methods of production of hydrocarbons from the sea shelf. The Netherlands are also interested in the development of navigation along the northern routes, as this would lead to further strengthening of the economic importance of the major Dutch ports, which serve the whole Europe.

Poland

Poland is interested in the Arctic region at the political level, as well as the active participant of the Arctic observations and research. And this happened even before the Arctic "fever." It is not just the outside observer, it is actively involved in the region through participation in regional cooperation, organized through regional and subregional organizations: CBER, Northern Dimension, the Arctic Council.

As energy dependant country Poland is looking for the ways to increase the degree of energy security and diversification of sources of energy. The degree of dependence of the Polish economy on energy imports is illustrated by the fact that it takes 15th place in the world in import value of natural gas and 17th place in oil import. The Polish oil and gas companies are not represented in the list of 500 largest companies in the world. Poland was cut off from revenue for the transit of Russian gas to Germany, as it is now transported on the sea through the pipeline Nord Stream. However currently, either shale oil or Arctic hydrocarbons are not regarded as a fundamental means of solving the problems of energy supply. In Poland there are large reserves of shale gas, but with modern technology, which is not indifferent to the environment, they are not developed, only the experiments are arranged in this sphere. Polish company KGHM International Ltd. is showing clear interest in the extraction of Arctic energy resources, the company has acquired a license for exploration of hydrocarbons in the offshore of Greenland. Two more polish oil and gas companies: Lotos, PGNiG conduct exploration on the Norwegian shelf. PGNiG has received from Norway ten licenses covering the part of the North Sea. In 2012 the company began production at three sites. Lotos has seven licenses to conduct research in the Norwegian and North Seas.

The specifics of the Arctic policy of Poland is that Poland considers cooperation with the Arctic Council in the light of its participation in the BEAC[7], in Northern Dimension policy, the EU and NATO. The main interest of Poland in the Arctic, as well as for many other countries-observers in the Arctic Council, is to conduct scientific research. Poland has half a century tradition of studying the Arctic. Polish research station on Svalbard was built already in the 1950s. Permanent station named after Stanislaw Siedlecki, located in the national park in the south Spitsbergen has a high academic reputation. It is actively participated in conducting the International Polar Year 2007—2008. In addition, five polish universities (from Wroclaw, Krakow, Lublin, Poznan and Torun) have been observing the Arctic Circle on a seasonal basis.

Poland has begun to show interest in Arctic issues, starting from the so-called Rovaniemi process, which adopted the Declaration about Protection of the Arctic environment and the Arctic Strategy for the protection of nature in the region. As is known, just this process became the basis for the Arctic Council, but Poland turned out outsude this Council because of its geographical position, since this council was organized as a regional organization. Together with Poland, Germany, Britain and the Netherlands participated in this process. Now all these countries as well as Poland, are permanent observers in the Arctic Council. Poland also has similar status in Barents Euro-Arctic Council (BEAC), in the Arctic Council and in the Nordic Council, which spread their activities to the north of Europe, including the Far North.

The polar target group consisting of diplomats and scientists has been formed in the Polish Ministry of Foreign Affairs. It helps to develop the aspects of Polish foreign policy, relating to the Arctic. In particular, Poland considers useful to develop relations between the member countries of the Arctic Council and the countries that are permanent observers, as well as to coordinate policy of observer countries of the AC. The Republic of Poland supports the idea of joining the EU in the AC as a permanent observer. Poland offered to arrange regular meetings of the Arctic Council at the level of deputy ministers, who would meet in the interval between ministerial meetings. Poland considers it useful to invite deputy ministers of observer countries to such meetings, in order to increase their status and to strengthen their influence on decisions taken within the framework of the Arctic Council.

Another initiative, supported by Poland, is invitations of the representatives of observer countries to the meetings of the Arctic Council, Poland also welcomes the participation of EU representatives at such meetings. A similar meeting was already held in Warsaw in March 2010. At this meeting all the countries that had observer status in the Arctic Council took part, both

[7] Poland has a status of observer in the BEAC.

permanent and those who participated on the basis of «ad hoc» principle. Poland would like to introduce similar meetings in regular practice. During EU presidency Poland organized the working meeting of senior officials of Ministries of Foreign Affairs of the EU member states in November 2011 to discuss EU Arctic policy. The purpose of the meeting was to improve coordination of policy in the Arctic. Poland supports the EU's intention to acquire the status of permanent observer in the EU.

Fundamentals of the Polish Arctic policy were established by the Deputy Minister of Foreign Affairs of Poland M. Shpunar, who formulated the four basic principles of the Polish approach to Arctic policy:

1. Recognition of the existing legal framework defining international cooperation, first of all, United Nations Division for Ocean Affairs and the Law of the Sea dated 1982.
2. Active participation in the development of the Arctic EU policy in order to keep Polish interests in it.
3. The development of cooperation with regional institutions and organizations, especially with the Arctic Council.
4. Conducting of the Arctic policy of Poland at the basis of the principle of the public diplomacy [6].

Thus, the key positions of the Polish Arctic policy are: the freedom of the Arctic research; enhancing the role of the observer countries; giving the EU the status of permanent observer; compliance with international law and standards; further development of EU Arctic policy and public diplomacy. Poland, as well as Finland and Sweden, seeks to operate in the Arctic on several levels: regional (Arctic Council), sub-regional (BEAC), communitarian (EU), through bilateral relations.

For Poland, as well as for many other countries that do not have direct access to the Arctic seas, the research objectives are on the first place, in particular the study of changes in the Arctic climate and their impact on the climate of the planet, as well as the state of the Arctic environment, observations for the ecological systems and biodiversity conservation factors. Polish scientific research in the Arctic are coordinated by the Committee of polar research at the Polish Academy of Sciences, which provides corresponding infrastructure. Polish Committee of polar research is included in a network of 19 leading Arctic research organizations from the European Union and the European Economic Area in Strategic Environmental Impact Assessment in the Arctic[8].

In Poland 24 scientific institutions and organizations are involved in the Arctic research, more than 200 scientists. Observations are made in Iceland, Greenland, Alaska, Canada and Russia.

[8] Arctic Policy. Contribution of the Arctic. Strategic Environmental Impact. Assessment of Develop-ment. URL: http://www.wageningenur.nl/en/show/Strategic-Environmental-Im-pact-Assessment-in-the-Arctic.htm (Accessed: 11 June 2016).

They published over one hundred scientific papers and reports on the results of the Arctic research, based on data collected at the research stations on Spitsbergen and during arctic expeditions. Poland has five research stations in Svalbard, including the expedition base of Poznan University. However, only one of which operates on a permanent basis — a station named after Stanislaw Siedlecki in Hornsund on Spitsbergen. It was formed in 1957 and since 1978 has been operating on a permanent basis. Three stations are valid only during warm seasons. This polar station of Stanislaw Baranowski of Wroclaw University, the University of Nicolaus Copernicus Station, station of Marie Curie University. Poland has a research vessel "Oceania" and support ship "Horizon II", which belongs to the Maritime University in Gdynia.

Institute of Geophysics and the Institute of Oceanology (both belong to Polish Academy of Sciences) take part in the European program SIOS (Svalbard Integrated Earth Observing System), in which the infrastructure for Earth observations is created. It is able to provide timely information about the changes in the Arctic to interested organizations. Polish Institute of Oceanology of the Polish Academy of Sciences system participates in the European program ATP (Arctic Tipping Points), aimed at the study of marine ecosystems, the effects of climate change. This program is funded through the seventh EU framework program.

Poland participates in multidisciplinary research project on Svalbard PO-LARPROG, which also involves Germany, Norway and Russia. Polish Academy of Sciences participates in Boreas program which coordinates the Arctic research, including social, natural and health sciences, and which brings together research institutes and organizations of Europe, the USA, Canada and Russia. The program is partially funded by the EU.

Since 2012 nine polish research organizations are participating in the program SAON (Sustainable Observing Networks) — monitoring system for sustainable development.

Three polish ports are interested in using of the Northern Sea Route. Container transportations are developed rapidly in Poland. Gdansk plays the main role in it, where new powerful cargo terminal has been built for vessels with deep drafts. It provides services not only for Poland, but also for Russia, Finland, Belarus and others working as a hub for the entire Baltic Sea and countries of the Eastern Europe which do not have access to the Baltic Sea (in particular, Belarus and Ukraine). However, it is not currently planned to use it widely as this transport route is considered as too expensive.

For a long time in the Polish Arctic polic the interest primarily to conduct scientific observations and research prevailed, but at the moment Poland is trying to convert previous approach in political advantages. The aim is to strengthen the polish vote in the regional and

European levels. Currently, the country is not clearly intended to participate actively in the development of Arctic shipping (as believes it is unprofitable from the commercial point of view) and / or in the active participation in the development of the Arctic mineral deposits [9] .That is why — the Polish side supposes — they can be a useful intermediary between the Arctic and non-regional countries and act as advocate of the interests of the observer countries[10]. Poland is most active in diplomatic terms in the Arctic, it seeks to act as a link between the Arctic Council members and observers of its activity. In addition, Poland is showing intensive interest in polar research, which it carrying out since the 1950s. "In general, Warsaw today, although does not have formally adopted and published Arctic strategy, but has a fairly elaborate and balanced position based on the research of corresponding analytical centers" [2, p. 57].

Conclusion

Three EU member countries: Spain, the Netherlands and Poland, which recently acquired the status of permanent observers in the Arctic Council, have general and specific interests in the Far North, determined by the specific features of their economies and participation in international cooperation. At the current stage of the development of the Arctic, all three countries, above all, concentrate their efforts in the field of scientific study and observation of the state of the environment and climate change.

Spain which specializes in international tourism and in maritime sector, is interested in the development of adventure tourism in the northern seas. Arctic cruises are gaining popularity. Kingdom intends to develop this type of recreation and entertainment in a sustainable way.

The Netherlands is the only one of the three countries, which has its own reserves of hydrocarbons offshore. Kingdom has accumulated experience of installation and decommissioning of oil platforms, which can be used in the northern seas. In addition, the Netherlands is specializing in transportations by sea, and has seaports of European significance. In this regard, the country is interested in the Northern Sea Route, which opportunities are studied.

Poland has been organizing expeditions to the Far North for a long time already and has accumulated a lot of observations. Now Poland is intending to play an active role in the Arctic region. For this purpose, the country is trying to unite the Arctic Council observer countries around itself to coordinate their actions and to influence on the decisions of this international body.

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[9] In 2013 one polish vessel went along the Northern Sea Route.

[10] Arctic Policy. Statement of Minister M. Szpunar to Swedish Presidency of the Arctic Council. (2012). Ministry of Foreign Affaires. Strategic Environmental Impact. Assessment of Development. URL: http: //www.arcticinfo.en.poland (Accessed: 11 June 2016).

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Germany's strategy for the Arctic

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Abstract. In the last decade Germany has increased activity in the Arctic region. From a formal point of view, the German state connects it with various aspects of international security (mainly — environmental and transport), with needs to respect the rights of peoples living in the Arctic regions and the importance of scientific research in the Arctic. But in reality, they are hiding far-reaching interests of safeguarding the national security of raw materials and access of German concerns to the Arctic resources. In solidarity and in many ways defining the EU's policy in the Arctic, Germany primarily is focusing on their long-term economic and geopolitical goals and objectives, which it will consistently implement in the coming years in the framework of the Arctic Council, and beyond, including within the framework of cooperation with Russia. This article is devoted to the analysis of these goals and objectives, as well as to the definition of medium-term trends in Germany's Arctic policy.

Keywords: *The Arctic, the Arctic Council, Germany, Russia, cooperation, Arctic resources, raw materials, energy, environmental, transport security*

Inroduction

The range of modern Germany's interests in the Arctic region is very wide. It covers the ecology, economy, shipping, and various aspects of security, including energy and raw materials. In 2013 Germany accepted the basic areas of the state policy in the Arctic [1]. The current coalition government (CDU / CSU and SDPG) since 2014 started to fill it with certain content, especially in the Arctic Council. In the following years, including during the current US presidency of the Council, the German activity will increase.

Germany began to show interest in the Arctic research in the middle of the XIX century. Famous German polar researchers (including citizens of the tsarist Russia) made a significant contribution to the development of the Arctic, many geographical discoveries are connected with their names[1]. One may state that that for a half of the century the country has become a world leader in this field, having gained invaluable scientific and technical experience in different fields.

In this respect, it is interesting to study of the economical and geopolitical objectives and Germany's interests in relation to the Arctic region, Germany’s approaches, methods and tools for their realization, the role and place of various public and private entities, as well as the interaction

[1] URL: http://www.awi.de/en/discover/history_of_polar_research/famous_polar_researchers/; http://library.ikz.ru/georg-steller/aus-sibirien-2013-2009/Boyakova-S.-I.-GERMANSKIE-NAUCHNYE-ISSLEDOVANIYA-V (accessed: 30 May 2016).

of Germany with the main actors - both within the framework of the Arctic Council, and outside of it. Is important to define medium-term trends in German politics, especially in view of the forthcoming elections to the lower house of the federal parliament in 2017, which will lead to a new configuration of the government coalition.

The Arctic structures in Germany

Today, there are a number of federal and private research institutions engaged in the study of the polar region. Leading among them is Alfred Wegener Institute for Polar and Marine Research founded in the summer of 1980 (part of the Joint Helmholtz Research Centre, the annual budget for polar research is about EUR 100 million). It has a highly developed material and technical base, which includes research vessel Polar-st*ern*[2] and two arctic stations — joint with the French in Svalbard and with the Russians on the island Samoylovsky.The second most important structure is the Federal Office for Geosciences and Natural Resources (Bundesanstalt für Geowissenschaften und Rohstoffe — BGR). BGR has nearly 35 years of experience in the field of polar research and, among other things, consults government bodies on issues of cooperation with international organizations dealing with the Arctic[3]. German Agency for raw materials (Deutsche Rohstoffagentur — DERA) was founded in 2010 as part of this structure. The main tasks of DERA include the provision of information and consulting services to business entities about possibilities of access to foreign markets of mineral and raw material resources, including through the implementation of specific projects with the use of modern mining technologies.

Among the government structures, following federal ministries are actively engaged in the Arctic issues: Ministry of Foreign Affairs; Environment, Nature Protection, Nuclear Safety of reactors amd construction; Education and research; Economy and energy. In addition to the state, the number of federal lands located in the north, contribute to the funding of research: Hamburg, Bremen, Brandenburg, Schleswig-Holstein. The range of German national interests in the Arctic is determined by the following factors: 1) the role of the Arctic in climate change on the planet; 2) the need to protect the Arctic ecosystem and habitat of indigenous peoples; 3) the prospects of access to mineral resources (including hydrocarbon, as well as colored and rare earth metals) in terms of increasing energy and raw material security of the country.

To increase the stability and security of supply of the national economy by raw material resources, the federal government accepted the so-called raw-material strategy on the 20th of

[2] In 2018 it will be replaced by the new vessel with the same name and the value of 113 million euros. It will be one of the most modern in the world in its class.
[3] BGR. URL: http://www.bgr.bund.de/DE/Themen/Polarforschung/polarforschung_node.html (accessed: 30 May 2016).

October, 2010 and the German program of efficient use of resources (das Deutsche Ressourceneffizienzprogramm — ProgRess) on 29th of February 2012. The Arctic is not mentioned there directly, but is implied. It is interesting that in early 2014 the German Agency for Natural Resources published a study of German experts of the mineral resource potential of the Arctic, much interesting for the manufacturing industry in Germany [2]; 4) due to the possibility of using the Northern Sea Route and the North-West Passage. Federal Republic of Germany is one of the largest exporters and importers of goods in the world, 90% of which are delivered by sea. Using of the Arctic shipping infrastructure significantly reduces transport costs for the German companies; 5) demand for German technologies, machinery and equipment during the development of the Arctic.It seems that just long-term economic and political interests are crucial in the current German Arctic strategy. Other objectives are subordinated to them and act as important accompanying factors, destined to show a special concern of the German government about the protection of the fragile Arctic ecosystem and very important role of Federal Republic of Germany in it, including as well its unique half century potential of scientific Arctic research.

Germany is one of the permanent observers in the Arctic Council (since 1998), member of Spitsbergen Treaty of February 9, 1920, the observer in the Barents / Euro-Arctic Council (BEAC). Germany is attentively following the processes in the Arctic, trying not only to participate but also to influence them — in the first place, within the European Union, cooperating closely with France. The federal government constantly emphasizes its committing to the various international legal documents, in one way or another related to the Arctic, such as the UN Convention on the Law of the Sea of 1982, the International Convention for the Prevention of Pollution from Ships (MARPOL), the Convention for the Protection of the Marine Environment of the north-east Atlantic (OSPAR).

The Arctic policy of Germany

Despite the obvious strategic interests in the region, the German state until recently has not got any clear program of actions. Various federal ministries and departments realized some projects that were not coordinated with each other. The coalition government (CDU / CSU and SDPG) made the first steps in the coordination of activities, definition of objectives and interests in 2009. Since March 2008 Germany holds international conferences and seminars where the future of the Arctic is discussed.

The German Foreign Office has a Department of the Arctic Policy and the Division for the economic, environmental and scientific aspects of the Arctic Ocean. The development of the main lines of the state policy regarding the Arctic started at the initiative of then-head of the Foreign

Office G. Westerwelle in 2011.These lines were coordinated with the corresponding regulations of the EU [3; 4] and accepted in mid-2013 [5]. The document denotes the chances and risks of development of the region and the main aspects of the German Arctic strategy, as well as in the context of cooperation with leading international organizations and individual states. On 27th of April 2016, the European Commission, largely in view of the German position, introduced a new Integrated Arctic policy of the European Union, which identifies three main challenges for the future: 1) support for research on environmental and climate issues in the Arctic; 2) achieving sustainable economic development in the Arctic on the basis of a reasonable use of resources and environmental expertise; 3) strengthening of constructive interaction and dialogue with Arctic states, indigenous peoples and other partners [4]. The Arctic policy contains 39 measures for further development of EU policy regarding the region in these closely linked lines [6]. EU, as well as Germany, pays special attention to the Arctic cooperation with Russia. After the acceptance of the basic lines of new EU policy, EU High Representative for the Common Foreign and Security Policy F. Mogherini said that cooperation with the Russian Federation regarding solving of the Arctic problems meets the interests of the European Union and must be deepened and expanded[5].

Germany supports the international development of the Arctic region and criticizes national approaches of the neighboring states, including Russia. In the Arctic Council the German Federal Government supports increasing of the participation of German experts in Council working groups and obtaining of the additional rights for the observer countries in case of their significant contribution to the solution of certain problems.Not being able to directly influence the activity of the Arctic Council, the German authorities use the EU potential (largely forming its policy of the development of the Arctic, including in the context of "normative" force, involving the implementation of the relevant standards and behavior patterns), as well as bilateral relations with several countries -members of the board (in the first place, with Norway) [7; 8].

The German position on many issues coincide with the French [9]. It seems that in the coming years the French-German tandem will more actively coordinate their actions regarding the polar region, among other things, continuing to insist on the determination of the international Arctic status, the introduction of compulsory and law fixed standards of geological exploring works, further extraction of minerals, environmental protection and responsibility of business entities. Germany also

[4] Joint communication to the European Parliament and the Council. An integrated European Union policy for the Arctic. Brussels, 27.4.2016 JOIN (2016) 21 final. URL: http://eeas.europa.eu/arctic_region/docs/160427_joint-communication-an-integrated-european-union-policy-for-the-arctic_en.pdf (дата обращения: 09.07.2016).

[5] Mogerini: ES zainteresovan v sotrudnichestve s Rossiei po rabote v Arktike. 27.04.2016. URL: http://ria.ru/world/20160427/1421462488.html (accessed: 09 July 2016).

supports the activities of the European Investment Bank (EIB) in the area of development of energy, environment, transport and research infrastructure in the Arctic.

In the context of security policy, German supports the peaceful development of the polar region, but it is focused on the implementation of different formats NATO in the development of partnership, involving the organization of active dialogue between the neighboring countries. The German authorities think that a platform for discussions such as the Arctic Security Forces Roundtable should be added here.

In essence, the current government of grand coalition (especially the Federal Minister for Education and Research J. Vanka) is actively implementing the Arctic policy developed by the previous cabinet. It emphasizes continuity and importance of integrated support of the geopolitical, geoeconomic and geoecological interests of Germany, highlighting the priority of environmental protection — the issue about it was firstly included in the coalition agreement. Not without reason, the Federal Chancellor A.Merkel addressed with video message to the participants of the Arctic Circle Assembly in Reykjavik in October 2015, where she paid special attention to environmental aspects of the Arctic system[6]. It is obvious that the role of the Arctic in the German foreign policy will be constantly growing and the economic and political goals will gradually come to the forefront. Germany is trying to use the current US chairmanship in the Arctic Council (2015-2017) to lobby german interests. It will be possible to evaluate the efficiency of these efforts in a few years.

Russian-German cooperation in the Arctic

In these circumstances, it is important to pay special attention to the role and place of the existing Russian-German Arctic cooperation in terms of mutually beneficial Russian and German interests in the development of the Arctic in the medium and long term prospect. Despite the deterioration of German-Russian relations since the beginning of 2014, due to the Ukrainian crisis, there is still significant potential for mutually beneficial cooperation in the development of the Arctic region in the scientific, technical and economic sphere, as well as in education. Germany started to develop scientific cooperation with the Soviet Union in the sphere of the Arctic research 30 years ago — in 1985. The main partners from the German side — Alfred Wegener Institute and Leibniz Institute of Marine Sciences (IFM-GEOMAR, Kiel), from the Soviet / Russian side — Arctic and Antarctic Research Institute (now — FGBI "AARI"). Their joint projects successfully survived difficult periods of Soviet perestroika and formation of the new Russian state. It should be noted

[6] Arktis-Schutz steht im Koalitionsvertrag. URL: http://www.deutschlandfunk.de/run-auf-die-arktis-deutsche-forschung-im-zwiespalt.724.de.html?dram:article_id=320795 (accessed: 30 May 2016).

that the joint projects of polar research, carried out in the period from 1957 to 1990 with scientists from East Germany, were continued after the unification of the country.

Agreement in the field of marine and polar research between the Ministry of Industry, Science and Technology (now the Ministry of Education and Science) and the Federal Ministry of Education and Scientific Research of Germany, signed in the middle of 90s of the last century, plays the important role in current scientific cooperation. The largest project was the program "Laptev Sea System", combining the efforts of about 20 Russian and German organizations. The Russian-German Laboratory for Polar and Marine Research named after O. Schmidt, was created in FGBI "AARI" in 1999, it coordinates research, including monitoring, holding seminars, schools, conferences and meetings on polar issues [10].

One of the leading Russian institutions in the scientific and educational cooperation with Germany was established in 2009 — Northern Arctic Federal University named after Lomonosov (NArFU) which has stable partnership relations with many universities in Germany, including the University of Applied Sciences Emden / Leer, Freiburg mountain Academy, University of Hamburg, Kiel University of applied Sciences [11][7]. In Arkhangelsk at the base of the Institute of Philology and Cross-Cultural Communication[8] there is Representation of the German Academic Exchange Service (DAAD). Saint Petersburg State University, Kazan Federal University and the North-Eastern Federal University, in which the Russian-German laboratory for the study of the ecological state of the Arctic has been working from 2013, actively participate in the Arctic projects. Joint research projects are important elements of cooperation in the study of the Arctic region. They should be not only supported but expanded as well. Among other things, it is necessary to more actively use the positive experience in the framework of the Arctic Council of the International Arctic Science Committee (IASC) and the Working Group on Sustainable Development of the Arctic, and also pay more attention to Russian-German project on Svalbard.

Despite the EU sectoral sanctions against Russia there are still good prospects for economic cooperation of the German company BASF (through subsidiary — Wintershall) with Gazprom in the development of the South-Russian deposit. Now the projects are not discussed in public, but there is high probability that in a few years, the interest to them will be expressed from both sides. The Norwegian state company Statoil will be the main competitor for interested Russian economic operators.

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[7] Soglasheniia o sotrudnichestve SAFU s zarubezhnymi partnerami. URL: http://narfu.ru/international/mezhdunarodnoe-sotrudnichestvo/zarubezhnye-partnery/ (accessed: 30 May 2016).

[8] Now it is part of the Institute of Humanities and international communication of NArFU named after Lomonosov. — Editor's note.

Conclusion

The Arctic strategy and policy of Germany for the last five years has acquired clear outlines. They are spelled out in a number of basic documents and subsequently filled with concrete content. Many German postulates formed the basis for the new EU Integrated Arctic policy, assepted at the end of April 2016.

Formally special attention is paid to the most profitable issues in terms of international positioning — climate protection, sustainable development of the Arctic ecosystems, indigenous peoples' rights, scientific research. But behind it the long-term economic geopolitical interests of the largest economy of Europe stand. The German government aims to ensure guaranteed access of their corporate groups to the mineral resources and transport infrastructure of the Arctic region. The Arctic Council is one of the most important sites for it, where Germany is looking for a variety of formats for cooperation with its members, including Russia.

The German-Russian Arctic cooperation until now has been concentrated in the area of research and education. Scientific cooperation is characterized by a large number of participants and a variety of high-impact projects, many of which were initiated already in the XX century.

Economic cooperation still remains in the shadow, including and due to the EU sanctions. However, in the medium term, you can count on its gradual recovery, especially in view of the above mentioned economic and geopolitical objectives in Germany. In this respect, the Russian state should clearly define the common denominator, which should take into account their interests in such cooperation. The contribution in this area should be also arranged by NArFU named after Lomonosov, Moscow State University and the Institute of Europe of the Russian Academy of Sciences which carry out projects on Arctic issues, including in joint research and educational programs, finding ways to dialogue on mutual Russian-German interests in the development of the Arctic taking into account the membership of Germany in the EU and the Russian Federation in the EEU.

With high probability, the future coalition government formed at the basis of the results of elections to Bundestag in autumn of 2017, will continue to realize the national strategy for the Arctic. Perhaps certain nuances will appear in it, but they will be insignificant in terms of its core content.

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The motives and interests of non-Arctic states on Arctic development

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Abstract. The article summarizes the work of the Center for Strategic Assessments and Forecasts on the study of strategy and policy of the Arctic Council observer countries. It is proposed in the number of the Arctic Council observer organizations include the Russian Geographical Society — internationally recognized and oldest scientific community, which has made a significant contribution to the development of the Arctic.

Keywords: *Arctic, observer countries, the Arctic Council, the Center for Strategic Assessments and forecasts*

At the turn of 2010—2012 a new center of power actually formed in the international Arctic policy — the group of the Arctic Council observer countries[1]. Employees and experts of the Center for Strategic Assessments and forecasts conducted a of the Arctic Council countries-observers. The attempt was made at the expert level to find Arctic strategy, position and motives of activity of each country with observer status [1, p. 8—73].

The following key points were confirmed during progress of work. The issue of the development of deposits located in difficult climatic conditions has become one of the most urgent in the last decades due to climate change on the planet, as well as the exhaustion of easily accessible deposits of hydrocarbons. On the other hand, changes in the geopolitical balance of powers in the world, redistribution of financial, commodity and other flows between East and West at the beginning of the XXI century have made one of the most important also the question of the revision of the strategic transport through passages.

The above mentioned reasons, as well as several other factors led to the fact that the problem of the development of the Arctic, with its impressive resorces of raw materials, as well as new transport abilities has become one of the most discussed in the first decade of the XXI century. [2; 3; 4; 5]. Russia's interests in the Arctic, the evaluation of existing partnership institutions in the region, the main lines of the strategies of the foreign states in the Arctic are discussed in the anthology "The Arctic region: problems of international cooperation". [2]

A number of world powers rushed to lay claim to the resources of the region and the region itself as a whole. As V.N. Konishev, M.I. Ryhtik, A.A. Sergunin noted already in 2011: "In the

[1] This problem was described in the research of the Center for Strategic Assessments and forecasts: Strany-nabliudateli v Arkticheskom sovete: pozitsiia i motivy deiatel'nosti. M.: ANO, Tsentr strategicheskikh prognozov i otsenok, 2014, 102 p. Funding of the preparation and publication of this work was carried out by the Foundation of Public Diplomacy Support, named after A.M. Gorchakov.

context of enhancing of the geopolitical status of the Arctic, the trend towards re-militarization of the region has appeared. This is reflected in the strengthening of the military presence and activity of a number of countries, as well as NATO in the Arctic; modernization of the armed forces and military infrastructure; the use of armed forces (especially the navies) to defend the economic interests "[6, p. 157].

During a large-scale diplomatic work by the end of the first decade of the XXI century in the Arctic region the international legal framework was formed which let to avoid direct confrontation. With the foundation of the Arctic Council and a number of other institutions, today the international relations in the Arctic are kept to a mutually acceptable dialogue between key polar countries: Denmark, Iceland, Norway, Canada, Russia, USA, Finland, Sweden. These countries are included in the Arctic Council as permanent members and thereby ensured the legitimacy of the organization.

The status of permanent members and achieved relative prosperity in international affairs on the issue of development of the Arctic does not allow these states having more expressed interests in the region, to pursue an active expansionist policy. However, it is clear that the importance of the Arctic is significant that it is not possible to be satisfied only by the achieved status quo and it is necessary to look for other tools that would allow to solve their own problems without disputing about established order of things.

The observer countries in the Arctic Council

According to our estimates, at the moment such a tool is observer countries (currently there are 12). These states which showed their interest in the development of the Arctic, but they are not countries in the region, and according to the rules established by the Arctic countries, they can not claim to its resources. However, they can exert political, economic and other effects on the situation in the region, though not directly, but indirectly — through other areas and other projects. Today observer countries are active players in the international arena. Their interests in the Arctic may often overlap with those of other regions in the world, such crossings can be the subject of a diplomatic game. It should be taken into account that in recent years among the countries-observers China has appeared — it is a rapidly evolving geopolitical center of power, which clearly identified its own interests in the Arctic and is seeking to increase the speed of development of the region by any means.

Conducted analysis of the study shows that today there are independent players (e.g, China), as well as dependant countries (most of the rest of the observer countries) among the countries-observers. They, in turn, can be divided into two groups: those who understand their

own economic benefits from participation in the "Arctic race" and ready to cooperate with stronger players (Singapore, South Korea, Japan and others) and those who are ready to offer their own "Arctic policy" as a tool for stronger partner (Spain, Italy, etc.) or more complex political and diplomatic games.

Multidimensionality and diversity of relations between the parties on the issue of development of the Arctic today raise a number of problems to the Russian foreign institutions, and the Russian Arctic policy will depend on their solutions. Today it is quite clear that it will be very difficult for Russia alone to defend its interests in the Arctic — the opposition from the other participants of the process will be too hard. It is not reasonable to solve most of the problematic issues only within the framework of the Arctic Council today. A number of problems can be discussed in bilateral relations, keeping the balance of interests. In the literature of 2012—2013 before the Ukrainian crisis the issue of the creation of "Arctic twenty" was raised, as about global organization of a new type in order to develop real trust to each other under conditions of emerging multipolarity. In the process of intensification of the struggle for the Arctic area, the Arctic Council is increasingly manifesting itself as apologist of the unipolar world. "In such a difficult situation it seems enough positive to start a constructive dialogue on the creation of a new geopolitical structure — "Arctic twenty" of the major economies of the world, or «International Arctic union» as the organization of a new type of the global scale — AG20» [4, p. 116—117]. The proposed modernization of Arctic managing undoubtedly requires long work and does not involve radicalism.

In these circumstances, it is very important to understand the "balance of powers" and to form new coalitions on the basis of mutually acceptable objectives and tools to achieve them. The study confirmed that the leading country (among the regional states) actively engaged in the study of the capacity of observer countries and options for using it in their own interests, is Norway today. This country is making the active dialogue with Singapore, China, South Korea, trying to bring them to solve a number of issues in their own interests. As the informal coordinator of the policy of the observer countries the role of Poland with the support of Britain and France is denoted.

Problem Arctic issues and concerns

Nowadays the problematic issues actively discussed in expert circles of the regional states, have been clearly determined, and they are also a key topic of the dialogue of the observer countries with the permanent members of the Arctic Council.

Global climate change and the role of them in the polar regions. This topic today dominates in cases when extraregional country is trying to prove the interests in participating of the study of the Arctic region. Climate change and the role of the Arctic in them is almost a safe topic when it is

necessary to solve the issue of access to the management structures in the region. This topic today sounds almost in all the official documents related to the formation of policy of the countries in relation to the Arctic region.

Environmental security in the region. This topic is not less important because it directly connected with the first one. It is very convenient — any attempts of industrial development of the Arctic stumble on issues of environmental security. This is ecology that allows today to take more radical steps if it is necessary to protect or promote someone's interests.

In particular, today the work has been performing to tighten the environmental standards of shipping on the Northern Sea Route (the work has been performing jointly by Norway and Singapore). The main purpose of this work — to accept stringent standards, allowing operation in the Arctic of vessels only built by using the special "green" technology, which offers only a limited number of countries in the region. This allows to solve competition issues rather effectively.

Providing international access to the use of the Northern Sea Route. Despite the fact that the real economic prospects for the active operating of the Northern Sea Route lie in the medium term, already today there is active discussion of the norms and principles on which the Arctic shipping should be based on. The main requirement here is the separation of the interests of the Arctic states (such as Canada and Russia having the largest areas, via which the northern ways go) and the rest of the international community.

Preservation of ecosystems of the indigenous peoples. The topic of indigenous peoples is conditional enough, though, and is effective as it is related to the social aspects and allows to bring to the discussion the entire practice of diplomatic struggle and advocacy on human rights violations.

International law in the Arctic region. The issue of "modernization" of international law in the Arctic region allows to achieve significant priorities for the states holding the main resource, which allows to influence on the formation of new structures and relations in the sphere of international law. First of all, it is USA. However, there are a number of the observer countries, which are also important players — they are Singapore and the United Kingdom. These countries are now engaged in the formation of new approaches to international law in the Arctic.

With regard to the interests of the new members of the Arctic dialogue, then they are following mostly expressed: 1) the use of renewable Arctic marine resources (fishery); 2) access to non-renewable (especially to hydrocarbons) resources of the Arctic shelf; 3) access to the Northern Sea Route. These interests are the same for the majority of countries, and they are the source of the potential conflicts in this respect.

With this in mind and based on the results of the conducted research, it is necessary to take into account the following special aspects in the formation and implementation of the Russian Arctic policy. *The issue of access to the Arctic resources carries a potential of hidden and obvious conflicts*. It is difficult enough for Russia alone to solve arising problematic issues. Due to this reason it is necessary to arrange configurations of new foreign associations and alliances able to consolidate the opportunities of both permanent members of the Arctic Council and observer countries. Realizing that the very institution of the observer countries enables leading players to remain in shadow, keeping status quo, we can expect that the process of accepting of new states as observer countries will go on in the coming years.

Countries of the region for a few years already have been actively forming the corresponding *infrastructure* enable them to prepare scenarios for the political leadership, which makes their steps effective and efficient. In particular, in most countries, industrial and other clusters have been made and successfully work, combining institutions, research organizations and industrial enterprises in order to consolidate the efforts to defend their own interests in the Arctic. For example, in Poland today there is the Arctic consortium, uniting 12 scientific and educational institutions. In Japan a public-private partnership is arranged from the largest shipbuilding companies and government agencies, designed to ensure the country's leadership in the Arctic shipbuilding. This practice must be considered and in Russia, trying not to spray, but to unite and consolidate the resources for the forming, promotion and protection of the Russian interests in the Arctic.

Considering that the Arctic for Russia is the future and due to it, on the background of the highest possible democratic approaches to making international relations in the Arctic, the strictly state position of Russia is to be formed in the issue of the development of the Arctic region.

Conclusion

As one of the results of the work we think correct to recommend the creation of a specialized association or consortium in Russia, which as public organization would unite all the concerned institutions in order to coordinate ongoing Arctic policy.

It is known that besides the observer states there is also Institute of observer organizations in the Arctic Council. It includes in particular the Arctic program of the World Widelife Fund, union of reindeer herders of the North and others.

We consider important to recommend the Russian organizations to the promotion into the Arctic Council observer organizations. Russian Geographical Society is the most promising here, it is internationally recognized as the oldest scientific community having in its line many historical

figures which have made a significant contribution to the development of the Arctic. It is necessary to work and to promote as observer organizations also other Russian and foreign structures, which can be used in the Russian interests in protecting the country's interests in the Arctic region.

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China, Republic of Korea and Japan in the Arctic: politics, economy, security

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Abstract. China, South Korea and Japan are actively pursuing scientific, economic and political activities for the development of the Arctic, the Arctic resources, ensure security in it, seeking to increase its role in the Arctic Council, cooperating and competing-Rui with other countries. The paper stresses that China is in the final stage of preparation of its Arctic strategy, however, it is noted that the Arctic is important for China, but not a top priority of its foreign policy. The priorities of the Republic of Korea in the development and exploration of the Arctic, as shown by the analysis conducted by, yavlyutsya: research, the use of the Northern Sea Route for the transportation, receipt of orders from Arctic countries for Korean shipyards for the construction of offshore oil platforms, special vessels and icebreakers; development of relations with Russia. Japan is a growing interest in the Northern Sea Route, scientific research in the Arctic. We consider Japan's attempts to resolve the territorial issue with Russia. Japan's Ministry of Foreign Affairs supports the establishment of a new international structure in the Arctic, which was formed not on a geographical basis, and by the presence of economic interests in the region. Seoul supports the establishment, together with Russia a regional mechanism of multilateral cooperation in the Arctic, with the code name “Asia-Pacific Arctic Council”.

Keywords: *Arctic, China, South Korea, Japan, the Arctic Council, observer states, interests, scientific research, the Northern Sea Route*

China, Korea and Japan as the Asian Arctic Council observer countries are most actively pursuing the Arctic policy. The research of the interests, various aspects of their work reveals the features of the Arctic policy of every of these three countries. The comparative analysis shows that in addition to political, economic issues of cooperation, these countries have started to pay more attention to the issues of countering new challenges and security threats (terrorism and illegal migration), development of constructive and business cooperation in prevention of emergency situations, the tasks of search and rescue in the Arctic.

Interests and policy of China in the Arctic

China has the most powerful potential of all Asian countries to participate in the Arctic policy. Today it has the second economy in the world, so is looking for all possible ways for further development. China's interests in the Arctic form a complex which consists of, first, economic, including natural resource- and transportation and logistics interests, and secondly, ecological and climatic and other research interests as fundamental theoretical and various scientific applications, thirdly, geopolitical and closely related military-strategic [1; 2; 3].

China is actively promoting a full series of scientific, economic and political initiatives to secure its strategic interests in the Arctic. The country is actively engaged in polar research [2, p. 54—73]. The start of this research was initiated in 1981, China held the first expedition to the Arctic in 1995, when researchers reached the North Pole on foot. And the first marine expedition to the North Pole took place in 1999.Since 1994 China holds polar research aboard the only China research icebreaker "Syuelun" ("Snow Dragon"), which was purchased from Ukraine in 1993. In August 2013 "Syuelun" was the first of the Chinese ships which passed along the Northern Sea route (NSR) in the Barents sea, and on the way back from Iceland to the Bering Strait — went on high-latitude route, bypassing the Northern sea route[1]. The voyage of "Syueluna", as director of the Polar Research Institute of China (PRIC) Hueygen Yang noted in interview with South China Morning Post, "strongly encouraged" Chinese shipping companies[2]. For the first time a Chinese ship skirted almost all the northern coast of Russia. The Japanese believe that the polar ambitions of Russia were hurt by this case. Commercial use of the NSR is to use (of course, be-paid for) Russian icebreakers, as well as fees for passage along this way [4, p. 63].

Every year China spends about $ 63 million on polar research, which is approximately equivalent to the costs of South Korea for the same objectives and much more expensive, for example, of the United States. The plans of the leadership of the country are to increase the number of scientists involved in polar issues. There are several research institutes, which are directly involved in Arctic research, the main one is the Polar Research Institute of China (PRIC) in Shanghai, which in 2013 teamed up with leading research institutes of the Northern Europe into the China North European Arctic research; China Institute of Marine Research in Pekin and Qingdao Institute of Oceanology. Research related to the Arctic are held in the Maritime University of Dalian, University of Xiamen, Tongji University in Shanghai, the Chinese Antarctic Centre of topography and mapping at the University of Wuhan, in China marine research center in Qingdao and the Ocean Institute in Chzhetszyan [3, p. 68].

According to Chinese experts, the country needs the research results to get a deeper understanding of the negative impacts of climate change in the Arctic on the environment in China, and its agriculture. It is now established that the air flows in the Arctic are the major cause of extreme weather conditions in China and influence strongly on the economic and social

[1] Barents Observer. URL: http:// barentsobserver.com/sites/barentsobserver.com/les/styles/grid_8/public/main/articles/xue_long_snow_dragon_sinoshipnews_com.jpg (accessed: 21 February 2014)
[2] BBC. URL: http://www.bbc.co.uk/russian/ international/2012/11/121107_china_congress_ opens.shtml) (accessed: 21 February 2014); ChinaLogist.ru: URL: http://chinalogist.ru/book/news/biznes/kitay-perenes-15-gruzopotoka-na-severnyy-morskoy-put/] (accessed: 21 February 2014)

development of the country. Now China has progressed in terms of scientific and technological development of the Arctic than many Arctic countries, including Russia. China is rapidly modernizing base of Arctic research, rearranging icebreaker port in Shanghai and building new bulks for data processing, storage of polar ice.

It should be noted, that the Arctic, the NSR are guaranteed supply chain of energy and other resources for them, and the US Navy will not be able to block it. The Chinese call the NSR, protected from exposure of the US Navy, informally as "Marine silk way". China is seeking to fixate in the North Sea Route, which allows to significantly reduce the logistics costs, as well as to ship goods safely to the country. Transit of Chinese export goods through the NSR from such large ports as Dalian, Qingdao, as well as from ports of the southern Primorye and DPRK will significantly reduce the time of delivery of containerized cargoes to Europe. According to Chinese forecasts, up to 15% of China's foreign trade cargo will be transported through the NSR by 2020, mainly in the form of container traffic, which is about 800 billion Euro [5, p. 77]. In addition, the NSR is shorter and much cheaper than the southern route from Shanghai to Hamburg. Absence of piracy risks reduces the costs of operation of the NSR, whereas piracy ships particularly threaten to the Chinese ships in the Gulf of Aden, due to which the insurance premiums have increased tenfold for the passage of the gulf. According to Chinese experts, one "northern" trip of container vessel or dry cargo vessel can save from 0.5 up to 3.5 million dollars. For China this issue is extremely important, bearing in mind that the economy of the largest exporting country in 46% is dependent on international shipping. According to opinion of the scientists from the China Institute of International research, the active development of the NSR will encourage the development of China's north-east and the coastal zone, as well as the cooperation of East Asia. The representative of Dalian Maritime University Li Zhenfu quite accurately expressed the view of Chinese experts, believing that the one who will get in the XXI century "control over the Arctic route will control the new way of the global economy". Therefore, in addition to its own base China is renting two ports in North Korea — Rajin and Chongjing, located near the Russian Far East.

At the international level, the question of dividing of the Arctic has not been settled yet, and China benefits from it, seeking to prove that no one has exclusive rights to the development of the region. Presence in China’s structure of authorities of special Arctic and Antarctic Administration proves China’s serious intentions. It is responsible for the implementation of research programs and stepping up activity in these areas. China is going to create the first ever permanent drifting station in the Arctic Ocean. In autumn 2013 two container vessels belonging to COSCO, passed along the Northern Sea Route from Dalal to Rotterdam. The company received

from the Administration of the NSR the permit for three trips, giving the right for independent sailing along the route in light ice conditions, as well as sailing with ice-breaker assistance. China announced the construction of a new icebreaker with a range of 20,000 nautical miles, able to pass the ice with thickness of up to 1.5 meters, with acceptance of which in 2014[3]. Recently significant investments in the expansion and modernization of production capacities of the Arctic shipbuilding industry are arranged in the country, building of entire fleet of modern icebreakers is planned [2, p. 61].

China is gradually increasing its influence on decision-making process related to the Arctic. Beijing has already been steadily integrated into the system of the Arctic problem solutions: ranging from the environment and ending with the economy. Expanding investment projects in the Arctic states, China lays the foundation for increasing its influence in the region. With a number of major projects, it has formed the basis for building the mechanisms of economic pressure on these countries to implement their own interests in the Arctic. So far Beijing does not show clearly its explicit claims to the Arctic by means of authorities. Excessive activity in the region can only lead to what is now observed in the South China Sea. China's position on the disputed territories in this sea has led to the fact that countries in the region have united to stand against China. India, Japan, Vietnam, Korea, the Philippines, Malaysia and Indonesia actively prevent attempts of Beijing to seize control in the South China Sea.

Subarctic countries are also displeased with China's activity in the Arctic and, considering it a dangerous competitor. Ignoring the discontent of these countries, China calls itself "the Arctic country" by means of experts. But nevertheless, Beijing rarely crosses the "red line" and does not give grounds to consider its intentions aggressive. Now China prefers not to get involved in the diplomatic conflicts and work through joint ventures. But in the wake of rising of the economic power and military potential, Beijing can become less "polite". It is no coincidence that China closely monitors all actions of Russia in the Arctic. For example, if repeated updated application of Russian Federation to the United Nations, sent in August 2015 on the extension of the continental shelf, proving that the underwater Lomonosov and Mendeleyev ridges are a continuation of its continental shelf, will be satisfied, China, as some scholars note, finds itself in disadvantage regarding the development of resources in the Arctic. If application response will be successful for Russia, the Arctic area of the country may increase by 1.2 million sq. km.

[3] V Kitae ob"iavili o stroitel'stve novogo ledokola. URL: http://www.korabel.ru/news/comments/v_kitae_obyavili_o_stroitelstve_novogo_ledokola.html (accessed: 12 June 2016).

it is also possible that with the increasing of China and a possible weakening of Russia due to the sanctions of the West, Beijing can decide to declare the "Marine Silk Road" as international water area. But then other countries may require recognition of Hainan Strait between the island and mainland China as a neutral area. The beginning of the serious dispute between Russia and China regarding the NSR would be in the interests of the West oriented to raw containment of China.

For the West the emergence of China in the Arctic basin is even less desirable prospect than all the Russia's Arctic claims. That is why many western experts are trying to prove to Moscow that the emergence of China in the Arctic creates a "regional threat, and first of all — for Russia".

In contrast to these assertions Beijing uses rather different approaches in the Arctic. China prefers to be blocked on Arctic issues with the countries whose positions are not as strong in the presence of the great powers of the region, such as Russia, the United States and Canada [6, p. 37—44]. China is seeking benefits, actively working with the "small" countries [7, p. 40—45]. One of the most attractive partners for China is Norway. Both sides at every opportunity actively discuss issues of cooperation in energy sector. Chinese companies are very interested in the experience of the Norwegian partners in deepwater drilling, and for their part they are ready to invest in Scandinavian projects. The first scientific station "Yellow River" in New Ålesund in Svalbard was opened thanks to Norway already in 2004, which provided for China not only the territory, but also the technical basis. Station "Yellow River" was built by the Norwegians, which still provide the service of this station.

Denmark also largely supports the growing role of China in the Arctic. Cooperation of Denmark and China, initially expressed in enhancing of trade between the two countries, is gradually developing into a close partnership. The reason for this are the Greenland minerals. Copenhagen hopes to benefit from the reduction of the Greenland ice sheet, which will allow to extract rare earth metals there. And China is going to become the main buyer of these resources. The current monopoly (97% of world production of rare earth metals is accounted for by China) is a serious concern in the United States and the European Union, including the rare earth metals in a list of 14 strategic scarce raw materials[4]. Sichan Xinue Mining Corporation has become investor of great international project in mining at the Greenlandic Isua iron ore deposit. According to experts view, if it becomes successful, other Chinese companies such as Jiangxi Zhongrun Mining

[4] They are used in high-tech industries: electronics, nuclear engineering, mechanical engineering, metallurgy, chemical and glass industries. Restricting of the supply of rare earth metals from China had a negative impact on the Japanese, US and European manufacturers.

and Jiangxi Union Mining will join it, which have already explored here deposits of copper and gold[5].

Iceland is important for Beijing as a firm base for a breakthrough in the Arctic [8, p. 88]. China in the midstream of the financial crisis of 2008 provided the country with a currency swap in 406 million euro to support the banking system. Beijing released Reykjavik several significant loans on extremely favorable terms in 2012. China signed an agreement with Iceland on cooperation in the Arctic, as well as the agreement on free trade area, which entered into force in 2014. The Chinese company China National Offshore Oil Corporation announced a deal with the firm Eykon Energy for exploration of oil reserves off the southeast coast of Iceland[6]. The chinese investments came into the economy of Iceland. The Chinese felt a taste of luck in Iceland and almost went too far. A number of Chinese billionaires privately tried to buy some islands in the north-east of the country with a total area of over 300 sq. km for "business tourism", as it was officially announced. According to Russian experts, the real purpose of such purchases was most likely the creation of "stationary military bases and communications". Iceland was able to abandon this offer .[7] Soon there was a ban imposed by law to sell the land parcels, which could potentially be used for building bases there. Today, Iceland is the main China's lobbyist in the Arctic Council. Reykjavik convinces the colleagues that the adoption of Beijing as a permanent member will attract Chinese investments in environmental work and collective research in the region. However, Sweden, USA, Norway come out against it. Russia probably does not have sense to lobby China in the Council, as Iceland does and what some Chinese experts say about.

China develops cooperation with Canada in the field of energy production, mainly due to the rapid spread of China's economic expansion in the energy sector in Canada. In recent years, the sums of Chinese investments in Canada's energy sector have been increased significantly, the Chinese companies buy significant stakes in oil and gas projects of the North American partner. China has become the owner of the entire parcel of shares of the Canadian company Athabasca in Alberta, where 85% of world oil sands are concentrated [8] . From 2009 to 2011 China bought shares in such Canadian companies as Teck Resources, ConocoPhillips, Daylight Energy. And apparently,

[5] Arkticheskaia strategiia Kitaia. URL: http://www.daokedao.ru/2013/06/24/arkticheskaya-strategiya-kitaya/ (accessed: 13 June 2016).
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China is not going to stop. Canada, in turn, is trying to diversify its energy market, which is now heavily focused on the United States.

As Chinese China Daily noted 6 June 2013, China intended to set up in Shanghai China Nordic Arctic Research Centre — CNARC, on the basis of PRIC, with Danish, Icelandic and Norwegian institutions. Chinese experts, holding their ground in the Arctic, introduced in scientific and political use the definition of China as "near arctic power", identified six areas of multilateral and bilateral cooperation of China in the Arctic: a) research, b) natural resources, oil and gas, and c) tourism, d) Arctic shipping routes, d) the use of high technology in the development of the regional economy, and e) culture and education. In addition, research is becoming a tool of soft power at the initial stage of the international cooperation in Arctic [9, p. 43—45].

Rapprochement of Beijing with Moscow is going on, as well as the formation of a strategic alliance between Russia and China in the Arctic [10, p. 24—35]. In system of energy policy of Russia and China, the Arctic is considered as a basis for sustainable development of the Russian-Chinese relations [11, p. 15—22]. As one of the Arctic countries, and the largest by territory and mineral resource reserves, Russia has a unique opportunity for full-scale development of these reserves and to use financial, human and technological resources of China, possessing advanced technologies for resource extraction and searching for partners in their development [9]. China, as well as a number of other non-Arctic states, lays claim to the natural resources of the Arctic. In the future this may lead to an aggravation of rivalry with Russia, having abundant resources in the polar region [12, p. 2—9].

Russia became the first point of the visit of Xi Jinping as the new chairman of China 22—24 March 2013. In the course of this remarkably pragmatic, in many respects historical visit, 35 documents were signed aimed at the development of cooperation between Russia and China in the field of energy, metallurgy and electric power industry, food security, agriculture, environment, tourism, information and cultural exchanges, the control of migration, investment, insurance and interbank activity [10]. Agreements on the supply of oil and gas in China have been signed. In 2014 Rosneft and China National Petroleum Corporation (CNPC) agreed to jointly study the Zapadnoprinovozemelsky area in the Barents Sea, as well as Yuzhno-Russky and Medynsko-Varandeisky sections in Pechora Sea. The agreement between CNPC and Gazprom is in force for the exploration of oil and gas fields in the Arctic and the deal is finished for purchase of 20% shares of the project Yamal LNG. The construction of the plant for the production of liquefied

[9] Anan'eva M.N., Grachev P.A. KART-BLANSh. Arktiku mozhno sdelat' rossiisko-kitaiskoi URL: http://www.ng.ru/economics/2014-03-20/3_kartblansh.html (accessed: 13 June 2016).
[10] Frolova I.Iu. Ob itogakh vizita predsedatelia KNR v RF. URL: http://riss.ru/analitycs/3254/. (accessed: 13 June 2016).

natural gas capacity of 16.5 million is going on within this project, at the resource base of the South Tambey field, the development of transport infrastructure, including the sea port capable of accepting of large-capacity LNG tankers and the airport near Sabetta village in the area of the Gulf of Ob. The Chinese investors have expressed their willingness to invest in the construction of a new deepwater Arkhangelsk sea commercial port and railway Belkomur (White Sea — Komi — Ural), which will shorten the way from Siberia to the White Sea by 800 km. Cargo turnover of the new port area will amount to 30 mln. tons per year[11]. China developing its fleet, hopes in the coming period on the Russian nuclear fleet. According to the vice-premier of Russia, Chairman of the State Commission for the Development of the Arctic D. Rogozin, in accordance with the Complete Plan of the development of the Northern Sea Route, approved in June 2015, a radical renewal of the icebreaker fleet of Russia is provided. In 2017, 2019 and 2020 the Russian fleet will be replenished with three new nuclear icebreakers. In the near future the project of the super-icebreaker capacity of 130 MW will be developed and, which will surely break through the way for super tankers with deadweight of 200 thousand tonnes and more[12] .

On the other hand, China uses contradictions of major powers in the region. At the same time Beijing makes it clear for Moscow that the prospects of the mutually beneficial projects in the face of threats and economic sanctions from the West are more significant than resistance to the penetration of China in the Arctic. China is trying hard to convince Russia that Russia alone will not be able to master the Arctic resources and offers investments for the purpose of creating a tripartite joint ventures involving advanced western (Norwegian) technologies, without which Russia reportedly unable to conduct extraction of raw materials from great depths. Beijing also aims to deliver its geophysical and drilling equipment to Russian enterprises. At the same time, Chinese manufacturers want to provide technical support for its products, as well as monitoring of operating drilling equipment in difficult Arctic conditions. Beijing also intends to have a permanent "polar" fleet, accelerated works to build it are already underway. In addition, China expects to have special aircrafts, able to land at the North Pole. Thus, China's actions in the Arctic are on the rise because China has the scientific, economic and financial capabilities for it. And every year they will only grow also due to the status of observer in the Arctic Council.

China will pursue the role in determining the political frameworks and legal basis for future activities in the Arctic. "Unlike the “polar five” China, Japan and South Korea do not have the

[11] Kitaitsy zainteresovalis' stroitel'stvom Arkhangel'skogo glubokovodnogo morskogo porta. URL: http://www.dvinainform.ru/politics/2013/04/22/13845.html (accessed: 13 June 2016).
[12] Ponomarev V.A. Severnym putem idete, tovarishchi! // Sever Press. 2015. URL: http://goo.gl/utaqu0 (accessed: 13 June 2016).

official Arctic strategies in which the priorities of their Arctic policies would be clearly formulated, but their interests in this region of the world are obvious. They are mostly made public by the representatives of expert and scientific community, and the authorities are cautious not to provoke the "official" Arctic states, including Russia, "[13, p. 124]. Apparently China already has the Arctic program, or at least worked out a plan of actions. According to Professor V.V Karlusov, in the second half of the 2010s China's possible priorities in the Arctic will be: 1) reaching of high level of scientific and applied and qualitative deepening of fundamental research of atmosphere, hydrosphere, lithosphere, and biosphere of polar latitudes with access to the forefront in the world of science in these areas by 2020-2030; 2) construction and operation of the system of permanent polar research stations in the Arctic; 3) the beginning of a large-scale industrial development of the whole complex of mineral resources in the Arctic; 4) the development of fish and other food and technical resources of hydro- and biosphere of the Arctic ocean to solve food security problems; 5) the creation of the only one transport-logistic and information and communication system in the Arctic, including high class trading and icebreaker fleet, the Chinese sea ports; 6) significant revenues of the Chinese tour operators from the development of international tourism on Arctic routes; 7) ensuring of permanent strategic military presence of China in the Arctic polar regions; 8) the general increase of the global status of China [14, p. 30].

The fact that Beijing is increasingly talking about the Arctic as a "global commons" stirs the particular control among the Russian experts. P. Boev supposes that "such approach is extremely unpleasant for Moscow, because the idea of sovereign control over areas in the Arctic does not fit it." [13]Moreover, dispute over the positions of Russia and Canada that the NSR and the Northwest Passage are the internal waters of these countries, may be counterproductive for China. Today it is clear that under existing legislation the rights of China in the Arctic are limited. The country can not claim for any Arctic territories, without calling into question the UN Convention on the Law of the Sea. Famous Chinese position that the country's right to sovereignty and non-interference in the internal affairs of a country should be overriding in international relations, hamper any attempt of China to dispute sovereignty of any of the Arctic countries. In this light, the statements of some Chinese officials that Arctic countries should take into account the interests of all mankind, and the region should be accessible to all, seem contradictory. It is unlikely that China will want to become one of the warring parties in the conflict over the Arctic and will seriously make territorial claims in the region.

[13] Boev P. Chem opasna dlia Rossii druzhba s Kitaem. URL: http://www.rbc.ru/newspaper/2014/09/22/56bdb5449a7947299f72c90c (accessed: 24 October 2015).

Many experts agree that China will acquire much more from cooperation with the Arctic countries, than from an aggressive policy to extend its influence in the region. At the same time, China is interested in blocking all the attempts of Russia to maintain, and if possible to expand its special status in the Arctic. On a number of important aspects China's ambitions in the region are close to the US approach: both countries want the principle of "free hand", though in different ways. However, our countries have much more common interests [15, p. 94]. Russia and China are interested in the development of transit along the NSR, the creation of joint centers of ecological tourism. Russia is ready to involve the Chinese mining companies to the development of hydrocarbon resources on the shelf, as well as their investments for the development of coastal infrastructure. We are interested in developing and exporting of scarce ore mineral resources located in the Arctic zone of Russia to the markets in the Asia-Pacific region. In turn, as already noted, China is interested in access to the hydrocarbon resource base of the Arctic, including the rich fisheries in the Arctic Ocean.

Based on the above, it should be noted that China will continue to hardly strengthen its policy in the north, but will do it gradually, using soft power and trying to find the approval of the other parties. According to Ambassador Extraordinary and Plenipotentiary of the People's Republic of China in the Russian Federation Li Hui, the Chinese party in the development and exploration of the Arctic pays attention to intensification of cooperation and exchange of Arctic experience, improvement of practical cooperation on a multilateral and bilateral basis, as well as expansion of opportunities for public participation, scientific research Institutes, enterprises in the Arctic cooperation. [16] At the same time, it is important to consider that the Arctic for China is important, but not the top priority in the foreign policy of the country.

Scientific and technological capabilities of the Republic of Korea in the Arctic

In the forefront of the increased interest of the large world's powers and the Arctic states to the development of the Arctic resources, the Republic of Korea is also seeking to keep up with them, and to secure a certain position in the region. The priorities of the activities of Seoul in the Arctic are: the strengthening of relations in the framework of cooperation with the Arctic states; the development of research activities and the formation of a new model of business activity in the Arctic; improving the legal and institutional infrastructure[14] . All this is necessary in search for answers to the challenges facing the Arctic, such as global warming, environmental protection, the use of the new economic opportunities offered in the Arctic.

[14] Natsional'naia gordost' i kommercheskie vozmozhnosti vlekut Iuzhnuiu Koreiu v Arktiku.13.11.2013. Арктику.13.11.2013. URL: http://russiancouncil.ru/inner/?id_4=2673#top-content (accessed: 24 October 2015).

in South Korea seven departments deal with the Arctic issues: Ministry of Foreign Affairs, Ministry of Science, Technology and future planning, Ministry of Commerce, Industry and Energy, Ministry of Environment, Ministry of Land-use, Infrastructure and Transport, Ministry of Maritime Affairs and Fisheries and the Korea Meteorological Administration. South Korean authorities create administrative and legal base for Arctic operations. The "Plan of activation of the Arctic regions" was accepted and published In November 2012, it provided the elaboration and adoption of an appropriate legal framework, the study of the major Arctic states legislation governing activities in the Arctic, government support for scientific research and development related to the Arctic sea transportation, fisheries, shipbuilding, development and production of natural resources, forming of comprehensive database on the Arctic issues, linkages and cooperation between relevant research institutions at home and abroad, training of specialists in the Arctic and Antarctic issues, as well as attracting of powerful members of the Arctic Council for cooperation and the development of specific business models of Arctic exploration[15].

In 2013 the project was further developed in the form of a "Plan of implementation of a comprehensive policy for the Arctic", arranged with the participation of a number of South Korean authorities — the Ministry of Ocean and Fisheries, the Ministry of Industry, Foreign Trade and Resources, Ministry of Land and Transport. Arctic Policy Implementation Plan contains four basic ideas: calls for increase of the international cooperation in the Arctic, the active participation in the Arctic Council and the deepening of bilateral cooperation with the Arctic states; It supports more active climate research and development in the region, including plans to improve the research infrastructure; It defines the business card about the Arctic, which will include measures to enhance the cooperation with the Arctic countries in shipping and port development, including the development of the Arctic route, shipbuilding, construction of offshore oil platforms, energy and resource extraction; It provides for the establishment of legal institutions, including new laws supporting Arctic activities, and the establishment of the Arctic Information Centre [17, p. 27—31].

Analysis of the official website of the Korea Polar Research Institute (KOPRI) indicates that the national program of the development of the polar regions under the auspices of the Government of the Republic of Korea has been realized since 1987, when the Korea Reseach Development Institute of the world's oceans (KORDI) established Polar Research Center, PRC. In course of time, the Polar Research Center had a few transformations and in 2004 it was reorganized into Korea Polar Research Institute (KOPRI), and has become the independent

[15] Cherkashin P. Plany Respubliki Koreia v otnoshenii Arktiki i perspektivy rossiisko-iuzhnokoreiskogo sotrudnichestva v etom regione. URL: http://russiancouncil.ru/blogs/dvfu/?id_4=1433 (accessed: 24 February 2016).

operator of the national program for the development of the polar regions, initially — Korean Antarctic Research Program, and after 2004 — Korean Polar Research Program) [17, p. 31]. KOPRI is based in Incheon, the largest port on the west (Yellow sea) coast. Another center for polar research is established in the Korean Maritime Institute, KMI, which branches in Busan and Ulsan on the coast of the Sea of Japan are actively investigating the problem of the transport development of the Arctic and polar logistics. The third center for polar research is being now formed at the Research Institute for Gangwon, RIG, based in the city of Chuncheon [17, p. 31]. In April 2002 the Republic of Korea joined the International Arctic Science Committee[16] and began to carry out the Arctic at the research station Dasan in the settlement of Ny-Ålesund on Svalbard (Spitzbergen). "The first Korean ice-breaker Araon was built in November 2009, which carries out research activities in the Arctic Ocean[17].

The Republic of Korea pays great attention to strengthening of the international cooperation in the sphere of polar research, developing cooperation with a number of foreign research institutions involved in research of the polar regions. These include: British Antarctic Survey; China Polar Research Institute in Shanghai; Alfred Wegener Institute for Polar and Marine Research; Russian institutes: Arctic and Antarctic Research Institute in St. Petersburg and the Shirshov Institute of Oceanology; The French Polar Institute Paul-Émile Victor; Japanese National Institute of Polar Research [15, p. 98], the Northern (Arctic) Federal University named after M.V. Lomonosov. South Korea was the organizer of the Arctic Science Summit, which was held in Seoul in 2011, with the assistance of the International Arctic Research Committee. According to some reports, South Korea spends on Arctic research almost as much as the US.

Considering the polar activity as one of the areas of international cooperation, the Republic of Korea aims at great activity in connection with opening commercial and technological opportunities in such sectors as shipping, shipbuilding, offshore technologies and fishing industry. The question arises: what caused such an interest of Korea in the Arctic, which technological capabilities the South Korean industry offeres to use in high latitudes?

Firstly, the country is dependent on energy imports. In 2013 it imported more than 50% of hydrocarbons from Saudi Arabia, Kuwait and the United Arab Emirates; Qatar, Indonesia and Malaysia. Information about the Arctic oil and gas reserves, of course, causes interest of Seoul. It is

[16] International Arctic Science Committee (IASC) was established in 1990. Its Board includes representatives of Canada, China, Denmark, Finland, France, Germany, Iceland, Italy, Japan, Netherlands, Norway, Poland, Russia, the Republic of Korea, Sweden, Switzerland, UK. Russia is presented by the Russian Academy of Sciences.

[17] The name of the vessel is a combination of Korean words. The name "Araon" consists of two words: "ara", which in Korean means "sea", and "on", that is "full", "whole". That is, "Araon" is a vessel capable to surf all seas and oceans.

expected that South Korean companies and experts will actively participate in the development and production of energy resources in the Arctic. The country is ready to invest in the projects for serch of deposits in the region.

Secondly, the interest of the Republic of Korea to the Arctic is caused by the ability to reduce transportation costs using the NSR. Korea made the first trip using the NSR in 2013, it started in the port of Ust-Luga and ended in the Korean port Dzhanguang. Korean ship also passed along the NSR, delivering equipment for the marine terminal in Yamal.

Speaking in Arkhangelsk (September 2015) at the International conference of representatives of the member states of the Arctic Council, observer states and the international scientific community "Ensuring of security and sustainable development of the Arctic region, keeping of ecosystems and traditional ways of life of indigenous peoples of the Arctic," Ambassador for Arctic Affairs Kim Chang said that this experience greatly enriched the knowledge of the Republic of Korea on the exploitation of Arctic shipping routes. In 2014—2015 the country made the commercial crossings along the NSR, to determine the economic feasibility of transportations on this route.

Thirdly, with the beginning of a new era of development of the Arctic resources and opening of the sea routes in the region, there is increase in demand for offshore oil rigs and special vessels, such as icebreakers and ships of ice navigation. The Republic of Korea is interested in the Arctic, primarily in the possibility of transporting of the liquefied natural gas, scientific research, sustainable and safe management of fisheries, new northern sea routes, as well as the prospects of the orders from the Arctic nations for Korean shipyards for the construction of special vessels and icebreakers.

The country is a large importer of hydrocarbons (9th place in the world for gas import and the 5th largest in oil import), and the opportunities to diversify its sources of supply are certainly important for the country.

South Korea is interested in the creation of new sea northern routes as it is one of the most important shipbuilding powers of the world, which is able to build icebreakers and other special vessels, oil platforms for export. South Korean shipbuilding companies Hyundai Heavy Industries, Samsung Heavy Industries, Daewoo Shipbuilding and Marine Engineering (DSME) are among the most competitive in the world for the production of high-tech vessels with high class equipment [15, p. 99]. Remarkable part of the global construction of icebreakers and special LNG carriers is made at the South Korean shipyards [18].

[18] The shipbuilding industry of South Korea consists of about 300 plants, 30 of which can and build ships with deadweight of more than 10 thousand tons. The main companies are the so-called "big three": HHI (Hyundai Heavy

DSME received from the Russian shipping company "Sovcomflot" an order for the construction of 9 LNG carriers in March 2014[19].The contract amount is $ 2.8 billion (the cost of each tanker is about $ 300 million.). Director of the Institute of Arctic logistics at the Yongsan University (South Korea) Sungvon Hong, speaking at the annual international conference "Transport and logistics in the Arctic - 2015", pointed out that the Korean shipyard DSME builds icebreaking LNG tankers for the Russian project "Yamal LNG". DSME, ahead of competitors, designed specifically for navigation along the NSR ice class LNG carrier ARC-7. New ultra-modern transport vessel with cargo capacity of 170 thousand cubic meters is able to overcome the ice cover of 2.1 m thick[20]. Russian Maritime Register of Shipping (RS) signed a contract with the South Korean shipyard Samsung Heavy Industries Co. LTD on technical monitoring of the design and construction in 2015—2017 of a new series of Arctic shuttle oil tankers of the project 42K «Arctic Shuttle Tanker» with deadweight of about 42 thousand tonnes. New tankers are designed to implement complex tasks of transportation of hydrocarbons from Novoportovskoye field located in the north of the Yamal Peninsula, 30 km from the coast of the Gulf of Ob [18, p. 27—28].

Shipbuilding companies of South Korea are interested in obtaining an order for the construction of methane carriers and ice class and earth-based modular units for natural gas liquefaction plant for "Yamal LNG" project. In addition, South Korean shipbuilders are specialized in the construction of offshore drilling platforms, both mobile and stationary.

With such technological capabilities, South Korea is interested in promoting their products, in using Korean-made vessels for the economic development of the Arctic. Taking into acceount high competition in the world market of new vessels, the Republic of Korea is focusing on R&D and innovations, also in the construction of ships, meeting modern requirements in terms of environmental impact. Exports of ships is a prominent part of South Korean export, varying in the range of 8 to 12% of its total export. A special feature of this country is a strong economy monopolization by large commercial and industrial groups (the so-called chebols), which are supported by the state. This helps South Korea to support the development of the domestic shipbuilding, shipbuilding technologies and create new vessel designs that meet the latest requirements.

Industries), DSME (Daewoo Shipbuilding & Marine Engineering) and SHI (Samsung Heavy Industries). These South Korean giants are also three largest shipbuilding conglomerates in the world.

[19] Koreiskaia verf' DSME budet stroit' ne 16, a tol'ko 9 tankerov dlia «Iamal-SPG». 10.07.2014. URL: http://www.korabel.ru/news/comments/yuzhnokoreyskaya_verf_dsme_budet_stroit_ne_16_a_tolko_9_tankerov_dlya_yamal-spg.html (accessed: 14 June 2016).

[20] Rossiia i Koreia dogovorilis' po Arktike. URL: http://ks-yanao.ru/novosti/rossiya-i-koreya-dogovorilis-po-arktike.html (accessed: 24 February 2016).

The interest of the Republic of Korea to the Arctic is largely associated with operation of the NSR, participation in transport for shipping companies in the country[21], taking advantage of the largest South Korean ports — Busan (known as the "sea capital of the Republic of Korea"), Ulsan (known as the "capital of the Republic of Korea's economy," the largest shipyard in the world is situated in this city — "Hyundai Heavy Industries", the port has 59 berths for liquid bulk goods) and Kvanyan, which is the second largest container port in the country after a Pusan, by the results of 2014 the port handled 2.33 million TEU (equivalent to 20-foot standard container).Korean shipping company TPI Megaline will carry heavy loads for three years to new Arctic port of Sabetta in Yamal. Another major player in the Korean market — company Unico logistics — is currently exploring the possibilities of transportation of heavy cargoes on the NSR and further along the river Ob in Pavlodar (Kazakhstan). According to experts, the Korean government actively suppors companies interested in using the Northern Sea Route. The russian Arctic resources make up a large part of the cargoes transported on the NSR in Korea. In 2013 8 of the 28 international trips on the NSR belonged to Korea. "Cargoes transported to Korea, were gas condensate and naphtha. The country in turn, exported aviation and diesel fuel"[22].

The development of the NSR will allow the country not only to increase the production of the Arctic class ships, but also to multiply the turnover of the Korean ports. Due to the reduction of travel time of the container traffic between Korea and Europe in about two times, significant saving in transport costs is achieved. In connection with the prospects of development of the Arctic resources and the use of the North-East and North-West passages as international maritime routes, a number of experts in South Korea point to the need for Seoul to take steps that can ensure participation in the development of the main ports of the Arctic and North Pacific, and also can meet the needs of the countries concerned in the various kinds of ice class vessels, which will be needed more and more with the development of the region.

Realization of the planns is expected by strengthening of the cooperation with the most influential members of the Arctic Council, revitalization of navigation on the NSR, participation of the Republic of Korea in the program "Polar Code" arranged by the International Maritime Organization, regulating requirements and shipping rules in the Arctic, and reduction of fees for the use of equipment and facilities of the Arctic ports along the NSR. Northern Sea Route will play an important role in the implementation of the "Eurasian Initiative" — a national strategy of the

[21] The largest shipping companies of the Respublic of Korea are: Hanjin Shipping, Hyundai Merchant Marine, STX Pan Ocean и Korealines.
[22] Iuzhnaia Koreia prokladyvaet morskoi put' v Arktiku. URL: http://regnum.ru/news/1905228.html (accessed: 24 February 2016).

Republic of Korea. The country makes great efforts to ensure safe navigation in the Arctic, both by the relevant scientific research and by training in Russian educational institutions. In addition, it is intended to increase the base for conducting the Arctic research, as well as to concretize projects of natural resource development in the Arctic. Pestsov S.K, Tolstokulakov I.A., Labyuk A.I., Kolegova E.A. (Institute of History, Archaeology and Ethnography of the peoples of the Far East, Far East Branch of RAS) point out that South Korea is at the very beginning of its Arctic way, it is increasing its technological and scientific capacity, forms a favorable international environment, gaining authority and strengthens bilateral contacts in the Arctic area. In July 2013 the South Korean government announced its intention to develop a national Arctic policy for the next fifteen years "[19, p. 5].

It is clear for Seoul that for the Republic of Korea it will be difficult to independently ensure the implementation of its economic interests in the Arctic, as well as to withstand competition in the region with China. And here, according to South Korean experts, the priority line is cooperation with Russia, as according to forecasts the largest hydrocarbon reserves lie in the Arctic region, which has in accordance with the UN Convention on the Law of the Sea the sovereignty and jurisdiction of the Russian Federation. In addition, in case of using the NSR as a new international trade route, it will be necessary to pass through the water area controlled by Russia, and to use Russian ports services, geonavigation system and icebreaking fleet. And it is taken account that Russia participate in the international system of partner management of the Arctic region, in particular, the Arctic Council and the Barents / Euro-Arctic Council (BEAC).

Y.V. Morozov and A.F. Klimenko, referring to the opinion of representatives of the Korean side, identify a number of specific initiatives to form a reliable partnership in the Arctic [20, p. 185]. *Firstly*, based on the "Plan of implementation of a comprehensive policy towards the Arctic" to work out and adopt at the government level, "general strategy of cooperation with Russia in the Arctic", and then to apply to Moscow with the proposal of signing the "master plan" of the resource, transport and logistic areas of the development of the Arctic region.

Second, to offer Russia to create new sectorial Committee for a new industry cooperation in the Arctic at the Russian-Korean Joint Commission on Economic, Scientific and Technical Cooperation. In addition, the Republic of Korea proposes to establish in the Russian sector of the Arctic joint research body — the "Russian-Korean Cooperation Center of study of the Arctic", which will later be identified as the main "the brains of the outfit" of the Russian-Korean cooperation in the Arctic.

Thirdly, together with Russia to initiate the establishment of a regional mechanism for multilateral cooperation in the Arctic, with conventional name "Asia-Pacific Arctic Council" that will allow Seoul to expect for increase of their status and role as one of the leading countries of the Arctic region, fulfilling the function of the gateway connecting Russia, Asia-Pacific region and the Arctic.

Fourthly, in order to prepare qualified specialists in the Arctic region it is offered to send Korean experts to study in educational institutions of Russia and attract Russian polar specialists in Korea, as well as to strengthen cooperation with the Northern (Arctic) Federal University named after M.V. Lomonosov (Arkhangelsk), with its structural subdivision — the Institute of Shipbuilding and Marine Arctic technology [20, p. 185].

In general, it should be noted that in concept of construction and development of bilaterial cooperation with Russia in the Arctic, the Republic of Korea is based on the fact that the process of development of the Russian Arctic areas in order to consolidate their status, infrastructure, development and production of natural resources, is rather expensive, and would require from Moscow large-scale investments, including foreign ones. It is necessary to check the projects of possible participation of the South Korean business in the development of natural resources in the region by acquiring the share of deposits, the development of nuclear technologies and new materials, the modernization of ports. South Korea is ready to offer investment in exchange for guarantees of free access to the use of the NSR as well as in the Russian sector of the Arctic for research and exploration work, offering necessary service for it. Thus, Seoul aims to gain access to the development of energy, mineral and other resources of the Arctic region, the use of logistic potential of the NSR, gaining of the Russian market of specialized large-capacity shipbuilding, implementation of scientific-technical and humanitarian cooperation in terms of getting from Russia a wide range of expertise, experience and technological skills relating to the implementation of research and economic activities in the Arctic.

Based on the Russian interests, the possible areas of bilateral cooperation with the Republic of Korea in the Arctic are cooperation in the development and modernization of the Russian Arctic ports, which is confirmed by signing of a memorandum of mutual understanding in January 2014.

This area can be called one of the most promising due to high level of technological development of South Korea, as well as rich shipbuilding experience, including specialized vessel construction, and development of the port infrastructure. Russia is also interested in what the Republic of Korea offeres: investment, information and communication technologies, scientific

and technical cooperation and joint research and development. The Republic of Korea initiative to establish in the framework of the Russian-Korean joint commission on economic and scientific-technical cooperation of a separate sectorial Arctic Committee makes sense and can be implemented. This will provide rather effective platform to find and discuss specific projects of bilateral cooperation in the Arctic region.

Other proposals of the Korean side do not fully meet the national interests of the Russian Federation. It seems unlikely that the proposal of the Korean side to establish "the Russian-Korean Cooperation Center for study of the Arctic" will have a positive response in view of Seoul's focus for getting foothold for its entry into the Arctic region, for which this structure is considered. Russia also has no interest in the creation of "Asia-Pacific Arctic Council," where issues of development of the Arctic, regionally or globally could be discussed. Feasibility of joint development and adoption of the "master plan" of the Russian-Korean cooperation in the Arctic is questionable in terms of obligations between the parties [20, p. 186]. Therefore, the need for accepting the document, involving large-scale bilateral cooperation in the Arctic, whether it is a "plan", "concept" or "strategy" — is problematic. The introduction of the practice of humanitarian and educational exchanges with the NArFU and its members, it is possible in the case of similar steps by South Korea to ensure the transfer of expertise and knowledge on issues of interest to Russia (information technology, shipbuilding and others).

Thus, the Republic of Korea is one of the most active players in Arctic issues. Despite the fact that the Arctic policy is not independent, the government is actively involved in the working groups of the Arctic Council. The country supposes that the development of the NSR will not only increase the production of the Arctic class ships, but also significantly increase the turnover of Korean ports with ports of the Western Europe. Recently the Republic of Korea has more partnership relations with Russia among the Arctic countries.

The arctic policy, security of Japan

Japan is not the Arctic state, but it does not want to stay away from the global processes of assessment, development and use of various resources and capabilities of the Arctic region. Despite the fact that the beginning of Japan's activities in the Arctic started only at the beginning of XX century, Tokyo recently has taken full strategy in the region.

Japan applied for the permanent observer status in the Arctic Council in June 2009. The Japanese representatives attend its meetings as observer temporary member since 2010, and experts have actively participated in meetings of the working group of the Arctic Monitoring and Assessment Program. The report "about international cooperation during observation for the

cryosphere" came out in Japan in 2010, the working group on Arctic research was organized. This group presented the report with recommendation to create a consortium to conduct Arctic research, as well as to begin studying the climate change in the Arctic. This consortium has been established [7, p. 40—45]. For the development of the government's Arctic strategy the expert "Japan meeting on the Arctic" was arranged in 2010, aimed to identify the ways to involve the country in control of the region in view of its economic potential, the possibility of taking advantage of the Northern Sea Route (NSR). The so-called "Arctic Task Force" was created in the structure of the Japanese Foreign Ministry in September 2010, it was engaged in comprehensive analysis and monitoring of the changes occurring in the region in several areas: the economy, security, the environment and the international law of the sea [21, p. 118].

the Japan Institute of International Relations got involved in the development of diplomatic strategy in the Arctic in early 2012. They launched the research project Arctic Government and apan's Diplomatic Strategy, one of its results was cognominal 97-page document, which is the most detailed exposition of Japanese views on the problems of the study and development of the Arctic for today [6, p. 73—80]. According to scientists, the Arctic key areas of foreign policy of the state can be: the establishment of mutually beneficial bilateral relations with the Arctic states with the purpose of joint development of deposits and provoding of the development of the region (search for common ground, avoiding conflicts of interest); compliance with the UN Convention on the Law of the Sea 1982; strengthening of the cooperation with the United States on Arctic and security issues; strengthening of Japan's position with regard to environmental issues; promotion of the use of Japanese technology and knowledge; development of diplomatic leverage in the Arctic; strengthening of the state Arctic policy (establishment of the Arctic Committee in the government) [6, p. 74].

Under the chairmanship of Prime Minister of Japan S. Abe, the parliamentary league was founded in 2012, whose main task was the creation of conditions to ensure the safety of the NSR. In March 2013 the post of the ambassador was established, who started to make contacts with the representatives of the Arctic Council countries. The Government of Japan on the base of the decision of the Parliament has included for the first time the topic of the Arctic development in the Marine general plan. Ministry of State Land and Transport has received a separate budget for the study of economic and other perspectives, as well as the benefits and legal aspects of the use of the NSR. Research and forecasting of future changes in the status of the Arctic ecosystem as a result of current climate, oceanographic changes were conducted in 2011 till 2016, in the framework of five-year program GRENE formed for the study of climate change in the Arctic by Japan's Ministry of

Education and Science. The program is provided from the state budget, the size of its annual subsidy is equal to 600 billion yen. About 300 scientists from 35 research institutes and universities participate in the research of this program[23]. In May 2013 Japan got the observer status in the Arctic Council, which allows it to estimate more deeply the problems of the Arctic, the balance of powers in it, and its place in the main areas of the Arctic activity and development.

A.A. Kurmazov, the member of the Russian-Japanese Commission for the settlement of claims relating to fisheries, the first secretary of the Russian Embassy in Japan (Tokyo), on the basis of deep analysis of the Japanese mass media, highlights the most important issues of Arctic problems, which are of particular interest in Russia for the Japanese government. These are: the possibility of use of the Northern Sea Route; research of the Arctic seas; increase of cooperation and at the same time competition between Russia and China and other Asian countries in the joint development of resources in the Arctic, primarily hydrocarbon deposits; accounting of the Russian position related to its interests in the Arctic by military and technical means [4, p. 59].

First of all, Japan is interested in the transit potential of the NSR, opening new possibilities for optimization of Japanese exports to Europe. Having at its disposal one of the largest merchant fleets in the world, Japan can benefit from the NSR, which reduces transit time from Hamburg to Yokohama approximately in 40% and fuel consumption — in 20%, compared with the route through the Suez Canal. The Japanese believe that Hokkaido, with its ports can become a kind of "gateway" of this important traffic way. And Tomakomai is expected to become the homeport[24]. The port is located at a distance, for example, from Murmansk that large container ships can go for two weeks. That is, it is quite possible to arrange the voyage for one month there and back. According to Japanese experts, this port could become a transit point of the NSR where the northern conditions will no longer stop shipping. A delivered goods can be transported from this port further, to the southern parts of Asia.[25]

The availability and the ability to use the NSR is considered widely in Japan. The country has the Center for the Study of the prospects of shipping along the NSR. The Japanese side can see not only the positive aspects, but admits that there are problems that can potentially have a negative

[23] U Iaponii kontsentrirovannyi interes k Arkticheskoi problematike / A. Kurmazov. URL: http://www.eastrussia.ru/material/u-yaponii-kontsentrirovannyy-interes-k-arkticheskoy-problematike/ (accessed: 15 June 2016).

[24] Port Tomakomai is located in Tomakomai river estuary to the south-east of Sapporo. The port is equipped with offshore berths with maximum depth up 24 m, which are able to accept large tanker vessels carrying up to 280 thous. tons. The main items of import of the port are coal, wood and wood products, oil and oil products; export — automotive and industrial equipment. The total turnover of sea transportations for one year in Tomakomai is 43 million tons of cargoes. The port is equipped with modern equipment for loading and unloading, as well as large storage spaces and storage facilities for oil. Construction and repair works are carried out by shipbuilding port companies, which have docks and slipways at their disposal.

[25] Iamada E. Vorota v Aziiu — vygoda Khokkaido // Khokkaido simbun. 2014. 2 avg.

impact on the efficiency of its operation. Severe climate conditions may alter the duration of navigation and speed of pilotage, in this connection, additional the icebreaker fleet will be needed for and as a result — there is a significant rise in operating the NSR. Weak population of the coastal areas and poor infrastructure of Russian ports in the Arctic, particularly its eastern part, also upsets Japan. At the same time, the Japanese experts predict that with cooling of relations with Europe because of the Ukrainian events, Russia will increasingly turn towards Asia. The flow of energy in Asian countries will be increased, and the role of the NSR will also be increased, in spite of all the problems. The Japanese fleet is ready to escort the Japanese ships on their way through the Arctic routes. Japan floated out its first icebreaker called Shirase in 2009. There are three icebreakers in total in Japan and it is expected to expand the icebreaking fleet. Japan intends to launch a weather satellite for monitoring of ice conditions in the Arctic seas [15, p. 102—108].

It is planned to launch in Japan a project for creation of the newest unmanned underwater bathyscaf to study the Arctic waters. The task of the device is collecting of oceanographic data. It is assumed its length will be about 10 meters, and it will be able to function without refueling up to several tens of days. The data obtained will be used to ensure the safe passage of ships through the ice [26]. Stock of orders for the construction of tankers for use in the NSR has been forming. At the same time, Japanese investors believe that the time for a large-scale nvestments in the development of Arctic natural resources or the use of the northern sea routes has not come yet, and they are cautious in this respect.

It should be noted that since 1993 the Research Fund of ocean policy has become the center coordinating the study of Arctic issues and developing scientific and expert grounds of policy in this area. The Fund acts as the head structure in the programs for the study of the NSR. Specifically, the subject of study of Japanese experts were not only technical, but also the international legal and military strategic aspects of the operation of the NSR. Sluggish research related to the NSC conducted in Japan since 1995, after the collapse of the USSR. The activation started after the East Asian neighbors of Japan started to deal much this matter, at the same time they are its nearest rivals for the development of the Arctic — China and South Korea.

Japan pays more attention to research with aim to get new knowledge about the marine biological and other resources and forecasting of climate change. At the same time, they think that natural and man-made processes in the Arctic affect global climate, economic, energy systems, in which Japan is included, as well as any other country [22, p. 9—11]. Development of observation

[26] Iaponiia sozdast podvodnyi bespilotnik dlia issledovaniia Arktiki. URL: http://www.arctic-info.ru/ news/14-2014/aponia-sozdast-podvodnii-bespilotnik-dla-issledovania-arktiki (accessed: 30 March 2016)

programs for the polar climate, biology and geology is carried out by the National Research Polar Institute (RPI), which is the leading research institution in this field [22, p. 9—11]. It was founded in 1973 as an inter-university center for polar research. In 1991, with the assistance of the Norwegian Research Polar Institute opened research station in the village of Ny-Ålesund on Spitsbergen (79° N. latitude), which is responsible for monitoring of air environment and radiological situation. In 2004, NRP was reorganized into an independent research institution, part of the state system of scientific and research organizations — research organization of information and systems. RPI since the beginning of 2000s, was reoriented from the Antarctic to the Arctic problems, actively participate in international research project — International Polar year, publishes several scientific periodical works in Japanese and English. The visit of the group of scientists of the RAS was arranged in July 2014, as per the invitation of the Ministry of Education and a number of Japanese research institutions to establish international scientific cooperation on the study of the Arctic. The members of the Russian delegation made a number of reports at the National Institute of Polar Research (NIPR) in Tokyo and at the University of Hokkaido, which caused great interest of Japanese experts.

The visit to the company Jamstec in Yokosuka (Kanagawa Prefecture) and to the research vessel Yokosuka with deep-sea mannable submersible Shinkai 6500 attracted particular interest. Jamstec has a unique experience in the world ocean, including the successful trial production of gas hydrates on the continental slope of Japan in the Nankai area owned with her ultra-modern deep-sea drilling vessel Chikyu (in Japanese — "globe") [23].

With assistance of Russia and the United States the Japanese actively monitor the distribution of ice on the NSR. During pilotage, surface observation tools are insufficient to ensure safe navigation in difficult ice conditions, so as mentioned, unmanned underwater research vessel has been building. Observations from the water column will give a lot more information for safety of navigation, including the thickness of the ice and the formation of underwater ice ridges, as well as salinity, direction of currents, and more. The study of the state of Arctic ice is important also because the changes of the ice cover, especially if they happen quickly, will for sure affect the advances in climate and state of ecosystems. Taking into account the climate warming, the mobility of floating ice is increased in the Arctic, contributing to the formation of more of extended zones of compression, layers and ice deformation, wind-wave processes are enhanced, the number of icebergs is increasing. All this, in the end, creates additional hazard for vessels, increases occurrence of environmental pollution risks.

The leading Japanese organizations: Nippon Foundation and the Ocean Policy Research Foundation, financing research together with Norway and Russia have started to take an active

part in the international program of the NSR study (INSROP project). Consortium of polar environmental research was founded in Japan, which is focusing on increase of workforce capacity and links with the scientific community, both in Japan and abroad. Scientists are actively engaged in the development of methods of careful use of space and resource potential of the Arctic. In October 2015 Prime Minister Shinzo Abe at a meeting on the Integrated Maritime Policy Council said that Japan should become an important player in the area of the North Pole and develope relevant scientific technology, as well as play an active role in the development of international rules of navigation and exploitation of natural resources in the Arctic region[27]. The Government of Japan intends to join the negotiations on possible agreement on the rules of fishing in the central part of the Arctic Ocean, which is not included in the exclusive economic zone of coastal states[28].

The state and major Japanese business companies show great interest in Arctic issues, as they are interested in access to deposits of natural gas and oil. This is due the recent lack of natural resources noticeable in the country, and dependence on energy import has increased, energy import provides 84% of country needs. Japan's demand for the natural resources of the Arctic became particularly urgent after the disaster at nuclear power station "Fukushima" in 2011 and in the light of the uncertainty of the future of nuclear energy of the country, providing up to 30% of its electricity needs. Most nuclear power stations in the zones of very high seismic activity has been already closed (or will be closed in the near future). Instead of nuclear energy, Japan intends to develop alternative energy sources — solar, wind, tidal and so forth. However, it will take a lot of time, and for this reason, in the short and medium term, Japan will continue to increase the consumption of traditional energy resources — oil and gas [15]. That is why Japan can not ignore the huge reserves of energy resources in the Arctic, other preferences which can be received in the development of the natural resources and Japan tries to expand its presence in the region. After the mentioned catastrophe, as it turned out, considerable part of the coastal and adjacent waters of Japan has become unsuitable for seafood production.

Japan is also interested in rare earth metals. Its experts study ways of their production in the Arctic, together with other Arctic countries, in order not only to obtain the necessary experience and information, but also to secure access to natural resources in the future. Japan strongly hopes that if it makes serious contribution to the Arctic research, in particular in the field of environmental protection, then it will receive additional preferences in using the NSR and in the

[27] Iaponiia planiruet aktivizirovat' deiatel'nost' v Arktike. URL: http://www.arctic-info.ru/news/16-10-2015/aponia-planiryet-aktivizirovat_-deatel_nost_-v-arktike (accessed: 17 March 2016)
[28] Iaponiia primet uchastie v dialoge o rybolovstve v Ledovitom okeane. URL: http: //www.arctic-info.ru/news/ 14-03-2016/aponia-primet-ycastie-v-dialoge-o-ribolovstve-v-ledovitom-okeane (accessed: 17 March 2016)

development of the Arctic resources. Japan does not admit for its direct competitors (China, Republic of Korea) to receive pre-emptive rights in the Arctic, and therefore seeks to monitor and review any changes and activities of all forces in the region that directly or indirectly affect the interests of the country, to use as accumulated experience in bilateral relations with the Arctic powers, as well as leading positions in key international organizations such as the International Maritime Organization.

The analysis shows that Japan seeks to find among the members of the Arctic Council those countries that are in need of raising funds for the development of the Arctic, as well as the allies who could balance the stronger Arctic powers. In this regard, Japan has made a bet on Norway, which takes favorably the Arctic claims of Tokyo. Thus, the common interests of two countries in the Arctic was fixed at the joint seminar on polar issues in April 2010, in Tokyo and at the international Arctic conference in Tromso, Norway (January 2011).

Another object of interest from the part of Japan — Canada, which is also interested in attracting of foreign capitals and technology to develop its Arctic zone. In November 2010, Canadian and Japanese scientists made a successful experiment on gas production from methane hydrate, they drilled a hole on the shore of the Beaufort Sea. They managed to maintain gas production for six days, which was estimated by experts as a very good result. Although the industrial level of gas production from hydrate in the Arctic, according to experts, can be achieved not earlier than in 10-15 years, the experiment once again showed how inexhaustible energy potential the region has. According to some estimates, in the Arctic region of Canada there are reserves of methane hydrate, able to provide the needs of this country in gas for a few hundred years.

Judging by the publications in the Japanese media, Japan is strongly concerned about military and other activities of Russia to ensure its interests in the Arctic. But the order of the President of Russia V.V. Putin to strengthen the military component of the Arctic[29], adoption of the new Maritime Doctrine of the Russian Federation[30], is considered not only as a strengthening and increasing of the capacity of Russian military power in the Arctic, but also as attempt of Russia

[29] Indeed, Russia for the last two or three years, has been increasing its presence in the Arctic in different areas. The Russian Defense Ministry, Russian Emergency Ministry and Federal Security Service of Russia strengthen their positions in the Arctic. United Strategic Command "North" — a new military structure on the base of the Northern Fleet was created and launched from December 1, 2014. Russian Defense Minister S.K. Shoigu said on October 22, 2015, that the establishment of the Arctic grouping of Russian troops will be completed by 2018, and Defense Ministry will finish reconstruction of six airfields in the Arctic in 2016-2017. As part of a comprehensive system of safety of the population and territories of the Russian Arctic, 10 complex rescue centers of Russia hve been opened with a total staff of 16 thousand people.

[30] Russian President Vladimir Putin signed the Maritime Doctrine of the Russian Federation on July 26, 2015 in Baltiysk on board of frigate "Soviet Union Fleet Admiral Gorshkov" after the meeting, which was attended by Deputy Chairman of the Government of RF Dmitry Rogozin, Defense Minister of RF S. Shoigu, Fleet commander-in-chief V. Chirkov, General commanding Office of the Western Military District A. Sidorov.

to restrain increasing activity of the United States, Canada and other Arctic countries in the Arctic region. People start to realize that the deployment of military infrastructure in the Arctic is carried out to protect the national interests of Russia, it contributes to maintaining the balance of forces in the region and countermeasure together with law enforcement agencies and special services of the new challenges and security threats.

As recent events show, Japan uses all the possibilities of cooperation with Russia in the Arctic development to promote issues related to solving the problem of "northern territories." The status of the Kuril Islands and the Japanese-American Security Alliance represent a serious obstacle for the establishment of partnership relations between two countries. The prospect of whole year-round navigation along the NSR increases the value of the Kuril Islands (ports, warehouse infrastructure, facilities of the security systems), which will give a new impuls for the disputes about these islands [4, 6]. In addition, the Japanese media periodically raise the issue of violations of standards of use of the environment by RF and the "degradation" of indigenous small peoples of the North, Siberia and the Far East. Nevertheless, Japan is ready to cooperate with Russia, well aware of the scale of the potential benefits it can derive from these relationships. By establishing practical relations with Russia, Japan is seeking to take advantage of the potential of the Arctic and to find support of the RF in the confrontation to assertive China policy. Russia is considered by the Japanese government as one of the main partners in the development of Arctic resources and shipping along the Northern Sea Route.

Japan considers Russia as the most influential player in the Arctic and in the Arctic Council and with Russian support Japan hopes to get greater access to the Arctic for its energy and marine transportation companies and research institutions. [4] It is about expanding the list of Japanese energy suppliers, increase of traffic routes along the NSR. In order to receive it, Japan fully strives to master the Russian experience of navigation and operation of equipment in harsh weather conditions, with maximum benefit to take advantage of its sea ports with competitors, such as Singapore, Shanghai and Hong Kong. In May 2013 the Japanese company Inpex Sogrogation concluded agreement about joint development of two oil fields owned by Russia with Rosneft.

In November 2015, the head of "Rosneft" I.I. Sechin offered to Japanese companies to supply their ships and equipment for the development of the resources of the Russian shelf, including the Arctic, basing on the rights of one of the main technological partners — ship and marine equipment suppliers. Also, according to him, the Japanese shipbuilders and marine

equipment manufacturers have the opportunity to enter the Russian shipbuilding projects, particularly in the shipbuilding complex "Star"[31].

Russia can also benefit from the strengthening of relations with Japan. Because Russian strategic interests gradually move from Europe to Asia, Russia should protect themselves in the event of unforeseen circumstances in the relationship with China and to establish close partnerships with other Asian countries. Although Beijing is still the most important trade partner of Russia in East Asia, Moscow should expand the list of East Asian buyers of its energy resources. Infrastructure of the energy projects Altai and Power of Siberia is still aimed only at China. For Russia, this is quite a serious motive for the expansion of the customer base and the inclusion of other countries of North-East Asia in it. In addition, Russia lags behind its main competitors in the field of technologies, which are necessary to conduct activity in the Arctic region. Japanese know-how in the field of energy production and marine operations can be useful for Russian companies. If Moscow and Tokyo are able to overcome the obstacles to dialogue, they will derive benefits not only in the Arctic but also in the countries of North East Asia.

Japan continues to actively cooperate with Washington in security issues. Japan considers the US as a military-political ally and relies on the support of the US government to obtain additional powers in the Arctic organizations and support for the exploitation of resources [6, c. 77]. In November 2014 the Governments of Japan and the United States signed a memorandum of joint research in the field of experimental extraction of methane hydrate in Alaska.The document was signed by Minister of Economy of Japan Yoichi Miyazawa, and US Ambassador in Japan Caroline Kennedy, in Tokyo at the International Conference "Producers and consumers of liquefied natural gas in 2014". The project will be arranged by the Japan Oil, Gas and Metals National Corporation (JOGMEC) and the State Laboratory of Energy and Technology of the US Ministry of Energy [32].

They support their Arctic ambitions by appropriate financial and economic, scientific and technological base, as well as a significant political potential for the active participation in Arctic policy. Japan, forcing the process of joining the Arctic Council as an observer, wants to be a full participant in the future. Japan's Ministry of Foreign Affairs supports the establishment of a new international structure in the Arctic, which would be formed, in their opinion, not at the geographical basis, but by the presence of economic interests in the region.

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[31]Sechin predlozhil iaponskim sudostroiteliam postavliat' tekhniku dlia osvoeniia shel'fa.URL: http://www.arctic-info.ru/news/06-11-2015/secin-predlojil-aponskim-sydostroitelam-postavlat_-tehniky-dla-osvoenia-sel_fa (accessed: 17 March 2016).

[32] Iaponiia i SShA dogovorilis' o sovmestnoi dobyche gaza na Aliaske. URL: http://www.arctic-info.ru/news/06-11-2014/aponia-i-ssa-dogovorilis_-o-sovmestnoi-dobice-gaza-na-alaske (accessed: 17 March 2016)

In carrying out the Arctic policy, Japan has recently faced with need to take into account the "Ukrainian factor". The loyalty to the allied relations with North America and Europe does not allow for Japan to go for the greater rapprochement with Russia, even though in the Arctic. Therefore, the practical interests of Japan (and not only in relation to the Arctic component) will largely depend on how it will be able to build a relationship of trust with Russia, both in the medium and long term. At present time, recognizing the leading role of Russia in the Arctic, Japan is trying to build a balanced relationship with RF, in spite of the difficult political situation in the world.

Conclusion

China, South Korea and Japan at all sites put forward the idea that the Arctic is a "province of all mankind", and its development should be arranged by efforts of all the countries that have this urgent need, the relevant financial, economic and technological opportunities. Thy try to revise in their favor the legal status of the Arctic, non-admission of registration of the applications for the extension of the continental shelf in the region by the coastal states. They seek to transfer northern sea routes under international control (the Northern Sea Route in Russia and the Northwest Passage in Canada).

China, South Korea and Japan are seeking to ensure a permanent, or at least seasonal presence in the Arctic in the form of scientific expeditions, cargo transportation, fisheries, mining, education, settlements, they try to get information about the deposits of strategic natural resources in the Arctic and their development, prospects of operation of the Northern Sea Route, Russian technologies of ice-breaker constrcutions, the situation in the areas inhabited by indigenous peoples of the North.

In this regard, Russia faces extremely difficult tasks in the issue of the protection of this region as a national resource base and transport route. Russia's relations with China, the Republic of Korea and Japan on the issue of economic development of the Arctic should combine elements of both cooperation and competition. Russia's task is to find a reasonable balance in this area.

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Singapore on the way to the Arctic

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Abstract. Singapore's Arctic interests and needs are analyzed. If China, Japan and South Korea consider the Arctic as a source of oil and gas, Singapore is interested not so much in the mineral resources of the region, but in the use of their technologies for their production. For Singapore, the Arctic is a platform on which its innovation and technology can find a place. Singapore has achieved the status of a permanent observer in the Arctic Council, which for him is a convenient position for careful monitoring of Arctic political changes.

Keywords: *Arctic, Singapore, the Arctic Council, an observer country, the Arctic Institute interests and needs*

Singapore is a very young country, which acquired the right to self-government only in 1959 and only in 1965 it got full independence. Since then, it was able to take the path of the rapid development, taking advantage of its geographical position and specializing in provoding of financial, transport and logistics services [1; 2]. The "Arctic" Singapore's history is very short, but it has developed rapidly. In December 2011, Singapore applied to the Arctic Council for permanent observer status, and it was granted in 2013. In January 2012, Ambassador Kamal Siddique was appointed as special envoy on the Arctic issues in Singapore Ministry of Foreign Affairs, after that the diplomatic effrts of the country has been intensified to strengthen the relations with the Arctic Council, whose representatives visited Singapore as per invitation of its government in May 2012. He also started to deal with coordination of activity on the Arctic issues of other government departments, business and academic community. Official representatives of Singapore attended the meetings of the Arctic Council during the Swedish Presidency, took part in tour to Svalbard, organized by the Norwegian Government in August 2012 and in the 10th Conference of Parliamentarians of the Arctic region in September 2012.

Officially in Singapore there is no publicly announced Arctic policy, but analysis of its economy, the interests of its largest enterprises and diplomatic activity shows quite clearly its Arctic ambitions, growing interest to the Arctic. Singapore is interested in the development of Arctic energy resources, which primarily related to opening of new possibilities for the use of its existing advanced high technologies in the field of shipbuilding, mechanical engineering, construction of port infrastructure, including the infrastructure of the mining industry offshore.

Representative of the Office of Maritime and Port Administration of Singapore P. Ong already in 2007 noted that Singapore could contribute to the development of the Arctic thanks to the development of technologies in oil and gas extraction on the fields with limited reserves and in the harsh climate conditions of the region (currently Singapore produces about 70% of rigs for drilling oil wells in the world). [3] In this aspect, Singapore is positioning itself as a strong ally for any country seeking to develop the Arctic. This again was announced in August 2014 at the IV International Meeting of representatives of the participating countries of the Arctic Council in Naryan-Mar[1]. Ambassador Extraordinary and Plenipotentiary of the Republic of Singapore in Russia Ms. Kseng Hua Lim explained the interest of her country to the Arctic by the fact that Singapore is interested in the development of the region and can offer to countries engaged in the transportation of goods and mining in the high latitudes, the new technologies in shipbuilding, vessel service, navigation systems. "In addition, our country is interested in the issues of climate change, as this process also affects the countries of the Pacific region, to which Singapore refers. We even created the Institute for the study of climate and the existence of people in low-temperature conditions ", — Mrs. Ambassador noted in her speech[2].

According to experts of the Nordic Institute of Asian Studies (Denmark), Singapore is an influential player in the world's ocean. It positions itself as one of the leading maritime nations of the world. It is part of the International Maritime Organization (IMO) — the world's leading organization of seafarers. In November 2011, its representative was elected to the Board of the organization that can be regarded as a recognition of the country's status as the owner of the important seaports and great sea fleet, affecting on the development of the IMO position on key issues of shipping in the world.

Singapore has a significant economic and political interest in the development of the international maritime policy, including in the Arctic. Singapore stands for freedom of navigation, for strengthening of cooperation between the Arctic and other countries on issues of navigation in the high latitudes. Getting a large amount of information from specific systems, the relevant maritime services monitor changes in navigational conditions that allows to simultaneously track up to 10 thousand vessels. Arctic for Singapore is a good opportunity to confirm its status as global maritime power, to monitor and correct trends in international law of the sea, taking into account its national interests. Due to the structure of its economy and stipulated economic aspirations, it is

[1] K IV Mezhdunarodnoi vstreche predstavitelei stran-uchastnits Arkticheskogo soveta proiavili aktivnyi interes strany ATR. 7 vgusta 2014 g. URL: http://nao.er.ru/news/2014/8/7/k-iv-mezhdunarodnoj-vstreche-predstavitelej-stran-uchastnic-arkticheskogo-soveta-proyavili-aktivnyj-interes-strany-atr/ (accessed: 16 June 2016).
[2] At the same place.

interested in opening of the northern sea routes, in the development of deposits of Arctic oil and gas, as well as in the implementation of shipbuilding orders and construction contracts. In Singapore economy state-private partnership is at very high level, and in this regard, the Government separates the interests of business, since the state owns shares in large Singapore companies, having interests in the maritime sector and maritime engineering.

Singapore is energy dependent on external supplies and is very interested in the supply of energy resources, including hydrocarbons, since it does not have its own fuel and raw materials. Singapore is ranked 9th in the world in oil import. A large company of Singapore, PSA, owns terminals capable of receiving vessels from the Arctic routes. The company is 100% owned by the holding company Temasek, owned by the Ministry of Finance of Singapore [1, p. 100]. Potentially the Arctic for Singapore is one of the sources of oil supplies for domestic consumption and, most importantly, for oil refining, which makes one of the base of the economy.

The Republic has a firm intention to participate in the development of infrastructure of the NSR. Experience in planning and port construction, marine process management, prevention of oil spills and disaster recovery allow to Singapore to be one of the potentially primary participants of route development. As A. Pilyasov noted, Singapore "in recent decades has accumulated a unique experience and expertise in managing of complex infrastructure of a modern port that can be used constructively in the Arctic ports not for competition but for cooperation with it" [4, p. 337]. Singapore is the world's largest container port, and only recently it has given the first place to Shanghai as the world's leading container terminal.

For Singapore, the Arctic is a platform for its innovation and technologies. Using of the NSR will increase the flow of goods between the north-eastern and western European ports, as well as provide Singapore orders in shipbuilding. Singapore also expects to receive the results from the "sale" of its own achievements to participants of the Arctic race. Therefore, Singapore is a profitable ally for many states. According to some experts, the most active state "is Norway, which considers Singapore as ally and supporter in promoting its own interests in the Arctic" [2, p. 59]. If China, Japan and South Korea consider the Arctic as a source of oil and gas, Singapore is interested not so much in mineral resources of the region, but in use of technologies for their production.

Asia's largest state investment company is the National Foundation of Singapore (Temasek Holdings), the only share holder of which is the Ministry of Finance of Singapore. Companies associated with the "Temasek", take the leading positions in various spheres: management of ports and airports, transportation by these means of transport, energy, telecommunications,

media, banking and financial services, real estate, engineering[3]. State holding company Temasek owns by 21% shares of Keppel Corporation and 61% of shares of Semcorp Marine, leading in the engineering sector of Singapore's maritime cluster [1, p. 101—102]. That's why Singapore is trying to promote their interests in the world, including joining the Arctic Council's activities in the only available form for this state — as a permanent observer.

Many Singapore companies were the first to build icebreakers. The first icebreaker was built in 2008. The company Keppel built two ice-class vessels for the company Lukoil, which are intended for use in the Barents Sea: multifunctional icebreaker "Varandey" and assistance tug of ice class “Toboy” for work in the area of Varandey oil terminal[4]. Keppel together with ConocoPhillips is working on the construction of innovative offshore platform for the Arctic drilling. Keppel and Sembcorp also develop associated types of business: ship supply, logistics, information support using the latest electronic navigation devices in difficult environmental conditions. For these purposes Singapore develops tripartite cooperation between government, industry and the academic community. In order to increase the competence in the offshore oil and gas production, the Center for Research and offshore engineering was established in Singapore in 2004. In addition to the above, Singapore as one of the largest financial centers in Asia, is interested in insuring risks that will be high as it is known during the economic development of the Arctic. Besides considerable interests in maritime and insuarance of marine risks, the country is interested in sale expansion of ships and offshore platforms, as it is the large world center for their construction.

The country makes great investments in the development of offshore construction technology, including platforms for oil and gas for offshore oil production on great depths and in harsh environments. The Government of Singapore has set a goal — to transform the country into a global center for offshore technology by 2025. To do this, they develop maritime cluster, which produces about 10% of Singapore's GDP. 5 thousand enterprises function in it, and their activities are connected with sea. One of the main types of activity in this cluster is the offshore construction [1, p. 101].

At the same time Singapore has experience of the most efficient in the world of human resources management (including immigration flows), in the implementation of infrastructure projects, and can also act as an arbiter in resolving any disputes. Singapore - perhaps the only (not

[3] Osobennosti deiatel'nosti Singapurskogo Natsional'nogo fonda Temasek. Informatsionno-analiticheskii material. M., 2012. URL: http://www.veb.ru/common/upload/files/veb/analytics/strman/sm201301.pdf (accessed: 16 June 2016).
[4] Ledokol «Varandei» voshel v sostav Arkticheskogo flota Lukoila. URL: http://www.lukoil-kmn.com/news/168 (accessed: 16 June 2016).

including Russia) state in the APR, devoid of serious conflicts with all other important players. It should be noted that ships with Singapore flag and with flags of some other countries, were found in the illegal unregulated fishing in the exclusive economic zone of Russia. As stated, the received catch is transferred to foreign vessels or transported to ports of Japan, South Korea, China and other countries.

If climate change causes melting of glaciers in the north, and the Arctic states make the necessary investments in infrastructure, services sector and logistics, as Singapore did before, then the central position of this equatorial city-state in the world system of cargo transportation will be in danger. Singapore is aware of this potential threat for the economic well-being of the country in view of a possible reorientation of the traffic to bypass the Singapore logistics hub. With opening of the regular shipping along the NSR Singapore can lose part of Chinese goods, which now go through the Malacca Strait, and in the case of opening of the northern route, they will bypass the Singapore ports. The Singapore government cannot but respond to such prospect, even if it very remote. Executive Director of the Maritime and Port Authority (MPA) of Singapore acknowledged that the NSR could ruin the Singapore's status as a global transportation center. Singapore government invests a lot of money in the modernization of port infrastructure just to keep this status. MPA is going to increase the efficiency and volume of cargo handling by automating of processes, for example, by means of the introduction of the system of automated handling of containers, which is already being tested in one of the Singapore port terminals[5]. In August 2015 MPA announced a cooperation with the IT-giant IBM. In the framework of the partnership agreement, signed two years ago, IBM will create a single platform providing data integration in real time and complete view of the MPA information system for port operators could be able to better coordinate the work of the vessels[6]. All this goes in parallel with plans of MPA to increase the volume of processed goods from the current 33.9 million TEUs per year to 65 million[7].

Singapore continues to fix the status of very importart world port, and the development of Arctic shipping will hardly prevent this in the near future. Singapore specializes in container fleet, accepting the world's largest container ships at its port terminals. Today, the passage of ships with such draft is not possible along the NSR, and the passage of smaller ships along the NSR reduces its

[5] MPA: Arctic Shipping Lanes Won't Challenge Singapore's Status as a Global Shipping Hub "Any Time Soon" // Ship and Bunker. URL: http://shipandbunker.com/news/apac/564935-mpa-arctic-shipping-lanes-wont-challenge-singapores-status-as-a-global-shipping-hub-any-time-soon (accessed: 14 February 2016).

[6] Port Singapura vnedriaet analitiku IBM dlia upravleniia sudami // Tadviser. URL: http://goo.gl/OZ22VM (accessed: 14 February 2016).

[7] Boost in Singapore's port capacity and efficiency to compete with new trade routes // Straitstimes. URL: http://www.straitstimes.com/singapore/boost-in-singapores-port-capacity-and-efficiency-to-compete-with-new-trade-routes (accessed: 14 February 2016).

economic benefit to nothing, in terms of the expences for 1 transported container. In addition, container transportations of goods are carried out in accordance with strict time limits, which may not be observed in the Arctic due to the deterioration of ice and weather conditions. Today, navigation along the NSR is possible only during summer months, and for the passage in other period need, the assistance of the Russian icebreakers is needed. There is practically no infrastructure necessary for the organization of the safe navigation of ships along the NSR, while navigating through the Malacca Strait has been regulated and well managed for a long time already. Thus, we can say with confidence that the NSR in the near future will not be able to compete with the southern route via port of Singapore.

Another important reason for the interest of Singapore to Arctic development is climate change [2]. Further melting of Arctic glaciers can cause the rise of the global sea level, faster than previously predicted by scientists of Singapore. To prevent flooding, Singapore government has built bank protection walls and concrete embankments for about 75% of the coastline. In the process of realization of land reclamation, Singapore area can be increased more than 200 km2 by 2030, and the rise in sea level could disrupt these plans. Singapore also faces with abnormal climatic changes that have become unpredictable. Heavy rains have been increased in recent years, leading to flooding in various parts of the country. On the other hand, the monthly drought in January 2014 was the strongest for the last 50 years. Abnormal climatic changes not only lead to floods, droughts, emergence of new tropical diseases, but also affect the Government ability to manage water resources and to keep biodiversity. Just for the sake to understand better the ongoing climate change and confidently implement suitable protective measures, Singapore wanted to take the place in the Arctic Council[8].

Singapore conducts academic projects of Arctic research mainly in the following areas: 1) applied technologies of new generation in shipbuilding, mechanical engineering and construction of port infrastructure and infrastructure of the mining sector in regions with severe climatic conditions (Singapore currently produces about 70% of rigs for drilling oil wells in the world); 2) the study of Arctic ice melting effect on global climate change (NCCS — National Committee on Climate Change also deals with it); 3) the problem of the indigenous peoples of the Arctic (preservation of their culture and traditional way of life, the problem of providing of drinking water and its treatment, the problem of healthcare — the so-called "polar medicine", urban development problems in the regions with dominating low temperatures). The Government of Singapore pays the attention to the

[8] MFA Press Statement: Visit of Minister of State in The Prime Minister's Office and Ministry of Culture, Community and Youth, Sam Tan to Norway, 18 to 22 January 2015. URL: http://www.iarc.uaf.edu/sites/default/files/node/ 4484/ singapore_speech_state_of_the_arctic_singapor_15861.pdf (accessed: 14 February 2016).

revitalization of cultural exchanges with the representatives of the indigenous peoples of the North, as well as encourage of the youth volunteer projects in this area [5, p. 44—45].

One of the features of interest of Singapore in the Arctic policy is the support of the indigenous peoples of the North, as the representatives of Singapore repeatedly told. The first steps in this regard were made in June 2012. The country has a special extraordinary ambassador who visits indigenous communities to understand better their requirements and needs. In this regard, Singapore has recently received several delegations from the Arctic region. They included representatives of the Aleut International Association, Arctic Athabaskan Council, Russian Association of Indigenous Peoples of the North, Siberia and Far East of the Russian Federation, the Saami Council and the Secretariat of the indigenous peoples of the Arctic Council. In addition, in conjunction with the permanent members of the Arctic Council (representing the indigenous peoples' organizations), the scholarship program of postgraduate training has been established in Singapore, allowing for students-representatives of the indigenous peoples of the Arctic to study state policy in Singapore, public administration and conduct marine research. According to Singapore's diplomats, such programs are a new form of knowledge exchange, which can happen due to the activities of the Asian countries in the Arctic Council. These efforts may also allow representatives of indigenous peoples to return home with skills that will help them to better use the income from the production and transportation of mineral resources and manage them, instead of relying on foreign experts[9]. One of the Singapore companies, using modern technology, has developed a special mobile application to support indigenous languages and cultures[10].

Conclusion

Arctic interests of Singapore are a logical extension of its more common interests and important events in the international maritime policy, including through the International Maritime Organization, the United Nations Convention of Law of the Sea and regional cooperation in the sea. In this regard, Singapore with its international status and technological potential in the sphere of shipbuilding, management experience and the development of marine and coastal infrastructure is desirable and profitable ally for many countries, conducting more active Arctic policy. Formation of Singapore's Arctic strategy, as the other countries of South-East Asia, is still in

[9] Bennet Miia. Singapur i Arktika: vzgliad s ekvatora // Pro-Arctic. URL: http://pro-arctic.ru/08/10/2015/press/ 184 85 (accessed: 14 February 2016).

[10] Iz vystupleniia Chrezvychainogo i Polnomochnogo posla Respubliki Singapur v Rossiiskoi Federatsii Kkheng Khua Lim na mezhdunarodnoi konferentsii v g. Nar'ian-Mare 5-7 avgusta 2014 g. // Mezhdunarodnaia konferentsiia predstavitelei gosudarstv-chlenov Arkticheskogo soveta, stran-nabliudatelei Arkticheskogo soveta i zarubezhnoi nauchnoi obshchestvennosti «Aktual'nye problemy ustoichivogo razvitiia i obespecheniia bezopasnosti v Arktike». M., 2014. p. 31.

the process of development. Singapore has the opportunity to take its worthy place in use of the latest technology for the Arctic in infrastructure, shipbuilding and other industries, the financing of the Arctic investment projects, scientific and technical expertise, study of the effect of the Arctic sea melting on climate change.

In general, the involvement of Singapore in the Arctic Council's work, has rather positive meaning for Russia. Moreover, Russia and Singapore cooperation in the Arctic could be developed with new force due to the fact that a number of Western countries has imposed economic sanctions against Russian oil and gas sector and has directly limited supply of modern oil and gas equipment to Russian companies. Singapore has not imposed such sanctions, and therefore remains one of the few countries that can create and deliver such equipment in Russia. The country has a strong globally competitive sector of offshore engineering for the oil production facilities, including in extreme arctic conditions. Furthermore, Singapore has a technology for offshore drilling in tough environment, that can be advantageously used in the Arctic.

Singapore has achieved the status of a permanent observer in the Arctic Council, which is a convenient position for careful monitoring of the political changes taking place in the Arctic. [2] However, it is not clear yet if Singapore's efforts in the Arctic carry long-term goals and political context, or it will use the potential of the Arctic as an emerging market, where Singapore considers itself as a technology leader.

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Strategy of the Italian Republic in the Arctic

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Abstract. This article is devoted to analysis of the interests of the Italian Republic in the Arctic. Despite the geographical distance Italy from the Arctic, the interest of Italians to the Arctic cooperation is due to historical reasons: Italians participated in the study of the Arctic since the end of the XIX century. That's scientific achievements in the field of Arctic studies have provided Italy's place in the "Arctic Club of non-Arctic countries". In 2013, Italy became an observer in the Arctic Council, and in 2016 the Italian Ministry of Foreign Affairs presented the document "Towards the Italian strategy for the Arctic", which shows the country's interests in the region to address climate change, the development of scientific co-operation and economic development of the region the participation of leading Italian companies. Thus, Italy marked the importance of the Arctic in the direction of its policy. Russia is one of the most important Italian partners in Arctic affairs. As economic interests are a priority for both sides, the main bilateral cooperation projects are focused on energy and transport.

Keywords: *Arctic, Italy, the strategy, the interests of the Arctic Council, the Permanent Observer, international cooperation, the European Union, Russia*

Strategy of the Italian Republic in the Arctic

Modern foreign policy of Italy is characterized by a stable tendency to increase its international role and enter the ranks of the powerful states of the world. Italy seeks to emphasize the importance and the contribution it can make to the development of the world community. As a result, in recent decades, Italy's foreign policy is characterized by a significant increase in activity in the international arena. New areas of the foreign policy of Italy have been designated, sometimes even "exotic" for the republic, such as, for example, the Arctic. According to the Italian Ambassador in Norway, J. Novello, remoteness of Italy from the Arctic issues is only a superficial impression[1]. Events in the Arctic gain global importance, and his country should not stand on the sidelines from the opportunities and challenges of the region.

The history of the presence of the Italian Republic in the Arctic

Despite the fact that Italy is geographically very far from the Arctic, the interest of Italians to the Arctic cooperation is stipulated by the historical reasons: Italians participated in the study of the Arctic starting from the end of XIX century. At the end of the XIX century, on the initiative of Luigi Amedeo (Prince of Savoy and the Duke of Abruzzi), the first Italian expedition to the Arctic was organized. Indeed, the expedition on the steam whale ship “Polar Star” (Stella Polare) was organized in 1899 and started in Arkhangelsk. The Arctic expeditions with the participation of the

[1] Nearkticheskie strany proiavliaiut interes k Arktike. 21.01.2014. URL: http://www.arctic-info.ru/news/21-01-2014/nearkticeskie-strani-proavlaut-interes-k-arktike (accessed: 16 June 2016).

Italian explorer Umberto Nobile were organized in 1926 and 1928. Assessing the contribution of L. Amadeo and U. Nobile in Italian history, the Italian diplomat, special representative of Italy on the Arctic issues, Marco Tornetto writes that "Nobile entered Italy in the new world that was practically unknown for the Mediterranean country", thanks to L. Amedeo and Y. Nobile "Italy has found its "Northern dimension"[1, p. 11]. In the second half of the XX century Italy actively participated in the research of two poles and in many respects this period of Italian activity in the Arctic and Antarctic is associated with the name of Silvio Zavatti — the Italian explorer, politician and anthropologist. The foundation of the Institute of Polar Research in Fermo (Instituto Geografico Polare "Silvio Zavatti") by S. Zavatti in 1944 became an important event in the development of the Italian Arctic research, this Institue is still the only one in Italy involved in polar research. The main task of the Institute was to spread the knowledge about the Arctic and Antarctic in Italy and abroad. Since 1945, the Institute publishes the scientific journal «Pole» (Il Polo), which publishes articles in Italian and English, devoted to various aspects of polar research. The unique library for Italy was created in this Institute — it is documentation centre, in which research material on polar issues are presented, as well as a collection of periodicals from around the world dedicated to polar issues. In addition to the library, one more unique place for Italy was created in this Institute — the Polar Museum, in which exhibits collected in the course of the Italian polar expeditions are presented.

Italy has become the one of the leading non-Arctic countries in the field of scientific research of the Arctic region. The Council of National Research (CNR) of Italy plays the central role here, it began its work in the Arctic on Norwegian territory in the late 1990s. And then other Italian research institutions have opened their representative offices in various regions of the Arctic. The Italian Arctic Station Dirigibile Italia (named after the expedition of U. Nobile in 1928), was founded in 1997, which is an interdisciplinary research center and is located in Ny-Alesund on the Norwegian territory of Svalbard[2]. The station is operated by Council of National Research of Italy, and its activities are coordinated by the Environmental Department of the Council (POLARNET). The greater part of the research in the Arctic region of Italy is carried out here.

Italy in the modern Arctic: political dimension

Italy today is one of the European Non-Arctic countries, received the status of permanent observer in the Arctic Council (since 2013). On the one hand, it's unconditional recognition of the Italian merits in the Arctic research, and on the other — it is a new responsibility, providing further

[2] Lagutina M.L. Interesy Italii v Arktike. URL: http://en.instituteofeurope.ru/images/uploads/doklad/316.pdf (accessed: 09.07.2016).

strengthening of its activities in the region. According to the famous Italian politician Franco Frattini, Italy's role in the Arctic Council is the role of mediator between the small Arctic European countries (Sweden, Finland and Denmark) and the Arctic giants as Russia, USA, Canada[3]. As the observer country of the AC, Italy formally did not receive the right to vote on the Arctic issues, therefore, Italy did not get any opportunity to realize their political ambitions in the region, but in the economic and scientific spheres of cooperation in the Arctic, the Italian Republic has a fairly strong position. Thus, despite the fall of the world oil prices and the withdrawal of the majority of energy companies from the Arctic, the Italian ENI intends to continue in cooperation with the Norwegian company Statoil, the development of the oil and gas fields, and the northernmost offshore oil field, which will be operated in the area of Goliat[4]. After obtaining the observer status in the AC, Italian Foreign Ministry has started actively participate in the Arctic affairs. At the end of 2015 Italian Foreign Ministry published on its website the document "Towards the Italian strategy for the Arctic. National priorities"[5]. The document was prepared jointly with the Ministry of Environment of Italy and the Ministry of Economic Development. The text provides historical background and purposes of modern Italy's presence in the Arctic. According to the document, the Italian activities in the Arctic is carried out in the so-called "five dimensions": 1) polical, 2) environmental, 3) social-humanitarian (human), 4) scientific 5) economic[6]. This document is not a formal strategy for Italy in the Arctic yet, but it can be treated as an application for the formulation of strategic interests in the Arctic in the future, it follows from the very title of the document. In addition, the publication of this document also shows that Italy is in solidarity with other non-Arctic countries (eg, Germany, Japan, South Korea), which also presented their policy statements with regard to their vision of Arctic policy, to the world community.

According to the document, at this stage, Italy aims to consolidate its position in the Arctic Council, which is regarded as the leading forum for discussion in the region. Italy participates in the work of the Arctic Council at all levels: from the Task Forces to Working Groups, where it has the ability to make a significant contribution to the development of various areas of cooperation. For example, Italy regularly participats in the Senior Officials Meeting (SOM), in the activities of the working groups of the AC, such as the Working Group of the Advanced Modular Armor Protection (the AMAP) and the

[3] L'Artico, l'Europa e l'Italia. Parla Frattini. URL: http://formiche.net/2016/02/26/artico-italia-frattini/ (accessed: 30 June 2016)

[4] Sylvers A. Italy's Eni Plans to Pump Arctic Oil, After Others Abandon the Field / The Wall Street Journal. November 23, 2015. URL: http://www.wsj.com/articles/italys-eni-set-to-begin-arctic-oil-quest-even-as-others-abandon-field-1448274602 (accessed: 16 June 2016).

[5] Verso una strategia italiana per l'Artico URL: http://www.esteri.it/mae/it/politica_estera/aree_geografiche/europa/artico/ (accessed: 16 June 2016).

[6] In the same place.

Working Group on the Protection of the Arctic Marine Environment (PAME).The document further notes that Italy is a country that has ratified the UN Convention on the Law of the Sea 1982 (UNCLOS), and has adheres to its provisions, including the responsible management of the Arctic Ocean. Italy is also guided in its strategy for the Arctic by the provisions of other legal instruments that are indirectly related to the Arctic region: The Convention on biological diversity, the Convention on transboundary air pollution, the International convention for the prevention of pollution from ships, the International Convention for the safety of life at Sea. Italy is also one of the first states which signed the treaty on Spitsbergen of 1920. Special attention is paid in the document to the key role of the European Union in the field of environmental protection and sustainable development of the Arctic. Italy consider itself as "conductor" of European interests in the region[7]. Italy received the status of observer in the AC at the time when the European Union, where it is included in, has been refused to get this status, but, like other European observer countries — EU member states (for instance France), it has consistently advocated the importance of the EU's participation in solving of problems of the Arctic region and supports the EU's observer status assignment in 2017.

Italy, as a member of the AC, respects the sovereign rights of the Arctic states and is ready to develop bilateral cooperation with them in various fields: from scientific cooperation to economic cooperation. Embassies of Italy in the Arctic states carry out various activities for the expansion of the Italian presence in the Arctic (in Finland in 2013, in Russia, Canada and Norway in 2014). Italy finds Norway and Russia as its key partners in the region. And informal relations with the Council of the Saami have been established. Italy holds regular informal consultations with other non-Arctic countries (eg, China) on topical issues of regional development.

According to the text of the document, at the national level, the Italian Government intends to continue to support Italian research centers working on Arctic projects, and will enhance the activity of civil society in this area. The leading center of scientific Arctic research in Italy is the Council of the National Research (Consiglio Nazionale delle Ricerche (CNR)), which was established already in 1923 and aims to "promote international cooperation of groups of Italian scientists involved in the implementation of the International Polar Year results and the development of the monitoring system the Arctic in accordance with the recommendations of the report "Supporting Arctic observing Networks" (SAON). [1, p. 15]. Research of the Council are carried out on a wide range of issues: climate change, the impact of atmospheric aerosols, the study of atmospheric phenomena. Italian scientists actively cooperate with their coworkers from

[7] Caruso A. La geopolitica dell'Artico. 16 June 2014. URL: http://italian.ruvr.ru/2014_06_16/La-geo-politica-dell-Artico-2004/ (accessed: 16 June 2016).

other countries (Norway, Germany). At this stage, CNR carries out a large number of projects in the Arctic. In addition to the CNR, following institutions play important role in the Arctic research development: Institute of National Geophysics and Volcanology (INGV), National Institute of Oceanography and Experimental Geophysics (OGS), National Meteorological Institute (INRIM), National Institute for Astrophysics (INAF), the universities of Italy (for example, University La Sapienza in Rome, and others)[8].

Recently in Italy various research activities on Arctic topics at the initiative of various government agencies in Italy are organized and conducted: "In recent years Rome has also sought to science diplomacy, which is a common cornerstone of the Arctic Council observers, giving thus a tribute to previous historical research tasks "[9]. For example, in February 2013 in Rome under the patronage of the Italian Chamber of Deputies the conference "Glaciers and resources: a new geopolitical scenario for the Arctic" was held, directly organized by the Italian Institute of Geopolitical and International Studies (ISAG), headed by Professor Tiberio Graziani[10]. The current issues of the Arctic cooperation between the Arctic and non-Arctic countries were discussed at the conference. The conference "Climate Change and future scenarios in the Arctic region" was organized in Venice in December 2014, at the base of the Venice International University under the patronage of the Italian Foreign Ministry. The problems of changes in the Arctic environment and its sustainable development, and the place and the role of indigenous peoples in the changing Arctic were included into agenda of the conference. Heads of consular missions of the Arctic countries in Italy were among the participants of the conference[11]. It is also important to note that this event took place in the framework of the Italian Presidency in the EU Council in 2014. During its european presidency, Italy identified one of the problems as "stabilizing and strengthening of its observer status in the AC"[12].

Seriousness of the intentions of the Italian Republic in relation to intensify its involvement in the Arctic cooperation is also evidenced by the fact that in 2016 the Italian Society for

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[8] Novello G. at Arctic Circle 2014 “Italy in the Arctic”. URL: http://vimeo.com/111399255 (accessed: 16 June 2016).

[9] Marc Lanteigne. Arkticheskaia diplomatiia Italii. URL: http://arcticjournal.com/ opinion/2069/past-prologue (accessed: 16 June 2016).

[10] Ghiaccio e risorse: l’Artico come nuovo scenario geopolitico. Il 19 febbraio alla Camera. URL: http://www.geopolitica-rivista.org/25013/ghiaccio-e-risorse-lartico-come-nuovo-scenario-geopolitico-il-19-febbraio-alla-camera/ (accessed: 16 June 2016).

[11] Festival della Diplomazia: al Ministero degli Affari Esteri il dibattito Artico: risorse ed ecosostenibilità Se ne parla con i diplomatici del Canada, Danimarca, Finlandia, Norvegia, Russia, Stati Uniti e Svezia. URL: http://www.informazione.it/c/7771E1EB-0E64-461C-9177-F374ED172515/Festival-della-Diplomazia-al-Ministero-degli-Affari-Esteri-il-dibattito-Artico-risorse-ed-ecosostenibilitaSe-ne-parla-con-i-diplomatici-del-Canada-Danimarca-Finlandia-Norvegia-Russia-Stati-Uniti-e-Svezia (accessed: 16 June 2016).

[12] Caruso A. La geopolitica dell’Artico. 16 июня 2014. URL: http://italian.ruvr.ru/2014_06_16/La-geopolitica-dell-Artico-2004/ (accessed: 16 June 2016).

International Organization (Società Italiana per l'Organizzazione Internazionale (SIOI) in cooperation with the Italian Foreign Ministry and the Ministry of Environment will introduce the first Italian master program for Arctic cooperation (master course on sustainable development, energy geopolitics and Arctic research)[13]. Thus, in Italy, in-house specialists on the Arctic issues will be qualified.

Finally, the last level of the Arctic policy of Italy is the level of informal consultations with representatives of business and civil society. The general trend of the modern Arctic cooperation is to attract business to solve the Arctic problems and to develop cooperation in the region. For Italy it is a good opportunity to deepen contacts through business with other Arctic players. In this context it is interesting to mention "the Arctic Desk» held under the patronage of the Italian Foreign Ministry (Tavolo Artico), which at the national level is a series of informal events to exchange views with representatives of the Italian business and civil society. Italy is actively involved at the state and non-governmental levels in the informal activities of regional organizations, for instance, in conference “Arctic Circle” and "Arctic Frontiers”.

Italy and Russia in the Arctic: problems and prospects of cooperation

As already noted, one of the main Italian partners in the Arctic, with which bilateral relations on the topical issues of the region have been already established, is of course, the Russian Federation. In turn, Italy is one of the most important strategic partners of Russia in today's Europe, with which " intensive cooperation has been established and developed in almost all areas"[14]. Thus, a new trend has appeared in relations between two countries – the Arctic cooperation. The Russian-Italian cooperation in the Arctic also has a historical background. Thus, the expedition of L. Amedeo launched from Arkhangelsk in Russia, and the Soviet icebreaker "Krasin" took part in the expedition to rescue team of U. Nobile in 1928. It is also interesting to note that W. Nobile moved to the USSR in 1931, where he had been living about four years and participated in the implementation of the program of construction of the Soviet dirigibles and contributed to the creation of the company "Aeroflot".

After Italy has became an observer in the Arctic Council, the conditions for intensification of cooperation between the two countries have been created in the region. Three main areas can be marked in mutual cooperation: energy, new technologies and transport. Of course, one of the main areas of mutual cooperation is energy industry, where the Italian company ENI plays a key role with a number of other foreign companies. The decision of the Russian President Putin V.V, accepted in 2012 about the admission of private companies to participate in offshore projects,

[13] L’Artico, l’Europa e l’Italia. Parla Frattini URL: http://formiche.net/2016/02/26/artico-italia-frattini/ (accessed: 16 June 2016).
[14] Rossiisko-ital'ianskie otnosheniia. URL: http://roma.mid.ru/rossijsko-italanskie-otnoshenia (accessed: 16 June 2016).

including in the Arctic zone of the Russian Federation, became an important event in this context. The Russian government had to admit that the monopoly of two state-owned companies-giants (Gazprom and Rosneft) for the development of the Arctic shelf deposits "hinders the development of production a little"[15]. The first practical result of this initiative was the formation of a strategic alliance between the companies Rosneft and ExxonMobil, and the second was an alliance of Rosneft with Italian ENI. Agreement on strategic cooperation with the energy company was signed in April 2012. The agreement provides participation of ENI in the development of the Barents Sea shelf, namely: Fedynsky and Central Barents sections. Tax benefits in offshore projects, approved previously by the Russian government became key factor the attractiveness of this alliance for ENI.

ENI follows international standards for environmental protection mandatory in its activities. For example, Rosneft and ENI signed the Agreement and Declaration of the protection of the environment and keeping biological diversity during the exploration and development of mineral resources of the Arctic continental shelf of Russia, at International Economic Forum, in St. Petersburg in 2013. The companies intend to carry out regular monitoring of changes in the natural landscape and seas of the Arctic, the development of international cooperation, taking into account the Arctic environmental protection strategy (AEPS). In order to implement the provisions of the Declaration, Rosneft and its partners are exploring the possibility of establishing the Coordination Centre with the involvement of representatives of the Russian Federal Space Agency, the Ministry of Transport and Ministry of Emergency Situations of Russia. ENI rich experience in this field can be very useful for Russian energy companies.

Another important event in the sphere of the Russian-Italian cooperation in the Arctic occurred in December 2013 during the visit of Vladimir Putin in Trieste when Memorandum on the joint project with the Italian shipbuilding corporation Fincantieri was signed. According to the agreement, the Italian company will build a drilling ship, priced at 1 billion euros, designed to work in the Russian Arctic zone in the ice up to 1.5 meters thick[16]. It is expected that Russia will need at least ten similar ships by 2030. They will be built in cooperation with Krylov State Research Center, which is the leader in the scientific segment of the Russian shipbuilding industry. In particular, the Centre worked on the platform "Prirazlomnaya". Under the agreement, the partners will conduct joint research and development.

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[15] Afontsev S. Novyi podkhod k arkticheskim resursam. URL: http://russiancouncil.ru/ inner/id_4=370#4: 16.06.2016). (accessed: 16 June 2016).

[16] Staalsen A. Ital'ianskaia arkticheskaia strategiia razvorachivaetsia na fronte rossiiskoi neftedobychi. URL: http://barentsobserver.com/ru/energiya/2013/12/italyanskaya-arkticheskaya-strategiya-razvorachivaetsya-na-fronte-rossiyskom (accessed: 16 June 2016).

The current stage of relations between Russia and Italy is largely determined by European policy. However, in current crisis situation, Italy is one of few European countries critically evaluating applied sanctions against Russia and actively supporting the development of EU relations with Russia. For instance, during its presidency in the EU, Italy attempted to restore the relations between the EU and Russia, and that was identified as one of the priorities of the Italian presidency in the European Union in 2014[17]. However, as the EU member, Italy "is forced to build its position with careful eye to this fact" [18].

In 2014, two major events affected the plans for the development of the Arctic shelf: the fall in oil prices (primarily due to the development of shale oil production and falling demand in China) and sanctions for the Russian offshore oil production imposed by the US and EU countries. Both factors contributed to the fact that many energy projects with the participation of Russian companies (first of all, Rosneft) have been "frozen". In particular, it is prohibited to supply technology into Russia for oil and deep exploration of the Arctic shelf. According to Russian experts, "sanctions show that the West is extremely uninterested in promoting Russia in this way, in spite of its increasing demand for energy".In practical terms, the sanctions are aimed to disrupt the already existing cooperation in the Arctic between the Russian state corporation Rosneft and the American company ExxonMobil, Italian ENI and Norwegian Statoil[19]. As a result of the sanctions, all projects with the participation of Rosneft have become on hold. However, sanctions are detrimental not only for the Russian side, the West also bear losses. This was repeatedly stated by the representatives of the Italian business[20]. However, starting from the second half of 2014 the cooperation between the Western and Russian companies in the Arctic has stopped.

Against this background of this lull, the signing of a tripartite agreement on strategic partnership between the Russian state corporation Rostec and the Italian Finmecanica — one of the largest engineering holdings in Italy, and the oil company Rosneft" at the end of 2014, became the important event.

In 2015, the intention to continue the cooperation on this project have been confirmed at the level of heads of the states of Russia and Italy. In accordance with the agreement, on the plant near Moscow — HeliVert (a joint venture of holding company Russian Helicopters and

[17] Posol Italii v RF: normalizatsiia otnoshenii s Moskvoi – prioritet predsedatel'stva Rima v ES. URL: http://www.interfax.ru/383869 (accessed: 16 June 2016).
[18] Dzhannotti A. Italiia liubit Rossiiu s ogliadkoi na ES. URL: http://gorchakovfund.ru/news/18646/ (accessed: 16 June 2016).
[19] Semushin D. Sanktsii protiv Rossii: Donbass na iazyke, Arktika na ume. 01.10. 2014 r. URL: https:// cont.ws/post/55771 (accessed: 16 June 2016).
[20] Ital'ianskii biznes iz-za sanktsii protiv Rossii poterial 3,6 mlrd evro. 26.03.2016 URL: http://www. vz.ru/news/2016/3/28/802058.html (accessed: 16 June 2016).

AgustaWestland, which is a subsidiary of Rostec and Finmecanica) it is supposed to organize the production of medium-sized multi-purpose helicopter AW189, which will be used also in the Arctic.

The signing resulted in fact that the President of Rosnfti Igor Sechin said: "The development of offshore projects is a strategic objective of Rosneft. The realization of this task is impossible without modern Arctic and marine engineering, oil and gas platforms, and modern aircrafts. We are glad to the achieved agreements, thanks to which the strategic partnership is built in such important sphere "[21]. Thus, Italy has actually breached the "pause" in the Russian-European relations, implementing the objectives of its presidency in the EU, and has confirmed its intentions to restore the relations of Russian with the European partners.

In turn, the Italian experts are very optimistic about the prospects for international cooperation in the Arctic, with the participation of Russia: "... Russia accounts for half of the Arctic region, therefore all attempts to tarnish the Arctic policy will be counterproductive also for other Arctic nations ... The international cooperation that we see in the North pole in recent years should continue, even if any progress is not achieved with the situation in Ukraine. This is the only possible perspective ", says Italian expert A. Caruso[22].

Conclusion

Summing up, it should be emphasized that Italy is not the new entry in the Arctic and in contrast to many other non-Arctic countries, Italy has a historical background of its presence in the Arctic, which largely predetermined Italy's membership in the Arctic Council as an observer. At this stage, the main objective of the Italian policy in the Arctic is to consolidate its position in the Arctic Council and in the region as a whole through the active involvement of Italy in the multilateral and bilateral Arctic cooperation.

Analysis of the program document of Italy about the Arctic 2016 showed that the country takes a holistic approach in its Arctic policy and diplomacy and has clearly defined the interests in the region and the priorities of its Arctic policy. At the same time Italy, successfully combining rich history and modern existing potential, defines itself as a key player in the Arctic.

With regard to relations with Russia, our country, is undoubtedly one of the priority Italian partners in the Arctic. As the economic interests are strategic for both sides, then the main bilateral cooperation projects are focused on energy and transport. Although in terms of anti-Russian

[21] Rostekh, «Rosneft'» i ital'ianskaia «Finmecanica» dogovorilis' o proizvodstve v Rossii vertoletov AW189. URL:http://russianhelicopters.aero/ru/helivert/news/6683.html (accessed: 16 June 2016).
[22] Caruso A. La geopolitica dell'Artico. 16.06. 2014. URL: http://italian.ruvr.ru/2014_06_16/La-geo-politica-dell-Artico-2004/ (accessed: 16 June 2016).

sanctions a number of areas of cooperation has become "frozen". However, Italy stands against sanction policy of the West towards Russia, and Italian companies continue to cooperate with Russian partners in various fields. In our opinion, at this stage the main task of two countries is to find new promising areas of the Arctic cooperation, taking into account the changed geo-economic and geopolitical situation. For the Italian diplomacy the experience in the implementation of Russia's policy in the Russian Arctic is nteresting, as well as Russia's position on topical issues of regional cooperation, knowledge and experience. For Russia, the largest power in territory and in mineral resources of the Arctic, cooperation with Italy, traditional and reliable partner, under terms of deficit of its own funds and technologies, may become a unique opportunity to attract technological resources of Italy for the full development of energy resources in the Arctic region and the development of infrastructure.

Thus, in general, new opportunities for cooperation are opened today for Russia and Italy, on the level of business and scientific-technical cooperation on a wide range of areas beneficial for both parties.

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Arctic interests and policy of France

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Abstract. The author considers scientific, economic and political activities of France for the development and exploration of the Arctic, providing security there. Along with some other non-Arctic countries, France is not ready to accept such a situation when eight members of the Arctic Council solve Arctic problems on behalf of all mankind.

Keywords: *France, Arctic, Russia, the Arctic Council, observer countries of the Arctic Council, France's interests in the Arctic, policy*

Although France is not an Arctic country, it claims the status of "polar" country in view of its interests in the region and a significant contribution to scientific research, as well as observer status in the Arctic Council.

Strategic interests of France in the Arctic

French strategic interests in the Arctic are very diverse, and they are similar to those of other major European countries:

1. the study of climate change and its consequences, especially for fishing;

2. the safety and cost of maritime transport;

3. business interests in the Arctic (especially of powerful company Total);

4. promotion of the EU in the Arctic Council and providing of the geopolitical interests in the Arctic for France and integration union as a whole [1].

The French Foreign Ministry issued a formal "road map" in March of 2016, which outlined the main areas of the policy of France in the Arctic. The main thesis is that in the context of global warming the Arctic becomes the object of very great importance for the entire international community. [2]

Since France does not have significant energy reserves, it imports hydrocarbons on a large scale (8th place in the world for import of gas and oil), mainly from Norway, Africa and the Middle East. One French oil and gas company beloning to a class of TNCs is Total. Norway takes 1st place in natural gas supply of France and 2nd — in oil supply (after Russia). In France, Norway is considered as advanced country in terms of technology, which, moreover, is rich in fuel. French companies Total and Gaz de France / Suez are the main buyers of the liquefied gas produced from natural gas extracted at the Norwegian field "Snohvit" in the Barents Sea.

The Company Total extracts hydrocarbons throughout the world. This company is very important for the economy, since it accounts for 12% of the French stock market. Its profit in 2012 reached $ 12 billion, tax contributions to the state treasury amounted to 1.2 billion euros[1], which is quite enough to make the state attentive to the interests of the oil business. The company is considered to be oil and gas expert (including in a cold climate) and in appropriate technologies. The company carries out most of the Arctic operations in the Norwegian and Russian Arctic, and the company makes significant investments in the Russian sector of the Arctic. The company is present in the regions of the Far North since the 1970s. and has accumulated a large experience in hydrocarbon production in harsh environments. It participates in the geological works to study deposits in Alaska, in Northern Canada, at Spitsbergen, at the Snow White in the Barents Sea, at the west of Greenland, in the Timan-Pechora basin in Russia, in Western Siberia. This French TNC bought a stake of the deposit at Yamal, as well as in the company Novatek, 25% in Shtockman project, along with Gazprom, tbut he development of Shtockman is postponed until the 30-ies of XXI century. The company employs 97,000 people, 40% of them are engaged outside Europe. One of the senior executives of Total, Christopher de Margerie, who died tragically in a plane crash in 2013, warned against the start of oil production in the Arctic on the basis of existing technologies, rightly believing that the threat of major disasters is too high.

French experts are paying particular attention to the massive migration of marine biological resources from the Atlantic into the Arctic Ocean with the global warming, considering it as a basis for their claims to those resources.

France shows the increased interest in the Arctic research, protection of the natural environment of the Arctic, ensuring of military security of the region, the use of the Northern Sea Route and to the production of hydrocarbons in the Arctic. Its Arctic policy has been discussed in both chambers of parliament — the Senate and the National Assembly. Certain institutional framework for its implementation have been created. Michel Rocard, a former prime minister, was appointed Special Ambassador for Arctic issues in 2009. This politician was known as the "father" of the Madrid Protocol on the environmental protection of the Earth's south pole, which was signed in 1991 in connection with the conclusion of the Antarctic Treaty. These documents banned the mining on this continent for 50 years. It is obvious that the French ruling circles are not averse to use some of the approaches to Antarctic issues in relation to the Arctic policy.

France leads the Arctic research at the permanent station, founded in 1963 in the scientific town of Ny-Alesund, located at Svalbard. French naturalists conducted polar research since the

[1] Le Mond fr. 21.12. 2011.

second half of XIX century. The largest known among them were Charles Rabo (1856—1944) and Jean Corbeil (1920—1970), their names are immortalized in the names of two French research stations in Spitzbergen. The research icebreaker Astrolabe and research vessel Marion Dufresne are used there. The icebreaker passed between the Atlantic and the Pacific Ocean along the Northwest Passage.

Currently, France is conducting about twenty different research programs in the Arctic. Paul Emile Victor French Polar Institute is actively cooperating in the field of Arctic research with the Alfred Wegener German Institute for Polar and Marine Research in AWIPEV program. Two institutes have a common scientific base at Spitzbergen. Cooperation is also arranged with the Norwegian University Centre in Svalbard in the capital of the archipelago Longiyarbyuene, as well as with the Russian scientific organizations. France actively participated in the International Polar Year 2007—-2008. Four in total French research institutions are engaged in conducting of the polar research: The French Polar Institute, Arctic Research Centre, the European Arctic Centre and the French National Center of Scientific Research.

France has had a significant influence on the formation of the Arctic EU strategy, and that was France which has initiated the development of relevant products and documents. France was especially active in this area during last presidency in the EU in 2008. As a nuclear power, France is committed to participate in ensuring security in the Arctic. It is actively involved in military cooperation with Denmark, Canada, Norway, the United States in the conduct of military exercises “Cool response”, organized every second year by NATO member states at the territory of Norway [1; 3; 4].

France is involved in the activities of regional Arctic organizations is the observer in the Arctic Council and CBER. Besides scientific research, climate change and environmental protection, France is interested in the Arctic mineral resources, as it is assumed that the Arctic hydrocarbon reserves are enormous, and they are the only in the world which have not been yet exploited., In the French White Book on defense and security, published in 2013, energy security is considered as one of four priorities of France [4].

France has great interest in the northern sea routes, it is trying to legally justify giving the international status for the Canadian Northwest Passage, but it is not supported by the Government of Canada. The justification is explained by the fact that Canadian economic potential is too small to effectively manage this route, and Canada does not have sufficient financial resources needed for this.

France is also interested in sustainable fishing in the northern seas. The matter is that France is a large buyer of fish caught in the northern waters. It is also Europe's largest consumer of fish caught outside the EU fishing areas. The country takes the 1st place in Europe for the consumption of fish per capita. Almost half of the foreign French purchases of fish and seafood accounts for the northern seas: The Norwegian, Barents and Kara [1].

Thus, three factors have stipulated the increase of France's interest to the Arctic: climate change, increased competition for resources, the problem of the boundaries of the exclusive economic zones, though UNO deals with the issue of the territorial areas. All three factors are connected with the security. The Russian expedition to the North Pole and hoisting of the titanium Russian flag at the bottom of the Arctic Ocean have been perceived ambiguously in France. Since that France began to take measures to ensure that its armed forces could carry out military operations in the Arctic zone. The French infantry battalion for the first time took part in the international military exercise "cool response", which is regularly held in Norway, with the participation of NATO. 9,000 soldiers from 14 NATO countries took part in exercise in 2012, including 420 French foot-soldiers. The exercises of 2012 were carried out not only in the territory of Norway but also in Sweden. Britain, Canada, Netherlands, USA, France and Sweden became the largest participants. Later France held exercises with Russia in the Barents Sea with the call of the French ship to Severodvinsk. The Russian cruiser "Peter the Great" made a friendly visit to the French Brest. At present, a contingent of French troops, who are able to conduct operations in the Arctic, has reached 6000. French warships and nuclear submarines regularly go to the northern sea. French Air Force took part in the international military exercise in Alaska. French pilots take part in the annual exercise in the North Kaloth, which is located in the north of Norway, Sweden and Finland [3].

The Arctic policy of France

One of the central components of French policy in the Arctic is the statement that this policy should have not regional but global nature, because the events in the Arctic directly affect also French interests. This is justified by the influence of the Arctic on climate. Hence the conclusion is made that you can not trust the so-called Arctic Club of five or eight states.

SPA Arctic Circle was organized in France in 2006, which supports the idea of establishing of the international control over the Arctic and polar nature. Stanislav Pottier from the IMF and Professor of the Institute for Policy Studies in the elite "Big School" (Grande École de Paris) Laurent Mayet are the heads of this organization. They became advisers of the representative of the President of France on the Arctic issues M. Rocard, who has been appointed later. The working

group of SPA Arctic Circle prepared a draft of the law on the protection of the Arctic nature in 2007. In October 2008, the European Parliament adopted a resolution on Arctic governance. This document proposed to initiate negotiations in order to conclude an international treaty for the protection of the Arctic nature. 597 members of EP voted in favor of the resolution. The idea was to establish the order in the Arctic, similar to that which was established with the active support of France for the Antarctic.

Senator Christian Gaudin made the basis of the Arctic policy of France. He prepared two reports on French interests in the polar regions. The reports were presented to the Senate and to the National Assembly. One of the conclusions was that the role of the North for economic development increased. The senator made a number of proposals to the government and proved the necessity of the French presence at both poles. He recommended to appoint an official who would be responsible for the coordination of French policy in the Arctic. It is in line with these recommendations, the French Minister of Foreign Affairs appointed as "Ambassador of the Arctic" the former French Prime Minister M. Rocard in March 2009. Since 2010, Ambassador M. Rocard, together with the French State Secretary for European Affairs Pierre Lellouche participated in the meetings of the Arctic Council, organized a parliamentary group on Arctic affairs. Official title of the M. Rocard — "Ambassador at the international negotiations on the Arctic and Antarctic" [1].

Another idea of senator C. Godin was to create an international observatory in the Arctic, as well as to establish international regulation of human activity in mining and tourism. To implement this idea, Senator K. Godin recommends to use the support of the European Union, these ideas were promoted particularly active during the French presidency of the European Union. The fact is that France is seeking to strengthen its influence on the formation of EU policy and one of the areas in which France hopes to prove itself is the Arctic policy. France chosen four priorities during its presidency in the EU: immigration, reform of agricultural policy, climate and energy in one package, as well as European policy in the sphere of security and defense. The Arctic aspect was present in two of the four priorities (in priority 3 and 4).

Development of Arctic issues in the EU based on the fact that the Union already has a policy of the Northern Dimension, which applies to the Arctic. Thus, a new political concept — the "Arctic window" of the EU policy appeared.

During a visit to Greenland, actively supported by all the Scandinavian countries and Finland, the French Ambassador for Ecology Laurent Stefanini said: "The Arctic is part of the Northern Dimension of the EU common policy in the field of foreign and security policy, and you can be sure that we will develop this priority. The EU has the "Arctic window", and even more —

the "Arctic door"[2]. EU Commission issued the first document on the Arctic Policy in November 2008 as the development of this view.

In France, broad public debates on environmental protection are condacted at the residence of the Prime Minister on Rue de Grenelle, with the participation of both political parties, and civil society representatives, in which the matters relating to the protection of the environment are discussed, the documents are accepted, summarizing these debates. After the Paris Summit for the Environment in 2015, the French Parliament adopted a resolution in which it was proposed to establish an international commission to manage the Arctic, because this region affects the climate of the entire planet, as well as to adapt the international maritime regulation [5] for the Arctic Ocean.

In order to expand the influence on the work of the Arctic Council, France is not satisfied with the observer status in the Arctic Council — France would like to increase the participation, becoming an associate member (now it has the observer status) to be able to participate in the preparation of documents, which is conducted in the framework of working groups. France criticizes the Arctic Council, believing that they can not rely on"the Arctic club" in solving of such large-scale problems that arise in the Arctic and that affect all of humanity. The French side is willing to participate in the defense of the Far North from the global challenges and in ensuring of its security. It is earnestly seeking a legal basis to play a more active role in the Arctic. Its representatives, in particular, M. Rocard, say that there are serious gaps in the Arctic management system, and participation of interested non-regional countries is required, and management of the Arctic can not be restricted only by those countries that surround the region[3]. M. Rocard criticizes the Arctic group of 8, because they failed to introduce a legally binding controls in the Arctic. He described Declaration adopted in Ilulissat in 2008, as a document that only stated the Arctic problems, but did not offer their solutions. He calls among these problems fishing, maritime security, ensuring the strategic interests of the world powers, resources exploitation. Polar Ambassador of France does not agree with the fact that only Arctic countries are responsible for the situation in the Arctic. Statements of M. Rocard confirmed that there are serious contradictions between the Arctic Council members and non-Arctic countries, at least, from the French point of view[4].

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[2] L. Heininen (editor), Arctic Yearbook 2012, Northern Research Forum and TN, p. 66—67.
[3] Shields A. Visit de Fanden premier minister francais -Arctique: la fin du 'chacun chez soi' est inévitable, croit Michel Rocard. Le Devoir, A3.
[4] Rocard M. The Arctic and the European Union: Environmental and Human Challenges. Stockholm, Sweden. June 2011.

A number of French experts write that France, along with some other non-Arctic countries, is not ready to accept a situation when eight members of the AC decide the Arctic issues on behalf of all mankind. In their view, it would be a mistake to limit the role of outsiders (the UK, Germany, China, France and the EU) by the observer status, which does not give the right to vote at meetings of the Arctic Council [6]. Thus, France claims to have greater role in the Arctic affairs, than that it has now.

According to French experts, non-Arctic countries should participate in the preparation of documents, which are arranged within the framework of working groups of the Arctic Council on the issues of security, fishing and environmental protection. For example, a serious problem, which is waiting for its decision, is that there is no fishing management regime to the north of Spitsbergen and the Bering Strait. The decision is complicated by the fact that there are no reliable data about these sea areas which would create a scientific basis for the establishment of fishing quotas. This problem is difficult to solve in a narrow range. There are several international organizations that could help to solve it. In addition to the working group on keeping the Arctic flora and fauna of the Arctic Council, the French experts refer to the following bodies: Fishing Council for the North-East Atlantic; Marine scientific organization for the North Atlantic Ocean; The International scientific Arctic Committee; International Council for Sea Exploration. France supports the idea to extend the zone of responsibility of the Board of Fisheries of the north-eastern Atlantic, bearing in mind the fact that the EU is already a member of it [1].

France is very concerned in the lack of international regime of environmental management in conditions when it is planned to start production of oil and gas in the Arctic. Any accident similar to the one occurred in the Gulf of Mexico on British Petroleum platform would lead to even more serious consequences in the Arctic because the methods used in the southern latitudes for the oil spill, won't work in the north. The agreement regulating responsibility of countries for oil spills was worked out by the initiative of Norway, the USA and Russia in the Arctic Council and signed in 2013.

Conclusion

France is looking for legal grounds to play a more active role in the Arctic. It supports the adoption of representatives of the EU in the Arctic Council, believing that it will strengthen France's abilities to influence the decisions of the AC. Just France has made the greatest influence on forming the EU's Arctic policy.

France is not ready to accept such a situation, when eight members of the Arctic Council solve problems on behalf of all mankind. Some French experts and politicians stand for the introduction of international management Arctic mode that would equalize the rights of the

permanent members of the Arctic Council with observer countries. This view is not shared by circumpolar countries.

On the whole, Arctic policy of France reflects its general approach to the problems of global scale, that France considers as a tool to increase its influence on the global agenda by relying on international organizations, primarily the EU, NATO, the UN, but shows readiness for a dialogue with members of the Arctic Council, including Russia.

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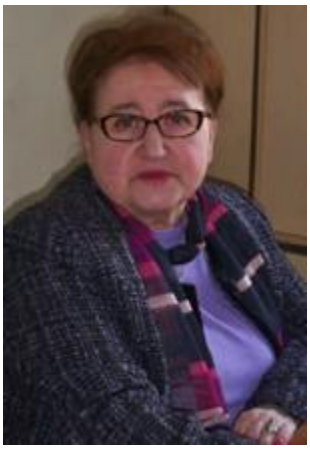
India and the Arctic: environment, economy and politics



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During the preparation of the article, the authors were consulted by leading researcher of FGBUN Institute for Far Eastern Studies of the RAS, Anatoly F. Klimenko.

Abstract. The article analyzes the main trends in the development of India and the development of the Arctic: the participation in the study of global warming and the state of the Arctic ice; the use of the Northern Sea Route for transportation; expansion of international cooperation in the Arctic direction, including with Russia.

Keywords: *Arctic, India, Russia, the Northern Sea Route, the Arctic Council, research*

The development of the Arctic is recognized in India as a priority program, with which the country is seeking to strengthen its economic and political positions in the region. India does not have now enough capacities to implement large-scale projects, however, it is purposefully trying to gain a foothold in the Arctic, hoping on assistance of the partners.

India's interest to the Arctic is associated with lack of energy, which is covered by import, so the Arctic with its potentially rich hydrocarbon resources attracts its attention. The country takes the 4th place in the world in oil import. Indian companies are interested in cooperation with Russian partners with a view of joint development of the deposits in the Russian North, for example, in the Nenets and Yamal-Nenets autonomous areas.

India worries about possible reduction in transportations across the Indian Ocean due to the prospect of expanding of cargo traffic along the Northern Sea Route (NSR). Country shows concern in climate change, as the events taking place at the North Pole, may affect the climate of the entire planet, including the Hindustan [1; 2].

The first evidences of the interest of India in Arctic research are related to the period when India was a part of the British colonial empire. In February 1920, India joined the Spitsbergen Treaty, which defined the international legal status of Spitsbergen archipelago which was under the sovereignty of Norway. This document was signed in Paris by a number of countries in Europe, Asia and the America, including the United Kingdom overseas dominions.

In 1981, at the initiative of the Prime Minister of India, Indira Gandhi, the Department of ocean research was created, it was subsequently transformed into the Ministry of Earth Sciences. After this, the Arctic research program has been developed. National Centre for Antarctic and Ocean Research (NCAOR) founded in April 1999 in Goa, for the purpose of coordinating and developing of polar research in India, has been actively involved in cooperation with foreign scientific centers of the Arctic.

The beginning of regular Indian program of the Arctic research started in the middle of the first decade of the 2000s. In 2007, India established the research station "Himandri" in the village of Ny-Alesund in Svalbard at the distance of 1200km from the North Pole [3, p. 42]. This event can be considered as the beginning of change in the attitude of the Indian government to the Arctic territories. Since then, India has regularly (3-4 times a year) send scientific expeditions in the Arctic [4]. Every year about 200 researchers from various institutes, universities and colleges, work in shifts from May to November at this station. In June 2013, the Minister of Foreign Affairs of India visited it. The first Indian multi-purpose floating observatory "IndArk" was launched on June 24, 2014, the works were carried out by a team of researchers from the Ministry of Earth Sciences, National Center for Antarctic and Ocean Research and the National Institute of Ocean Technology. It was discharged from board of the Norwegian research vessel "Lance" at Kungsforde in Svalbard, about midway between the coast of Norway and the North Pole[1]. At the initiative of the Ministry of Earth Sciences of India, the plans of the Arctic expeditions and research programs have been included in the five-year plans of the development of India. Expeditions of the Indian scientists on Spitsbergen island in 2007—2008 and in 2008—2009 were expected as well as research vessels of oceanographic expeditions during the Arctic summer of 2009—2010 and of 2011—2012.

Environmental protection is a key factor that determines Indian activity in the Arctic. It is, above all, related to the issue of climate change and global warming, if the peak of warming is in the spring and early summer, the temperature rise in the North of India could have disastrous consequences. Arctic ice melting affects the condition of the ice at the Tibetan plateau, where major rivers originate in India.It is known that any changes of ice conditions on tops of the Himalayan ridge can cause severe floods and have disastrous consequences for the entire Indo-Ganges valley, as the increase in sea level due to melting of glaciers can lead to flooding of considerable part of India with

[1] Mezhdunarodnaia konferentsiia predstavitelei gosudarstv-chlenov Arkticheskogo soveta, gosudarstv nabliudatelei i zarubezhnoi nauchnoi obshchestvennosti «Obespechenie bezopasnosti i ustoichivogo razvitiia arkticheskogo regiona, sokhranenie ekosistem i traditsionnogo obraza zhizni korennogo naseleniia Arktiki. Arkhangel'sk. 16.09.2015. M., 2015. pp. 90—91.

a population of more than 100 million people. Therefore, monitoring for the condition of the ice is one of the priorities of Indian scientists working in the Arctic.

Actual problem for India is the research of climate change, precipitation and the state of Arctic glaciers and ice of the Arctic Ocean to detect possible distant interdependance between the Arctic climate and the Indian monsoons. Indian scientists have established the existence of such dependence, but its mechanisms are not clear. The vital problem for the development of agriculture in India is volumes of monsoon. According to one of the participants of the Arctic Research of India K.P. Krishnan, particular importance of the Arctic region for the Indian subcontinent is precisely determined by the fact that there is atmospheric dependence of the region of north pole and intensity of Indian monsoon. Therefore, the results of research can help for modeling and prediction of the state and intensity of the monsoons.

India's interest in the research of the Arctic region is also associated with the need to study the flora and fauna of various forms of life in the Arctic region. India's first scientific expedition to the Arctic Ocean, started on the first week of August 2007. It was composed of five members, headed by the director of the National Centre for Antarctic and Ocean Research Shri Raziq Ravindra. Three long-term research projects in the sphere of atmospheric science, microbiology, earth sciences and the study of glaciers began in the result of the month-long stay at the International Arctic base in Ny-Ålesund. The second scientific expedition consisted of two stages: June — July and July — August 2008. Research of ice, atmospheric and biological processes, etc. were conducted there. The third Indian expedition worked in three phases: June — July 2009, August 2009 and March — April 2010. Next Indian expedition consisting of 5 members worked in the Arctic since May 14 till June 8, 2011. Scientists from various national institutions take part in the Indian Arctic Program. More than US 12 mln. have been invested in the research in recent years. In 2012—13, 25 scientists visited the station "Himadri", where they spent more than 185 days for research on ten special projects [5].

In 2012 India applied for the observer status, and on 1 May 2013 India received it at the eighth meeting of the Ministers of member countries of the Arctic Council, in Kiruna (Sweden), this status was granted to India, along with China, Japan, the Republic of Korea, Italy and Singapore. India's position in the Arctic Council is manifested in the fact that it takes the active part in the study of global warming and the state of Arctic sea ice, India studies possible options of using the Northern Sea Route for transportation, is looking for ways to enhance international cooperation in the Arctic area. It is important to note that India is opposed to expanding of oil and gas production, explaining it by the exploration and production of hydrocarbons in the Arctic are

associated with many risks, lack of the necessary technology and the limited scientific knowledge of environmental problems and serious dangers due to the effects of climate change. When using the Arctic as the shortest sea route between the eastern and western regions of the world, India is simultaneously reviewing its strategic interests and capabilities in the Indian Ocean.

Taking into account the events in Ukraine and strengthening of the opposition between Russia and the US and the European countries, India believes that it is important to consider not only the questions of science and the environment, but also the dynamics of the political, economic, strategic and economic processes in the Arctic region. In this regard, India considers the following objectives as strategic: 1) the expansion of not only economic and scientific, but also political and strategic cooperation with the "northerners" on a bilateral basis; 2) a large-scale study of the political situation in the Arctic region and the development of the special Indian "Arctic strategy"; 3) promotion of the idea of reducing the confrontation in the region; 4) the Arctic region should be declared free of nuclear weapons [6, p. 247].

The meeting of Indian diplomats with experts was held in September 2012, at Indian Council of World Affairs (ICWA), where the country's strategic prospects in the Arctic were discussed [4, p. 18]. ICWA prepared a special document in which, in particular, were formed the following tasks facing India in the Arctic: 1) to establish a mechanism for bilateral dialogue with the coastal Arctic states; to support the work of the Arctic Council, to promote cooperation between its members; 2) to appoint a special representative (ambassador) on Arctic affairs, who will represent India at the meetings of the Arctic Council; to develop such the Arctic policy, which will provide both diplomatic and academic, economic and strategic interests of the country; 3) to organize a special group for the continuous monitoring and observation for the development of political, diplomatic and strategic processes in the Arctic; preparing and publication of scientific projects and programs, including joint ventures with foreign countries, for policy makers and relevant government institutions. India should develop its own "Arctic strategy"; 4) to participate in international conferences, where there are real opportunities for the exchange of views with the scientists from different countries on the Arctic; 5) to participate actively in the elaboration of consolidated views of Asian countries on such problems in the Arctic as changes in sea level, ice conditions, changing of weather conditions, i.e, all that could have an impact on the situation in various regions and countries with a predominantly agricultural development; 6) to strive for inclusion of questions about the state of the northern polar area in the agenda of international forums such as BRICS, the East Asian Summit and others, with the participation of countries, somehow involved in the Arctic and Antarctic research.; 7) to strive for inclusion of issues related

to the Arctic into the first track of discussions with Canada, China, Denmark, European Union, Japan, Norway, Republic of Korea, Russia, the United States and other countries for the analysis of prospects for India's cooperation with these countries; 8) polar research should be discussed during the talks between India and Pakistan, since the changes in the Arctic affected on Himalayas and the Tibetan plateau, also influence on socio-economic development of both countries; 9) active participation in polar research gives India the status of sea power, a full participant in the solution of global problems, among which the development of the Arctic is included by the country's leading experts; active participation also contributes to the training of national personnel for navigation and maintenance of ships involved in the Arctic.

India treats with caution the activization of policy by China and Japan for energy resources in this particular ecological and economic region of the world. India and China see each other as rivals at the global level, and the Arctic is becoming as arena where their interests collide. In March 2010, Rear-Admiral of the Chinese Air Force, retired, Zhao Yin, speaking at the Chinese People's Political Consultative Conference, said: "The Arctic belongs to all people of the world as no nation has sovereignty over it." [2]. China, he continued, should also have a share of the region's resources. In India there are also ideas with call to follow China and achieve the share in the use of resources of the Arctic to ensure their economic growth.

At the same time, according to a well-known Indian diplomat and analyst Shyam Saran, this approach is short-sighted, because it does not take into account the damage that may be caused to the Arctic by "uncontrolled human greed." In addition, India has neither the financial nor the technological capabilities of the countries that are competing for the leading positions in the Arctic. Instead, India, according to Shyam Saran, should stand for signing of the Arctic agreement, according to which the territorial claims must be set aside till the expiration of the agreement. India should also put this issue in the agenda of the UN Security Council and initiate appropriate international actions. Such a contribution in the solution of the problem will contribute to its recognition as a responsible global power. Indian Institute of Defence Research and Analyses held a scientific conference in September 2013, the purpose of which was to identify the prospects of Asian coalition of countries (India, China, South Korea, Singapore, Japan), where the objectives and motives of the"Asian" observer countries' joined to the Arctic Council were considered [4]. India based on its conceptual provisions is seeking to develop an international Arctic cooperation with Norway, Finland, Canada, and especially with Russia.

[2] Kholodnaia voina za Arktiku: stavki Indii. 11.05.2012. URL: http://ru.apircenter.org/archives/616 (accessed: 19 June 2016).

For instance, in the middle of November 2006, the Indian Minister of Earth Sciences Kapil Sibal visited Norway. In the course of negotiations, Arctic research were determinded as priority area of scientific cooperation between two countries. In June 2007, during visit of Minister of Higher Education of Norway to India, the agreement to continue joint polar research and the study of climate change was reached. During the 2012—2013, within the framework of the Norwegian-Indian cooperation in the scientific sphere, two joint scientific expeditions in the Barents Sea area were carried out, as well as conferences where possibilities of Indian participation in the development of the region were discussed. [5]

In October 2014, the first ever visit of the President of India Pranab Mukherjee in Norway and Finland was taken, during which he crossed the Arctic Circle in Rovaniemi area in Finland. This trip was regarded as a sign of India's commitment to continue to strengthen its strategic positions in the Arctic region, which gradually turns into a new arena of collision of geopolitical interests of various countries. The President was accompanied by 45 businessmen and professionals in the field of education that signed agreements with their partners from Norway and Finland.In Norway, also issues of cooperation in the field of deep-sea fishing and the development of related technologies were discussed. The cooperation with these two countries showed that in the interests of India, it is important to maintain relationships with the coastal states of the Arctic on a bilateral basis in the field of scientific and economic research, as well as in the political and strategic issues. Indian steel company Tata Steel intends to develop deposits of ore in the Arctic zone of Canada, and in such a large scale in order to provide a significant part of the demand for raw materials for its factories located in Europe [1, p. 93].

India is constantly expanding its cooperation on Arctic issues with Russia. Taking into account the long-term energy needs, Indian investment department of ONGC — OVL offered $ 2 billion for 15% of shares of Yuganskneftegaz already in 2005. 04 of May the company Oil and National Gas Corporation — Videsh Limited (ONGC–OVL)[3] sent to Rosneft an offer to participate in joint projects for the development of the Russian Arctic shelf together with the American company ExxonMobil, the Italian ENI and Norwegian Statoil. The company ONGC also works on the project "Sakhalin-1", where its share is 30%. In the Joint statement of 13th Indian-Russian Annual Summit, held on December 24, 2012 in New Delhi, signed by Vladimir Putin and Indian Prime Minister Manmohan Singh, both sides confirmed their interests in the fulfillment of the conditions of the Intergovernmental agreement about cooperation in the field of hydrocarbons, signed December

[3] The company ONGC–OVL was founded in 1993 as a state structure. The government of India controls 74,14% of its shares.

21, 2010. At the same time, the Indian side confirmed its interest in equal participation in the development of existing and new projects in Siberia, in Russian Far East and on the Arctic shelf via oil and gas company ONGC-OVL. In joint document on the results of the 14th Summit held on 20—22 October 2013 in Moscow (14), it was noted that "the Indian side expressed interest to the company ONGC-OVL in the exploration of hydrocarbons in the Arctic in cooperation with leading Russian companies." In May 2014, Rosneft and Indian ONGC-OVL signed memorandum of understanding on the Arctic shelf of Russia within the framework of international consortium.

At the beginning of October 2014, India's delegation participated in the international conference in St. Petersburg on the development of ports and shipping (Transtech), dedicated to the development of the Northern Sea Route. However, Indian experts noted that India did not have sufficient technical possibilities for the expansion of Arctic research, but was taking steps to solve this problem. In particular, aircraft carrier Vikramaditya, purchased in Russia, can be used for navigation in the Arctic waters. In early November 2014, Prime Minister N. Modi ordered the buy the polar research vessel to expand Indian operations in the Arctic. According to Indian experts, to solve this problem India is trying to build relationships with other participants of the development of the Arctic, primarily with Russia, whose role can become a key one in the sustainable development of the region. "We have to use the situation, — says the expert of the Institute of Defence Studies and Analyses (IDSA) Uttam Kumar Sinha, in an article published in The Hindustan Times. — Due to global warming huge deposits of oil and gas have become available, and we can cooperate with Russia in a strategic, commercial, scientific spheres. Russia will play an important role in ensuring the energy security of India. Russia and India have a long tradition of naval cooperation, and our fleet can operate in the Arctic, taking part in search and rescue operations and monitoring environmental pollution. The Russian and Indian scientists can work hand in hand over the key to the mystery of the Arctic Climatology and Meteorology»[4].

Following the results of the visit of the President of RF V.V. Putin to India, on December 11, 2014, in a joint Russian-Indian statement (point 13) the importance of the Arctic region for two countries is accepted and their readiness to develop scientific cooperation in the study of the rapidly changing situation in the Arctic, to develop technologies for processing of rare earth materials in the Russian Arctic.In December 2015, the President of the RF Vladimir Putin and Prime Minister of India N. Modi conducted negotiations on joint exploration and development of hydrocarbons on the Arctic shelf of Russia. Parties recognized the importance of the organization

[4] Aziatskii Sever. Chto nuzhno novym igrokam v Arktike. 13.04. 2015. URL: https://lenta.ru/articles/2015/04/10/arctic/ (accessed: 19 June 2016).

of deliveries of liquefied natural gas (LNG) from Russia to India. In this regard, both sides noted with satisfaction the growing cooperation between the group Gazprom and its Indian partners in the field of LNG trade. The Russian party welcomes the interest and connection of the Indian partners to cooperation in joint projects involving the establishment of LNG deliveries using the "Arctic LNG-2" factory facilities that are arranged by NOVATEK at the fields located on Gydansky peninsula and partly in the Ob Bay.

The parties welcomed the signing by NK Rosneft and the company ONGC Videsh Limited the contract of sale of 15% shares of Vankorneft, as well as negotiations to increase this share in the future. They noted the continuing interest of Indian companies to invest in Russia's hydrocarbon sector, in particular the discussion of NK Rosneft and the company Oil India Limited of promising investment projects, and called for the speedy coordination of new investment proposals.The sides welcomed the signing of main commercial terms of the contract for the supply of oil and oil products, by NK Rosneft and the group of industrial companies Essar, in December 2014, as well as the contract signed by them on 8 July 2015 "on the sidelines" of the BRICS summit in Ufa, for supply of oil for further processing on the refinery in Vadinare (India), providing, in particular, the entry of NK Rosneft in the authorized capital of the refinery. The parties noted with appreciation the offer of NK Rosneft to provide scholarships to Indian students interested in education in the oil and gas sector in Russian institutes[5].

It can be stated that cooperation of Rosneft, Gazprom with the Indian company ONGC-OVL, which has no serious experience in the development of Arctic fields, is determined, including the current policy considerations, by the desire to restore cooperation on a wide range of areas, to confirm interest in India as a powerful ally on the world stage. Moreover, Russia is interested in partners' finance of offshore projects. Participation of ONGC-OVL in Arctic projects will help the Indian company to gain a foothold in the Russian northern oil and gas market.

India even in difficult financial situation and tension in the social and economic spheres has no plans to cede the initiative in the Arctic matters to his opponent in the region — China. India is seeking to diversify its strategy in the Arctic and leaves space for maneuver, for example by supporting initiatives of the USA, China, Japan, in internationalization of access to Arctic resources and transport possibilities of the NSR. With high level of scientific development, India deploys various programs in the Arctic. Delhi hopes that the growing political importance of the country will strengthen the country's geopolitical position in the region and in the Arctic Council.

[5] Aleksandr Novak prinial uchastie v peregovorakh Prezidenta RF Vladimira Putina s Prem'er-ministrom Indii Narendroi Modi. http://minenergo.gov.ru/node/3710

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Summary

Авторы, аннотации, ключевые слова
Authors, abstracts, keywords

ЭКОНОМИКА, ПОЛИТИКА, СОЦИУМ И КУЛЬТУРА
ECONOMICS AND POLITICAL SCIENCE, SOCIETY AND CULTURE

Верещагин И.Ф., Сергичева Е.А. Моральные ценности в семейно-брачных отношениях молодёжи г. Архангельска

Ilya F. Vereschagin, Evgenia A. Sergicheva Moral values in family relations of youth in Arkhangelsk

Аннотация. В статье приведены результаты социологического исследования, проведенного в декабре 2014 — мае 2015 г. в городе Архангельске. Целью исследования было составление образа идеального брака, а также анализ роли моральных ценностей в семейно-брачных отношениях современной молодёжи г. Архангельска. С помощью таких методов, как анкетный опрос, анализ документов и экспертное интервью, были получены данные, во многом дублирующие результат опроса ФОМ и имеющие значение при прогнозировании изменения роли духовности в семейных ценностях молодёжи.

Ключевые слова: *брак, семья, молодёжь, мораль, ценность, духовность*

Abstract. The article presents the results of a sociological survey conducted in December 2014 — May 2015 in Arkhangelsk. The aim of the study was to make an image of the perfect marriage and analysis of the role of moral values in family-marriage attitudes of contemporary youth in the Arkhangelsk. By using such methods as questionnaire survey, document analysis and expert interviews, data were obtained, largely duplicating the result of the survey conducted by FOM and important in predicting the change of the role of spirituality in family values of youth.

Keywords: *marriage, family, youth, morality, values, spirituality*

Осипова О.В., Маклашова Е.Г. Миграционные намерения молодёжи Арктики в контексте субъективных оценок социального самочувствия

Olga V. Osipova, Elena G. Maklashova Migration intentions of the Arctic youth in the context of subjective evaluations of the social wellbeing

Аннотация. Целью данной статьи является представление результатов социологического исследования социального самочувствия молодёжи, проживающей на Севере Якутии. В настоящей статье внимание сосредоточено на двух основных вопросах: анализе миграционных намерений молодёжи и оценке качества жизни в Якутской Арктике. Устанавливается зависимость между демографическими показателями, миграционными намерениями и социальным самочувствием. На основе социологических данных заключается о существовании неудовлетворённости у молодёжи и в целом неблагоприятной ситуации в плане поддержания демографического баланса на Севере Якутии. Кроме того, авторы, опираясь на результаты анкетного опроса, предлагают некоторые рекомендации, направленные на закрепление населения в Арктике.

Ключевые слова: *молодёжь, Якутская Арктика,*

Abstract. The purpose of this article is to present the results of the sociological study of the social well-being of young people who live in the North of Yakutia. This article focuses on two main issues: analysis of the migration intentions of youth and evaluation of the quality of life of Yakut Arctic. The authors are setting the relationship between demographics, migration intentions and social well-being. On the basis of sociological data in the article conclusions are made about about existence of dissatisfaction among young people and generally unfavourable situation in terms of maintaining the demographic balance in the North of Yakutia. In addition, the authors offer some recommendations aimed at fixation of the Arctic's population, which are based on the results of the questionnaire.

Keywords: *youth, Yakut Arctic, migration, quality of*

миграция, качество жизни, меры по улучшению жизни в Арктике *life, measures to improve life in the Arctic*

Подоплекин А.О. Социально-психологическое самочувствие сельского населения прибрежной зоны Беломорья как фактор риска для арктической политики

Andrey O. Podoplekin Social-psychological well-being of rural population in the White Sea coastal area as a risk factor for the Arctic policy

Аннотация. В статье представлены обобщённые результаты социологического исследования социально-психологического самочувствия сельского населения прибрежных территорий Архангельской области (часть Арктической зоны РФ), проведённого в 2015 г. Показаны критический уровень социального пессимизма, уверенность граждан в сохранении негативной социально-экономической динамики, отсутствие мотивации и готовности к активному участию в решении вопросов развития территорий. Данное состояние имеет предпосылки в глубокой деградации объектов местного производства, инфраструктуры и социальной сферы, подтверждаемой данными статистики. Выявленные показатели обусловливают высокую миграционную готовность, особенно в группах трудоспособного возраста, что в среднесрочной перспективе создаёт риск обезлюдения и разрушения социального каркаса прибрежной зоны, обладающей существенным ресурсным потенциалом, и заселённость которой имеет стратегическое значение с точки зрения геополитических интересов России в Арктике. Решением, способным обеспечить позитивный тренд, может стать применение федеральными и региональными властями территориального подхода к социально-экономическому развитию, уже реализуемого в деятельности Госкомиссии по вопросам Арктики. Также актуальна корректировка законодательства, направленная на превращение жителей приарктических территорий в выгодоприобретателей освоения ресурсов макрорегиона, требующая создания специальных режимов и преференций в сферах природопользования, налогообложения, предпринимательства и кредитования для всех групп коренного (постоянного) негородского населения АЗРФ, включая малочисленные народы Севера.

Ключевые слова: *Россия, Арктическая зона, прибрежные сельские территории, коренное (постоянное) население, социально-психологическое самочувствие, миграция, баланс трудовых ресурсов, деградация местной экономики, территориальное развитие*

Abstract. The paper represents a generalized data from sociological survey of social-psychological well-being of the rural population of the coastal areas in Arkhangelsk region (included into the Russian Arctic zone) held in 2015. The data shows a critical level of social pessimism, assurance of residents in continuation of negative social-economic dynamics, deficiency of motivation and readiness for active participation and inclusion into the development of territories. Such a status is based on a deep degradation of local industries, infrastructures and social sphere, which has been confirmed by statistic data. The revealed indicators explain high migration preparedness, especially in groups of working ages, proceeding, in the middle-term prospective, to the risk of depopulation and disintegration of social frame in the coastal areas, which, in their turn, possess a significant resource potential. At that, residential population on these areas considered as strategic factor from the perspective of Russian geopolitical interests in the Arctic. A positive trend may be provided through implementation of spatial approach to the social-economic development, which has been already applied in activities held by the Russian State Commission on the Arctic Development. With that there is obvious relevance of correction of the Russian legislation toward transformation of residential population into the beneficiary party of the macro-regional development, which may be provided by establishing of special regimes and preferences in spheres of natural resource use, tax assessment, entrepreneurship and crediting for all groups indigenous (resident) population, including aboriginal people of the North.

Keywords: *Russia, Arctic zone, coastal rural areas, indigenous (resident) population, social-psychological well-being, migration, labor force balance, degradation of local economy, spatial development*

Шерстюков Б.Г. Климатические условия Арктики и новые подходы к прогнозу изменения климата

Boris G. Sherstyukov. The climatic conditions of the Arctic and new approaches to the forecast of the climate change

Аннотация. Описаны свойства колебаний климата, полученные в результате специального статистического анализа данных наблюдений мировой метеорологической сети станций с учётом особенностей северных регионов. На примере температуры воздуха рассматриваются свободные и вынужденные колебания характеристик климатической системы в их взаимодействии. Сформулированы новые представления о структуре колебаний и возможных причинах изменений климата. Предложена статистическая модель периодической нестационарности климата для прогноза колебаний климата на два десятилетия и предложена модель для сезонных и месячных метеорологических прогнозов с годовой заблаговременностью. Практическая значимость прогностических разработок особенно велика в суровых климатических условиях севера, где климат является одним из лимитирующих факторов промышленного развития северных регионов.

Ключевые слова: *изменения климата, колебания климата, ритмы, прогноз климата, долгосрочные прогнозы, климат Арктики*

Abstract. The properties of climate variability are represented resulting from the special statistical analysis of observations of the world meteorological network of stations, taking into account the features of the northern regions. By the example of air temperature free and forced oscillation of characteristics of the climate system in their interaction are considered. There are formulated new ideas about the structure of the oscillations and the possible causes of climate change. A statistical model of a periodic nonstationarity of climate is suggested for forecasting climate variations for next two decades and there is suggested a model for monthly and seasonal weather forecasts for the next year. The practical importance of predictive research is particularly high in the harsh climate of the north, where the climate is one of the limiting factors of industrial development of the northern regions.

Keywords: *climate change, climate variability, rhythms, climate forecast, long-term projections, the Arctic climate*

Арктическая двадцатка: 12 стран-наблюдателей Арктического совета
The Arctic Twenty: 12 observer countries of the Arctic Council

Ананьева Е.В., Антюшина Н.М. Арктическая политика Великобритании

Elena V. Ananieva, Natalia M. Antyushina Arctic policy of the UK

Аннотация. В статье рассматривается эволюция британской арктической стратегии, роль британских политических институтов в этом процессе, а также интересы и приоритеты политики, направленной на этот регион. Отмечается, что в настоящее время фокус внимания Британии обращён на изучение состояния окружающей среды в Арктике, а также на изменения климата. В будущем по мере развития арктических технологий и повышения изученности края будет возрастать интерес королевства к природным ресурсам арктической зоны, расширятся военные и оборонные интересы в регионе.

Ключевые слова: *Великобритания, Арктика, Арктический совет, Арктический посол, арктическая политика, британские*

Abstract. The article describes the evolution of the British Arctic strategy, the role of the British political institutions in this process, as well as the interests and policy priorities for the region. It is noted that currently the focus of the UK is addressed to the study of the environment state in the Arctic, as well as on climate change. In the future, with the development of Arctic technology and increasing scrutiny of the area, the interest of the Kingdom to natural resources of the Arctic zone will increase, as well as its military and defense interests in the region.

Keywords: *Great Britain, the Arctic, the Arctic Council, the Arctic Ambassador, Arctic policy, British petroleum Companies, the Scientific Council for the*

газонефтяные компании, Научный совет по изучению природной среды

Exploration of the environment

Антюшина Н.М. Страны-новички Арктического совета открывают для себя Крайний Север
Natalia M. Antyushina New comers of the Arctic Council open the Far North

Аннотация. В статье рассматривается становление арктической политики трёх стран-членов ЕС: Испании, Нидерландов и Польши, каждая из которых имеет в Арктике особые интересы. До сих пор Испания мало интересовалась Крайним Севером, но теперь она стремится развивать арктический туризм. Нидерланды накопили богатый опыт оффшорной добычи углеводородов, который может найти применение в северных морях. Польша проявляет высокую дипломатическую активность и стремится объединить вокруг себя страны, обладающие в Арктическом совете статусом обозревателя. Интерес всех трёх стран направлен в первую очередь на изучение изменений арктического климата и состояния арктической природной среды.

Ключевые слова: *арктическая политика, угроза затопления прибрежных территорий, глобальное потепление, Шпицберген, арктический туризм, арктические технологии добычи полезных ископаемых, устойчивое развитие Арктики.*

Abstract. The article is devoted to the study of the elaboration and realization of the Arctic policy in three countries-members of the EU. These are Netherlands, Poland and Spain. Up to now Spain is not very interested in the Arctic, but now it is very interested in the development of the arctic tourism. Netherlands possesses the wide experience in offshore extraction of hydrocarbons, which may be used in the Far North. Poland is very active and aims to unite the observer countries of the Arctic council. The study of the climate change and environmental conditions are the main objects of the interests of these three countries.

Keywords: *arctic policy, global worming, the threat of the flooding of the coastal areas, Svalbard, arctic tourism, arctic technologies for extraction of mineral resources, sustainable development of Arctic.*

Белов В.Б. Стратегия Германии в Арктике
Vladislav B. Belov Germany's strategy for the Arctic

Аннотация. В последнее десятилетие резко возросла активность Германии в арктическом регионе. С формальной точки зрения она связывает это с различными аспектами международной безопасности, в первую очередь, экологической и транспортной, необходимостью соблюдения прав народностей, населяющих граничащие с Арктикой территории, важностью проведения научных исследований в этом регионе. Но в реальности за этим стоят далеко идущие интересы по обеспечению национальной сырьевой безопасности, обеспечения доступа немецких концернов к арктическим ресурсам. Солидаризируясь и во многом определяя политику Евросоюза в Арктике, ФРГ в первую очередь ориентируется на свои долгосрочные хозяйственные и геополитические цели и задачи, которые она последовательно будет реализовывать в последующие годы как в рамках Арктического совета, так и за его пределами, в том числе в рамках сотрудничества с Россией.

Abstract. In the last decade Germany has increased activity in the Arctic region. From a formal point of view, the German state connects it with various aspects of international security (mainly — environmental and transport), with needs to respect the rights of peoples living in the Arctic regions and the importance of scientific research in the Arctic. But in reality, they are hiding far-reaching interests of safeguarding the national security of raw materials and access of German concerns to the Arctic resources. In solidarity and in many ways defining the EU's policy in the Arctic, Germany primarily is focusing on their long-term economic and geopolitical goals and objectives, which it will consistently implement in the coming years in the framework of the Arctic Council, and beyond, including within the framework of cooperation with Russia. This article is devoted to the analysis of these goals and objectives, as well as to the definition of medium-term trends in Germany's Arctic policy.

Данная статья посвящена анализу этих целей и задач, а также определению среднесрочных тенденций в германской арктической политике.

Ключевые слова: *Арктика, Арктический совет, Германия, Россия, кооперация, арктические ресурсы, сырьевая, экологическая, транспортная безопасность*

Keywords: *The Arctic, the Arctic Council, Germany, Russia, cooperation, Arctic resources, raw materials, energy, environmental, transport security*

Гриняев С.Н. Мотивы и интересы неарктических стран по освоению Арктики

Sergey N. Grinyaev The motives and interests of the non Arctic countries on the Arctic development

Аннотация. В статье подводятся итоги работы Центра стратегических оценок и прогнозов по изучению стратегии и политики стран-наблюдателей Арктического совета. Предлагается в число организаций-наблюдателей Арктического совета включить Русское географическое общество — международно-признанное и старейшее научное сообщество, внесшее существенный вклад в освоение Арктики.

Ключевые слова: *Арктика, страны-наблюдатели, Арктический совет, Центр стратегических оценок и прогнозов*

Abstract. The article summarizes the work of the Center for Strategic Assessments and forecasts on the study of strategy and policy of the Arctic Council observer countries. It is proposed in the number of the Arctic Council observer organizations include the Russian Geographical Society — internationally recognized and oldest scientific community, which has made a significant contribution to the development of the Arctic.

Keywords: *Arctic, observer countries, the Arctic Council, the Center for Strategic Assessments and forecasts*

Журавель В.П. Китай, Республика Корея, Япония в Арктике: политика, экономика, безопасность

Valeriy P. Zhuravel China, Republic of Korea and Japan in the Arctic: politics, economy, security

Аннотация. Китай, Южная Корея и Япония активно проводят научную, экономическую и политическую деятельность по освоению Арктики, арктических богатств, обеспечению в ней безопасности, стремятся к повышению своей роли в Арктическом совете, взаимодействуя и конкурируя с другими странами. В статье подчёркивается, что Китай находится на завершающей стадии подготовки своей арктической стратегии. Вместе с тем отмечается, что для Китая Арктика является важным, но не первостепенным приоритетом его внешней политики. Приоритетами Республики Корея в развитии и освоении Арктики, как показывает анализ, являются: проведение научных исследований, использование Северного морского пути для грузоперевозок, получение от арктических стран заказов для корейских судоверфей на строительство морских нефтяных платформ, специальных судов и ледоколов; развитие отношений с Россией. Усиливается интерес Японии к Северному морскому пути, научным исследованиям в Арктике. Рассматриваются попытки Японии разрешить территориальный вопрос с Россией. МИД Японии выступает за создание новой международной

Abstract. China, South Korea and Japan are actively pursuing scientific, economic and political activities for the development of the Arctic, the Arctic resources, ensure security in it, seeking to increase its role in the Arctic Council, cooperating and competing-Rui with other countries. The paper stresses that China is in the final stage of preparation of its Arctic strategy, however, it is noted that the Arctic is important for China, but not a top priority of its foreign policy. The priorities of the Republic of Korea in the development and exploration of the Arctic, as shown by the analysis conducted by, yavlyutsya: research, the use of the Northern Sea Route for the transportation, receipt of orders from Arctic countries for Korean shipyards for the construction of offshore oil platforms, special vessels and icebreakers; development of relations with Russia. Japan is a growing interest in the Northern Sea Route, scientific research in the Arctic. We consider Japan's attempts to resolve the territorial issue with Russia. Japan's Ministry of Foreign Affairs supports the establishment of a new interna-native structures in the Arctic, which was formed not on a geographical basis, and by the presence of economic interests in the region. Seoul supports the establishment, together with Russia a

структуры в Арктике, которая формировалась бы не по географическому принципу, а по наличию экономических интересов в регионе. Сеул выступает за создание совместно с Россией регионального механизма многостороннего сотрудничества в Арктике с условным наименованием «Азиатско-Тихоокеанский Арктический совет».

Ключевые слова: *Арктика, Китай, Южная Корея, Япония, Арктический совет, страны-наблюдатели, интересы, научные исследования, Северный морской путь*

regional mechanism of multilateral cooperation in the Arctic, with the code name "Asia-Pacific Arctic Council".

Keywords: *Arctic, China, South Korea, Japan, the Arctic Council, observer countries, interests, scientific research, the Northern Sea Route*

Журавель В.П., Данилов А.П. Сингапур на пути в Арктику
Valeriy P. Zhuravel, Artem P. Danilov Singapore on the way to the Arctic

Аннотация. Анализируются арктические интресы и потребности Сингапура. Если Китай, Япония и Южная Корея рассматривают Арктику в качестве источника нефти и газа, то Сингапур заинтересован не столько в полезных ископаемых этого региона, сколько в использовании своих технологий для их добычи. Для Сингапура Арктика является площадкой, на которой могут найти место её инновации и технологии. Сингапур добился статуса постоянного наблюдателя в Арктическом совете, что для него является удобной позицией для внимательного слежения за происходящими в Арктике политическими изменениями.

Ключевые слова: *Арктика, Сингапур, Арктический совет, страна-наблюдатель, арктические интересы и потребности*

Abstract. Singapore’s Arctic interests and needs are analyzed. If China, Japan and South Korea consider the Arctic as a source of oil and gas, Singapore is interested not so much in the mineral resources of the region, but in the use of their technologies for their production. For Singapore, the Arctic is a platform on which its innovation and technology can find a place. Singapore has achieved the status of a permanent observer in the Arctic Council, which for him is a convenient position for careful monitoring of Arctic political changes.

Keywords: *Arctic, Singapore, the Arctic Council, an observer country, the Arctic Institute interests and needs*

Лагутина М.Л. К стратегии Итальянской республики в Арктике
Maria L. Lagutina On the strategy of the Italian Republic in the Arctic

Аннотация. Данная статья посвящена анализу интересов Итальянской Республики в Арктике. Несмотря на географическую отдаленность Италии от Арктики, интерес итальянцев к арктическому сотрудничеству обусловлен историческими причинами: итальянцы участвовали в изучении Арктики ещё с конца XIX века. Именно научные достижения в области арктических исследований обеспечили Италии место в «арктическом клубе неарктических стран». В 2013 г. Италия стала наблюдателем в Арктическом совете, а в 2016 г. Министерство иностранных дел Италии представило документ «К итальянской стратегии в Арктике», где указаны интересы страны в регионе: решение проблемы изменения климата, развитие научного сотрудничества и экономическое освоение региона с участием ведущих

Abstract. This article is devoted to analysis of the interests of the Italian Republic in the Arctic. Despite the geographical distance Italy from the Arctic, the interest of Italians to the Arctic cooperation is due to historical reasons: Italians participated in the study of the Arctic since the end of the XIX century. That's scientific achievements in the field of Arctic studies have provided Italy's place in the "Arctic Club Non-Arctic countries." In 2013, Italy became an observer in the Arctic Council, and in 2016 the Italian Ministry of Foreign Affairs presented the document "Towards the Italian strategy for the Arctic", which shows the country's interests in the region to address climate change, the development of scientific co-operation and economic development of the region the participation of leading Italian companies. Thus, Italy marked the importance of the Arctic in the direction of its

итальянских компаний. Таким образом, Италия обозначила значимость арктического направления в своей политике. Россия — один из важнейших партнеров Италии в арктических делах. Поскольку экономические интересы имеют приоритет для обеих сторон, то основные проекты двустороннего сотрудничества сосредоточены в области энергетики и транспорта.

Ключевые слова: *Арктика, Италия, стратегия, интересы, Арктический совет, постоянный наблюдатель, международное сотрудничество, Европейский союз, Россия*.

policy. Russia is one of the most important Italian partners in Arctic affairs. As economic interests are a priority for both sides, the main bilateral cooperation projects focused on energy and transport.

Keywords: *Arctic, Italy, the strategy, the interests of the Arctic Council, the Permanent Observer, international cooperation, the European Union, Russia.*

Рубинский Ю.И. Арктические интересы и политика Франции

Yuri I. Rubinsky Arctic interests and policy of France

Аннотация. В статье автор рассматривает научную, экономическую и политическую деятельность Франции по развитию и освоению Арктики, обеспечению в ней безопасности. Наряду с некоторыми другими неарктическими странами, Франция не готова принять такое положение, когда восемь членов Арктического совета решают арктические проблемы от имени всего человечества.

Ключевые слова: *Франция, Арктика, Россия, Арктический совет, страны-наблюдатели Арктического совета, интересы Франции в Арктике, политика.*

Abstract. The author considers scientific, economic and political activities of France for the development and exploration of the Arctic, providing security there. Along with some other non-Arctic countries, France is not ready to accept such a situation, when eight members of the Arctic Council Arctic solve Arctic problems on behalf of all mankind.

Keywords: *France, Arctic, Russia, the Arctic Council, observer countries of the Arctic Council, France's interests in the Arctic, policy*

Шаумян Т.Л., Журавель В.П. Индия и Арктика: охрана окружающей среды, экономика и политика

Tatyana L. Shaumyan, Valeriy P. Zhuravel India and the Arctic: environment, economy and politics

Аннотация. В статье анализируются основные направления Индии в развитии и освоении Арктики: участие в исследовании процессов глобального потепления и состояния арктических льдов; использование Северного морского пути для грузоперевозок; расширение международного сотрудничества на арктическом направлении, в том числе с Россией.

Ключевые слова: *Арктика, Индия, Россия, Северный морской путь, Арктический совет, научные исследования*

Abstract. The article analyzes the main trends in the development of India and the development of the Arctic: the participation in the study of global warming and the state of the Arctic ice; the use of the Northern Sea Route for transportation; expansion of international cooperation in the Arctic direction, including with Russia.

Keywords: *the Arctic, India, Russia, the Northern Sea Route, the Arctic Council, scientific research*

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