



## **Attitude to climate changes in everyday management practice at the level of Kaliningrad region municipalities**

Interim Report on the ECOSUPPORT BONUS+ project  
"Advanced modeling tool for scenarios of the Baltic Sea  
ECOsysteM to SUPPORT decision making" and RFBR Project  
No 08-05-92421

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## **Summary**

A survey was conducted, based on a questionnaire developed within the projects ECOSUPPORT and BalticClimate. The respondents were representatives from municipalities in the Kaliningrad region. The answers showed that at the present time the climate related problems are not of high importance since other problems prevail, most of all – the socio-economic problems. Therefore the municipality management is performed without taking climate change into account despite the fact that many scientific institutions emphasize the problem of climate change and its consequences. Municipal development strategies were discussed and their relationship to climate change.

## **Sammanfattning**

Representanter för kommuner i Kaliningradområdet deltog i en enkätundersökning där frågeformuläret var utformat inom projekten ECOSUPPORT och BalticClimate. Svarssammanställningen visade att för närvarande rankas inte klimatrelaterade problem nämnvärt högt eftersom andra typer av samhällsproblem överskuggar, framförallt problem av socioekonomisk karaktär. Av denna anledning bedrivs kommunernas politik utan att ta hänsyn till klimatförändringar, trots att många vetenskapliga institutioner framhåller klimatförändringsrelaterade problem och dess konsekvenser. Avslutningsvis diskuteras utvecklingsstrategier för kommunerna i Kaliningradområdet i ljuset av klimatförändringen.



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## 1 Introduction

By climate we understand the longstanding statistical weather regime typical for the particular area due to its geographical location (Evaluation report ..., 2008). Its impact on all areas of human life is massive and any significant climate change brings disturbances in established activities in most spheres of human life: industrial and civil construction, agriculture, population health, use of recreational and aqua-resources etc.

Climate change is one of the most important international problems of the XXI century which falls beyond the scope of Earth sciences and represents a complex interdisciplinary problem comprising ecological, economical and social aspects of stable areas' development (Instruction ..., 2009).

An important factor to provide public adaptation to climate change should be the initiative of governmental authorities. At present time the president of the Russian Federation D. Medvedev has shown an initiative in the given field: on December 17<sup>th</sup> of 2009 by the instruction № 861-rp of the president of Russian Federation D. Medvedev the «Climatic doctrine of Russian Federation» was adopted.

The expected climate changes will unavoidably affect human, plant and animal life conditions in all regions of the planet, and in some of regions they will become a perceived threat to prosperity and stable development of the population.

The mentioned factors predetermine the necessity of taking climate change into account as one of the key long-term security factor in the Russian Federation and bring forth the problem of global climate change in its national and international aspects to the number of priorities of Russian Federation policy. Since the consequences of climate change effect global, regional, sub-regional and national levels (Instruction ..., 2009), there is a need to take climate-change processes into account when planning the development of all branches of human life, in both the nearest and distant future, also at the level of local government. At the present moment the municipalities of Kaliningrad region are finding their positions on the subject of their long-term development strategic priorities. Strange though it may appear in the century of material and technical progress, climate conditions may affect the success of these strategies greatly (Evaluation report ..., 2008).

To determine the idea of climate change and their impact on human life a survey was conducted among municipal administration bodies, ecological monitoring and environmental management organizations in the Kaliningrad region. The survey was handed out to the management and staff of mentioned institutions.

## 2 Method

The questionnaire was developed at the University of Linköping (Sweden) as a part of the international project ECOSUPPORT (Advanced tool for scenarios of the Baltic Sea ECOSystem to SUPPORT decision making, see <http://www.baltex-research.eu/ecosupport>) and BalticClimate, during 2009-2011 of the BONUS+ program (<http://www.bonusportal.org>). Since the questions were obviously oriented to EU countries they were slightly adjusted to the Russian context.

The survey consisted of four question blocks (listed below).

The survey was held in a quasi-interactive mode during a joint meeting on 26 of February, 2010. The respondents answered the questions synchronously, one by one, while the possible answers, prepared by the organizers (as though on behalf of the municipality member responsible for the environmental tasks) were demonstrated on a screen. This was necessary in order to provide a correspondence between the respondents' answers and the given subject, and not to let them slip away into other fields of their interests. The provided answers made no considerable influence on the respondents' answers since it was found out during the questionnaire processing that they did not occur often. Answering the questions did not require deep knowledge of climate change.

In total, 31 people were included in the survey. All of them were members of the municipal administration or environmental management organizations. Three groups of occupations among the respondents were distinguished:

1. Municipality management, marketing, transport, territorial management, port activity control, management organizing, economic policy development, industrial policy, international relations and tourism, municipal property management, territorial development.
2. Environment conservation, ecological monitoring, management of natural resources (governmental ecological control in marine waters, hydro-chemical control, socio-hygienic monitoring, terrestrial control and ecological monitoring), complex coastal zone management, marine living and non-living resources control, environment control in sphere of water management, coastal zone monitoring.
3. Tourism (excursion and recreation management in Kaliningrad region, Europe, worldwide).

After the questionnaires were processed the answering statistics was prepared.

### **3 Results**

Primarily, the main problems in the mentioned spheres from the respondents' point of view were identified, as well as which of them that are related to climate change. In the block №2 «Your opinion» it was suggested to the participants to state the problems of current interest and the ones that will be of current interest in 20 years.

The respondents included in the list of current problems such things as global financial crisis influence, problems concerned to the region's infrastructure imperfection (in particular, transport infrastructure problems), few small enterprises, poorly developed utility plants, water objects' pollution (in particular, pollution of the Baltic Sea by the vacationers of Vistula Lagoon), industrial capacity decrease, unemployment, increase of industrial plants number, bogginess of the lands (in the area of the Pissa River, due to the dams destruction), low skill level of personnel, low living standards of population, economical instability, Russian legislation imperfection, absence of environmental preservation methods within municipalities and lack of workplaces. All of these problems are not connected to climate change.

According to the opinion of the respondents the following problems may appear in 20 years: inundation of territories, depopulation, economic development lag, ecological situation decline, decrease of investment prospects of the region, skill level of personnel decrease, bank erosion,

social disaster, health deterioration of population, increase of industrial plants number and low living standards of population.

Among the problems in the sphere of municipality management the following groups of problem were distinguished by the respondents:

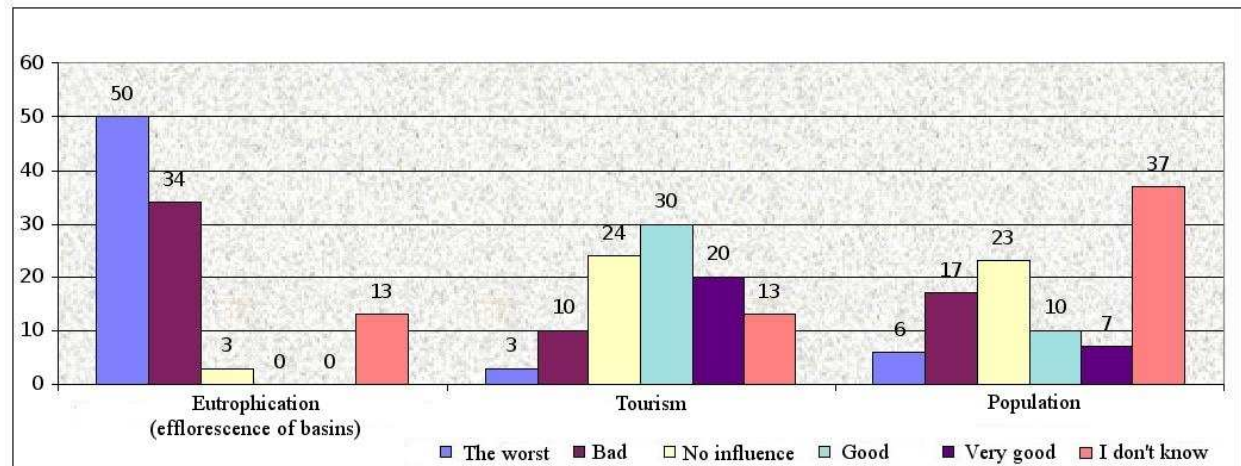
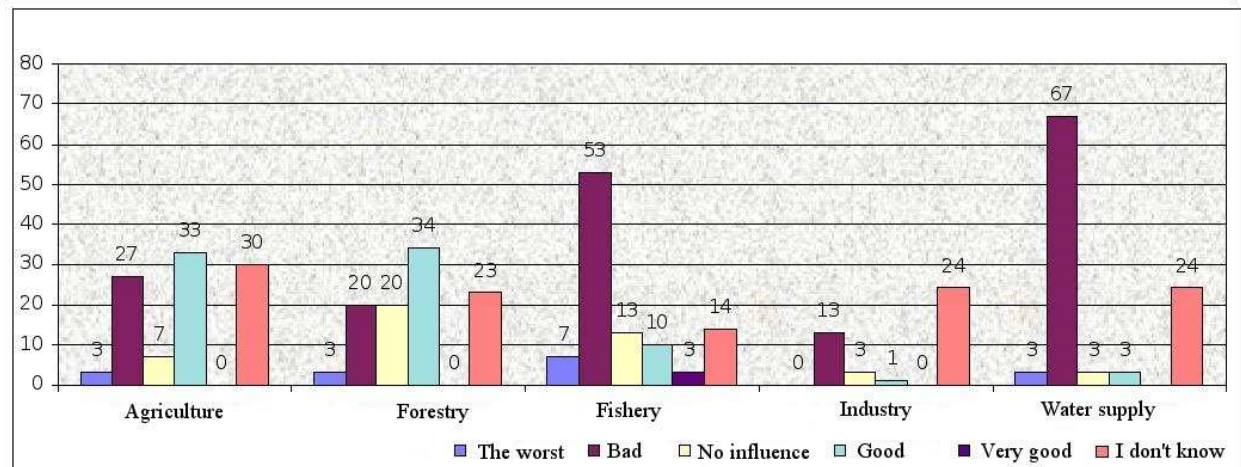
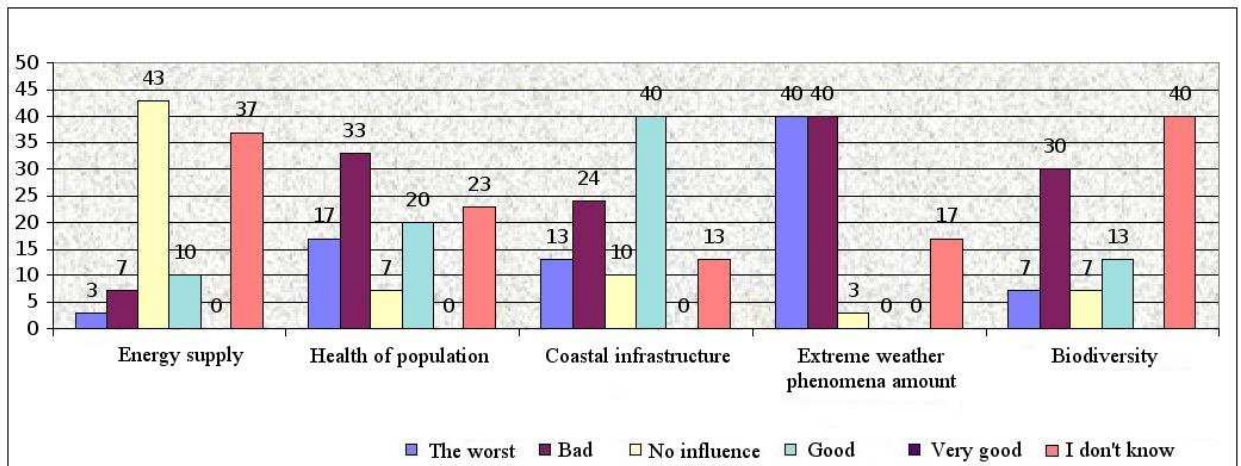
- problems of the poorly developed infrastructure in the region (first of all – the transport infrastructure)
- ecological problems (first of all – the pollution of the Baltic Sea and water objects, bogginess of the lands)
- socio-economic problems (depopulation, under-financing, legislation imperfection, low skill-level of personnel).

These groups not only characterize the up-to-date problems but the problems that may occur in 20 years by the respondents' opinion. Among all possible problems mentioned by the respondents, only coastal erosion, inundation of territories and soil degradation are concerned to climate-change processes.

When answering the question about the impact of climate change on the sphere of professional duties of each particular respondent the participants replied as following:

- 75% (23 persons) – said that climate change had an impact on their sphere of professional duties,
- 19% (6 persons) – said there was no impact,
- 6% (2 persons) – said they didn't know.

The questionnaire also contained the questions concerning the level of influence of climate change on different spheres of human life, such as industry, agriculture, fishery, etc. The answers are illustrated in the diagrams below (plotted in %).



Further the respondents were suggested to answer the question: «how serious are, in their opinion, the consequences of climate change currently and how serious they will be in 20 and 100 years». The answers represented a digit from 1 to 10, 1 meant there are (will be) no serious consequences, 10 – that there are (will be) major problems. Results for this block (they show how many respondents per cent that did chose the particular answer) are given in Fig. 2-Fig. 4.

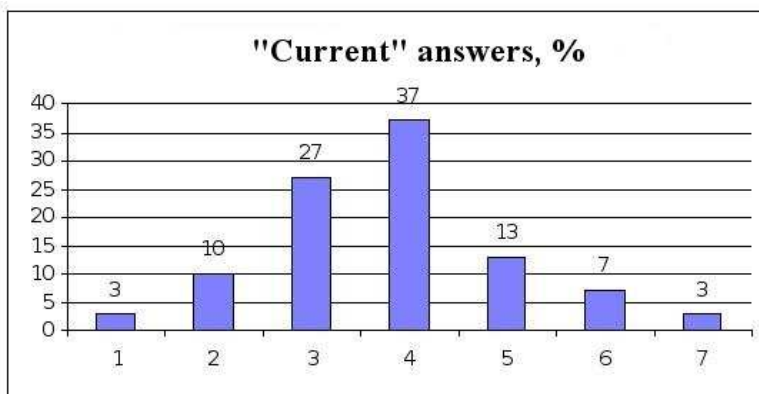


Fig. 2. Current number of problems connected with climate change.

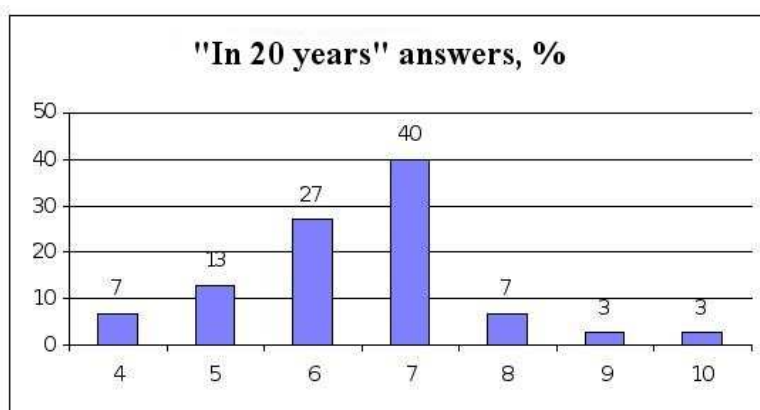


Fig. 3. Estimated number of serious problems connected with climate change in 20 years.

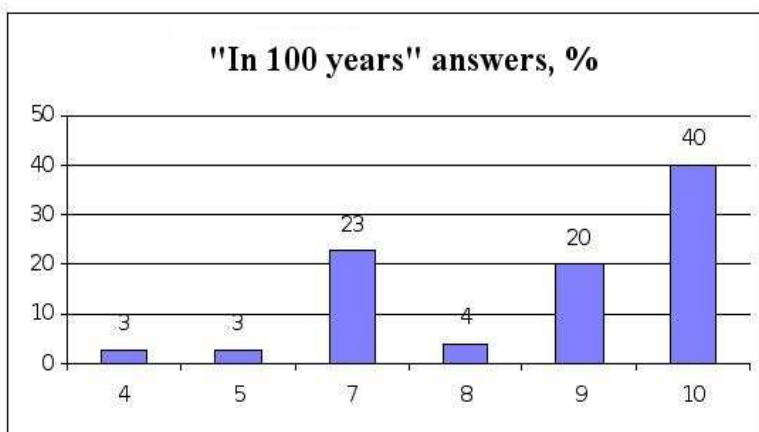


Fig. 4. Estimated number of serious problems connected with climate change in 100 years.

The objective of the next block «Your activity» was to estimate the level of influence, according to respondents, of climate change on their sphere of activities as well as respondents' awareness about different sources of obtaining information about climate conditions and climate change. Few kinds of such sources were proposed: scientific research and reports,

climate scenarios from National climate computer center, researchers, research companies, authorities, direction of organizations, Internet resources, mass media sources: local and national newspapers, television, educational classes, etc. The respondents were supposed to evaluate them indicating the level of usability and reliability of each source in their opinion.

According to the survey results it may be concluded that the most frequently used sources of climate change information are Internet and mass media. A little less frequently scientific/research, municipal authorities and science-based reports are used. The most trustworthy sources, according to the participants, are scientific/research reports, educational classes and Internet data.

With the help of the survey it was possible to identify which scientific knowledge respondents required in order to enhance the possibilities of stable management in the Kaliningrad region. Based on the survey the participants would use:

- more specific information about the field of interest
- data on the influence of climate change on agriculture
- regional scenario of climate change
- statistical and analytical data
- strategic forecasting of economic development
- environment change monitoring data
- ecological monitoring data
- standard exchange files of socio-hygienic monitoring
- Russian Federation stable development convention

When answering the question «What decisions and activities are of primary importance to manage stable development in your region?» the respondents gave the following answers:

- concurrence in the territories development
- increase of budget support
- regional infrastructure improvement
- cleaner production
- increase of the sea port appeal
- recreational development and financial improvement
- system approach to urban construction and development of small towns
- stable development strategy acceptance
- creating the reserves of generating capacity

- legible policy of natural resources control
- economical subjects stimulation to stable progress
- funding the treatment facilities construction
- ecological legislation observance
- water quality improvement
- different dedicated programs
- including the environment preserving arrangements in development strategies
- agricultural development
- development and modernization of HPU (Housing and Public Utilities)
- arranging the chain of SPNA (Special Protected Natural Areas)
- development of municipal plans of managing river basins
- municipal training of ecological specialists

The respondents think that the most efficient regional management in terms of global climate change in the first place requires statistical and the environment monitoring data. As for the measures to provide a stable development of the region, the respondents consider that the most important are those concerned with improvement and preservation of the environment by means of creating SPNAs, industry disposal improvement and increasing legislative pressure in the sphere of ecology.

In the last questionnaire block «Possible development scenarios» the respondents were given four hypothetical scenarios of future development of Kaliningrad region / Russia (A. Hansson) and were suggested to choose one scenario of region development in 2050 as the most believable and one as the most prosperous.

**Scenario 1:**

- 1.1. Ever increasing integration of the region into the world trade and into Europe.
- 1.2. Constant swell in population and unemployment level decrease.
- 1.3. The role of market and private enterprise strengthens, infrastructure and social services privatization takes place.
- 1.4. Strong economic growth.
- 1.5. The management is minimal, private and commercial spheres prevail.
- 1.6. High energetic expenses and growth of transport needs for people's and goods' carriages.
- 1.7. The population is concentrated on few developing territories.

**Scenario 2:**

- 2.1. Government sector is minimized and privatized, the market power grows. Weak system of social service.
- 2.2. Weak economic growth and high level of unemployment.
- 2.3. Major industrial companies prevail in regional and global policies.

- 2.4. Increase of local international conflicts number.
- 2.5. One's own values and guides dominate, "the fittest survive".
- 2.6. Increase of differences between the rich and the poor ones.
- 2.7. Depopulation.

**Scenario 3:**

- 3.1. Strong public sector, it tends to stable progress and balances between social and economic development.
- 3.2. Strong economic growth but not as strong as in Scenario 1.
- 3.3. Brand new international management focused on resolving global problems.
- 3.4. International agreements and laws play the significant role.
- 3.5. Public infrastructure is in good state and it is focused on railway and cycle transport.
- 3.6. Ecological tax reform.

**Scenario 4:**

- 4.1. Frequent economic crises.
- 4.2. Powerful local communities as a reaction to international instability.
- 4.3. Disintegration of political forces and decrease of regional and international coordination and control.
- 4.4. Private enterprise and independent growth.
- 4.5. Weak economic development and growth of shadow economy, high level of unemployment.
- 4.6. Weak public sector and minimal investments into infrastructure.
- 4.7. Standards of living are better in small towns than in big cities.

When answering the question about the most probable development in the region/country in 2050 the respondents' opinions divided equally between all the scenarios, including 20% of abstained participants. As for the most prosperous scenario 50% of the respondents chose the third one, 30% the first one and 6% the fourth one. Three participants abstained which was odd since we had expected all the respondents having clear opinions on the desired future. At the present time long term (5 to 16 years) development strategies are accepted in all municipalities of the Kaliningrad region. The main directions for the development are:

- Amber mining and processing
- Electric power industry
- Industrial production
- Agriculture
- Food industry
- Port and ground transportation
- Recreation and tourism
- Environmental preservation

Such drifts as tourism, agriculture, environmental preservation are directly connected to climate conditions and therefore the climate change will significantly influence them which in its turn will require adjustment of the development strategies.

For instance, 15 out of 22 municipalities in the Kaliningrad region, one way or another, connect their progress to agriculture (Table 1.). However, 30% of the respondents answered that they didn't know how the climate change would influence the agricultural sphere. Approximately an



equal number of respondents considered a positive or negative influence of climate change on agriculture as equally likely. The agricultural development strategy in municipalities does anyhow not take into account possible climate change on the territory of the Kaliningrad region (Fig. 1.).

Tourism is one of the main directions of socio-economic development of the Kaliningrad region included into the 15 municipalities' development strategies. Most of the respondents agreed that climate change will have positive consequences for the tourism development in the region (Fig. 1.). However, among the answers the large numbers of "don't know", "will not influence" and "negative" are present (Fig. 1.). Therefore the accepted tourism development strategy does not anyhow take into account possible climate change either.

Administrative unit	Strategic development direction							
	Amber mining and processing	Energetics	Industrial production	Agriculture	Food industry	Marine and ground transport	Recreation and tourism	Environment preservation
Kaliningrad UD			B			A	C	
Ladushkin UD							A	
Mamonovo UD			B			A	C	
Pionerskiy UD						A	B	
Svetliy UD			B			A		
Sovetsk UD			A					
Yantarny UD	A						B	
Bagrationovskiy MA				A			B	
Baltiyskiy MA			C	D		A	B	E
Gvardeyskiy MA			A	D	B	C	E	
Guryevskiy MA			A	C			B	D
Gusevskiy MA			A	B				
Zelenogradskiy MA			C	B		D	A	
Krasnoznamenskiy MA		C	B	A			D	
Nemanskiy MA		D	A	B			E	C
Nesterovskiy MA			B	A				
Ozerskiy MA				A				
Poleskiy MA				A	B			
Pravdinskiy MA				A				
Svetlogorskiy MA			B	C			A	
Slavskiy MA			B	A			C	
Chernyakhovskiy MA			C	B		A	D	
Kaliningrad region			III(5)	I(7)		II(6)		
Coastal municipalities				III(5)		I(5)	II(3)	
Inland municipalities			II(4)	I(4)		III(1)		
Popularity	1	2	15	15	2	8	15	3

Legend

A	1 <sup>st</sup> strategic direction	I(5)	development direction of 1 <sup>st</sup> priority (number of municipalities considering this direction 1 <sup>st</sup> strategic)
B	2 <sup>nd</sup> strategic direction	II(4)	development direction of 2 <sup>nd</sup> priority
C	3 <sup>rd</sup> strategic direction	III(3)	development direction of 3 <sup>rd</sup> priority
D	4 <sup>th</sup> strategic direction		coastal municipalities
E	5 <sup>th</sup> strategic direction		inland municipalities

Table 1. The strategies of municipalities regional development (Andriashkina & Domnin, 2009).

Such drift as environmental preservation is directly related to the climate. However, this is present in the strategy of three municipalities and cannot be considered as a good factor. Almost all human activities imply a load upon the environment and successful stable progress

of the territory requires measures to be taken in order to compensate the negative effects. Besides, due to the relatively small size of the Kaliningrad region the results of environmental preservation activities taken by a municipality may be negated by the load caused by its neighbors. That is why the strategies of all municipalities of the Kaliningrad region should contain environmental preservation strategies.

More than a half of municipalities in the Kaliningrad region are located by the coast, but none of them take into account the impact made by climate change on the coastal zone. Among the respondents it is considered that climate change will have positive effects on the regional coastal zone – 40 % of respondents think so (Fig. 1.).

One of the negative consequences of climate change is sea-level rise; the plot shows us average annual value of sea-level in Baltiysk for 15 years (Fig. 5).

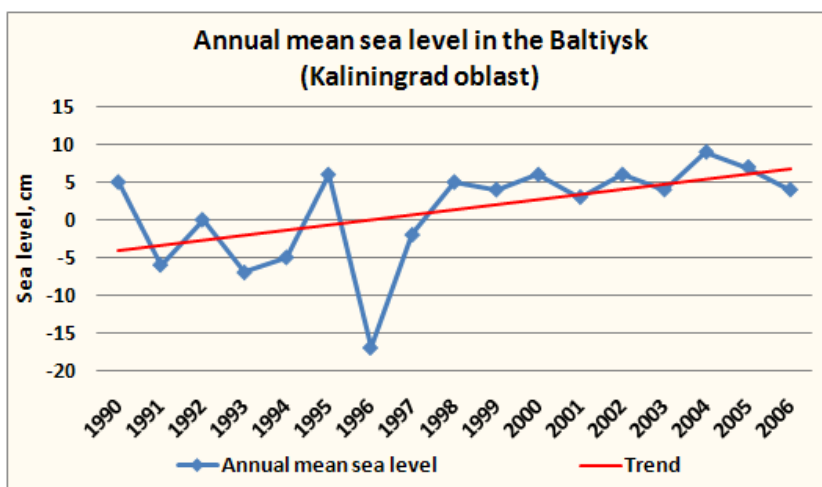


Fig. 5. Baltic sea-level in Baltiysk for 15 years (State of the Coast , 2009)

As one can see from the plot, in the period between 1990 and 2006 the sea-level rose by almost 10 cm. This trend will lead to increase of the coastal abrasion and therefore it is necessary to consider this when developing the region strategy, not only for the waterside municipalities but also for the districts with polder lands because the sea-level rise may lead to their inundation.

#### 4 Discussion

For all the respondents the problems caused by climate change seem to be of secondary importance as they have to solve the problems connected with other spheres first. This is attested to by the list of the problems made according to respondents' answers. The most significant problems seem to be socio-economic aspects. Also, it may be noticed that the respondents' answers show very few differences between the current problems and the future ones. Climate change-related problems play a part only in two answers: coastal abrasion and inundation of territories, though a lot of problems related to climate change actually exist.

It is necessary to take changing climate conditions into account when projecting buildings, technical constructions, communications and means of transportation as well as when developing service instructions for them – this can increase the adaptation potential in economic sphere. To prevent possible breakdowns of pipeline transport it is essential to

reconsider downwards expected useful lives of underwater pipe reducers and to organize effective monitoring system of pipelines condition. To avoid basement underflooding, deformation and weakening caused by ground water raise it is necessary to arrange an investigation of monuments of the past and other important buildings and constructions in order to prepare and accomplish preservation measures for them, including measures of water regime management of under-flooded territories. To reduce damage caused by floods and to protect the population, the efforts should be focused on developing modern automated systems of forecasting and prevention of floods as well as on creation of basin anti-overflow security systems. Besides, land-use systems in the risk zones should be regularized and the regulatory framework defining legible responsibility of government authorities and municipalities administration for the floods' consequences should be improved (Evaluation report ..., 2008).

When answering questions regarding climate change impact on different spheres of human life, industry and agriculture, the number of “don't know” answers is high (Fig. 2.). This shows the respondents' lack of familiarity with climate change matters and how they affect different spheres of human activity despite the fact that evaluation reports on the subject of climate change and its consequences on the territory of Russian Federation are available. One can also notice a certain scatter of opinions regarding climate change impact on human activities. This is most likely a sign of lack of conceptualization of climate change and its consequence (Fig. 1.).

The reason for the absence of distinct conceptions of climate change and its consequences is, most probably, a result of the overshadowing effort of solving more urgent short-term problems not related to climate change. Still this problem one way or another evokes concern and the results of the survey strengthen this notion e.g. by the respondents' expressed wish to possess scientific data regarding climate change and its consequences.

The development strategies chosen by municipalities in the Kaliningrad region do not only ignore the trends of climate change but practically do not focus on nature preservation at all, although it is essential for the stable development in both particular districts and the extended region. Only three municipalities (Table 1.) have nature preservation trends in their long term progress plans. However, most of the respondents agree that climate change actually causes problems and that the number of such problems will eventually increase (Figs. 2-4).

## **5 Conclusions**

At present time the climate change-related problems are not even close to be considered to be of high importance since other problems prevail, most of all – the socio-economic problems. Therefore the municipality management is performed without taking climate change into account despite the fact that many scientific institutions emphasize the problems of climate change and its consequences. For the public involvement and, first of all, management involvement in the climate change problem, the development of climate change scenarios for each region and the descriptions of both local and global consequences are necessary. As a result of the discussion we claim that it is necessary to hold special classes and explanatory work among the municipal authority staff members and specialists involved in nature preservation activities and environmental control. This is essential in order to provide a stable development in the Kaliningrad region even under the conditions of climate change.

## **6 Acknowledgements**

This study is part of the project ECOSUPPORT (Advanced modeling tool for scenarios of the Baltic Sea ECOSystem to SUPPORT decision making, see [www.baltex-](http://www.baltex-)

research.eu/ecosupport), one of the 16 funded projects within the BONUS+ program (<http://www.bonusportal.org>). Financial support from RFBR, grant “Modern toolkit of modeling the scenarios of Baltic ecosystem development for decision support” № 08-05-92421, is acknowledged. Authors appreciate valuable remarks of Markus Meier and efforts of Anna Shishova in translation of the text into English.

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| 2 | Barry Broman och Carsten Pettersson.<br>(1985)<br>Spridningsundersökningar i yttre fjärden<br>Piteå.                           | 10 | -   |
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- Slutrapport för perioden  
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- 18 Stig H. Fonselius (1987)  
Kattegatt - havet i väster.
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