Habitat Scroll of Honour
Nomination for the 2011 award

Implementation of the program “Integrated development of the territories of the Yakutsk city” in the Far North.”

1. Background
The Sakha Republic (Yakutia) ranks with the regions of the Far North in accordance with the laws of the Russian Federation.

Yakutsk, the capital city of the Sakha Republic (Yakutia) was founded in 1632 and is one of the oldest cities in Siberia and the Far East of the Russian Federation. Yakutsk is the biggest administrative, industrial, financial, scientific and cultural centre of republican and federal significance in the Russian North-East, a major transportation hub.

Yakutsk is the only megapolis in the Far North in east part of Russia. It is situated at the extreme latitude of 62°N on the left bank of the river Lena on a permafrost zone. The average depth of the permafrost can be as much as 300-400 m, in some places it is 1,500 m. It is the maximum depth of permafrost on the Earth.

The climate pattern of Yakutia is sharply continental; it is expressed in large annual fluctuations in temperature reaching 102°C in Yakutsk (at different times it was registered -64.4°C and +38.3°C). The temperature range of more than 101°C is the greatest in the world. Winters are long (6 months) and cold with little snow. The average temperature in January is around -46°C, often drops to -50°C. Snow cover forms in mid-October and lasts for 203 days. The average temperature in July is +18.7°C.

The time difference between Yakutsk and Moscow is 6 hours and it is 8468 km from Moscow. Its territory is 122 sq. m. The administrative-territorial structure is comprised of 14 settlements. The population is 296 000.

Science and Education. The Yakutia Scientific Centre and the Academy of Science of the Sakha Republic contain 14 research institutes of the academic profile, 7 industrial institutes and other scientific organizations. More than 80% of them are located in Yakutsk. Structural arrangement of a new laboratory of the northern cities environment at the Academy of Science of the Sakha Republic (Yakutia) is being considered at the present. It will develop practices to preserve the ecosystem of the northern cities.

Higher professional education is presented by 6 state institutions of higher education and branches of different state and non-state institutes and universities of Russia. There are more than 30 thousand students.

Culture. Yakutsk has 6 theaters, ethnographic, historical, mineral museums, where one can learn history, culture, flora and fauna of the northern country. Among them there are unique museums – the Mammoth Museum and the International Museum of Khomus (Vargan) Music.

Yakutsk has Russian Orthodox and Catholic churches, a mosque and a House of Spiritual Development of Sakha people “Archy”.
Industrial development. Industrial capacity of Yakutia is based in Yakutsk. It includes diamond cutting, jewelry, power and coal industries, wood processing and wood products plants, publishing, printing and food production.

Health services. The city has more than 40 medical outpatient clinics. The Yakutsk National Centre of Medicine with the Maternity and Childhood Centre is the largest in the Russian Far East.

International relations. Yakutsk is a member of the International Assembly of Capitals and Major cities, the Russian Union of Historical Cities and Regions and the Euro-Asian section of the United Cities and Local Governments. Yakutsk is twinned with Fairbanks, Alaska (USA), Harbin (China), Changwon (South Korea), Murayama (Japan) and a City-Partner of Heihe (China).

Yakutsk was awarded the Order of Labor Red Banner and Order "For contributions to the Victory" in honor of the 65th Anniversary of Victory in the Great Patriotic War.

2. Description of the initiative or project

By the middle of the first decade of the 21 century Yakutsk had undeveloped infrastructure, coming short of the set of parameters compared to some cities in economically developed regions of the country. The challenges are the lack of proper water disposal system, undeveloped road network and the failure to improve intra-area. Different natural destructive processes related to climate change occur on the ground. An improper water disposal system is the major cause of flooding of the territory of Yakutsk, waterlogging, high wear of load-bearing structures of buildings and deterioration of sanitary conditions in the city. The drainage system binding was ignored or carried out in an improper amount when repairing the facilities of the road network. As a result there are short lived roadways due to the ground flooding causing frost boiling and downwarplings (caves).

The city of Yakutsk is in the zone of continuous centuries-old permafrost and big annual temperature changes. There is a high degree of potential emergency situations due to accidents on the engineering service lines in winter season. The processes of land subsidence, frost heaves, cracking, water-logging and flooding, man-caused aufeis formation lead to destructions of road surfaces and pipelines, deformations of embankments and foundations, etc.

Insufficient documentation of the land planning has led to an infill construction of the built-up areas, which clearly led to a deterioration of living conditions of the citizens. It heavily burdened the existing municipal infrastructure that is already worn out.

There is a large number of one-and-two storey apartment buildings constructed in the 1970s without ventilated undergrounds. When severe frosts cause burst of heating pipes, sewage or running water pipes water enters the ground under the buildings. As a consequence distortion of ground temperature regime, permafrost defrosting, water-logging, soil salination and heaving occurs.
As a result the upper limit of permafrost area can go down to a depth of 15-20 meters.

These problems combined with geographical features of Yakutsk (severe climatic conditions, remoteness from the major centers of the country and the continent, the low level of transport accessibility) prevented from providing proper safety and favorable living conditions for the citizens and guests of the city, have contributed to a migration outflow of the economically active and competitive citizens.

The municipal target program “The Integrated Development of the city of Yakutsk” was developed in 2008 to address prevailing problems. The program implementation began in 2009. It is one of the largest infrastructure projects in the history of the city.

It should allow Yakutsk to move to a qualitatively different level of development in the foreseeable future.

The program is aimed to address the problems associated with the low level of urban infrastructure, and it is a set of interrelated activities to establish a unified system of drainage facilities, improving the structure of the road network, increasing its length, to ensure development of the inner city areas leading towards integrated construction of the elements of the city planning pattern (blocks, neighborhoods, and other elements). These are included in the main subprograms:

- “Provision of Drainage Facilities”
- “Development of the Street and Road Network”
- “Reconstruction and Development of the Inner City Areas”
- “Procedural and Institutional Support of the Urban Planning”

The program took into account many factors - the permafrost, challenging terrain, new drainage constructions and over-permafrost and rainfall volume on engineering facilities, distinctive features of the road network construction and high-rise buildings on permafrost. For the first time the construction of buildings and roads have been fully coordinated and linked with the measures of reconstruction and creation of a unified system of drainage in permafrost.

Yakutsk is located on the flat floodplain where water is drained through existing natural channels, streams and rivers. This problem is addressed in the program “Provision of drainage facilities”, which outlines all the activities of the three-level water drainage from the built-up areas.

This program is aimed at provision of drainage through the construction of new and reconstruction of the existing drainage facilities, upgrading the basic equipment for melt-water evacuation, creating comfortable and safe living conditions of the urban population through reconstruction and construction of the city canal and a storm sewage system, preserving permafrost, ensuring environmental safety of the city through the rational use of its natural resources, restoration of suburban and urban lakes.

A gridiron plan with drainage trays and a storm sewage system started in 2009 according to the program of the integrated development of the city of Yakutsk in conjunction with the architectural and land management enterprises. For Yakutsk it is a real breakthrough because it is located in the permafrost zone and draining of the territory is necessary to ensure the seismic resistance of the
residential and industrial buildings. At the same time a program of seismic resistance of buildings was developed. As a part of the subprogram “Development of the Street and Road Network” the reconstruction of one of the main highways of the city the Vilyuiskiy tract is completed with the use of funds from the federal and republican budgets in the amount of 130 million 980 thousand rubles. In 2009 repair works on the Zhornitskaya street were completed. In 2010 the reconstruction of the Stroitelnaya street and the construction of a byroad starting from the 50 let Oktyabrya highway to the 50 let Sovetskoy Armii street was completed. It is an essential part of the ring road highway of Yakutsk. All the works in the above mentioned streets and highways were done taking into consideration the subsidence of the soil and provision of secure water drainage system.

The third and fourth of these subprograms allowed to start a planned construction of new residential quarters and expansion of urban areas, significantly reducing infill construction and improving the existing residential quarters.

476 million rubles were released from the budget of the city of Yakutsk for the municipal target program “the Integrated Development of the city of Yakutsk” in 2009 and 591 million rubles in 2010.

In 2009-2010 the development of the road network was funded with the use of 635 million rubles. 65 million rubles were funded from the local budget. In 2009 from that amount 18 million 800 thousand rubles were released for the construction of gutters and 123 million 500 thousand rubles in 2010.

In 2009-2010 35 million rubles were sent for the integrated improvement of the residential quarters. Two residential quarters (16 and 69) of Yakutsk were improved.

The program is being implemented according to the General Development Plan of the Yakutsk territories and together with the municipal target programs "Housing for the Employees of the Public Sphere (2009-2013)", "Resettlement of the citizens from the dilapidated buildings", “Housing for the Young Families in 2006-2010”, the target program "Major Repairs of the Apartment Buildings” and other.

In 2009-2010 the scheduled activities on demolition of dilapidated houses and resettlement were carried out. 418 families were resettled with the use of funds from the federal, republican and municipal budgets. The program "the Major Repairs of the Apartment Buildings” is being carried out taking into account new technologies and the outlined activities of the program “Integrated Development of the city of Yakutsk”. In 2009 major repairs were carried out in 152 apartment buildings. The amount of financing was 303 million 338.340 thousand rubles including 15 million 166 thousand rubles from the local budget. In 2010 major repairs were carried out in 48 apartment buildings with funding of 222 million rubles including 16 million 300 rubles from the local budget. The service quality and housing stock maintenance were improved due to the major maintenance with the use of the latest scientific technologies. It improved the living conditions and reduced the wear resistance of the houses, as well as the likelihood of industrial accidents in the extreme conditions of the Far North.
The housing construction in the city is growing annually. 155,037 sq.m. of housing were built in Yakutsk in 2009 and 170,417 sq.m. were built in 2010 using all sources of funding.

In 2009 2558 families moved to the new apartment building. They were built with the use of 5 billion 122 million 818 thousand rubles. 33 multi-storey buildings were built with the use of new technologies.

In 2010 2673 families purchased new apartments and houses. They were built with use of the funds accumulated by the private-state sector partnership in the amount of 5 billion 390 million 883 thousand rubles. 29 apartment buildings were built with the use of new technologies.

3. Main partners

Financial and Regulatory support. The assistance in implementing of the program in the city of Yakutsk is carried by the state authorities of the Russian Federation and the Sakha Republic (Yakutia).

In 2009-2010 for the implementation of the development of the street and road network program 439 million rubles were released from the republican budget and 131 million rubles from the federal budget. In 2009 for the major repair of the apartment buildings 79 million 823 thousand rubles were released from the republican budget and 208 million 347 thousand rubles from the federal budget and in 2010 108 million 700 thousand rubles and 97 million rubles respectively. The federal funds are released according to the Federal Law “About Fund of assistance to reforming housing and communal services” N185-FZ.

In 2009 the Economic Council of the Government of Yakutia approved a targeted program "Socio-economic development of the Municipal District of the City of Yakutsk in the period 2009-2012".

Scientific support. The main partners are:
- the Academy of Sciences of the Sakha Republic (Yakutia)
- The Permafrost Institute of the Siberian Branch of the Russian Academy of Science.

Contribution to the program by the referred research institutions is to develop innovative technologies in construction of buildings, structures, linear objects (roads and communications), new drainage systems, water catchment tanks within neighborhoods, as well as the scientific basis for creating a favorable social environment in specific conditions of the Russian North.

In 2009 there was a joint scientific session of the Yakutsk city and the Academy of Sciences of the Republic of Sakha (Yakutia) “The scientific support of the program of the integrated development of the territories of Yakutsk”. (http://www.znanie14.ru/news/254).

4. Impact
The successful realization of the municipal target program “Integrated development of the territories of the Yakutsk city” together with other social-economic projects has led to the population growth and improvement of the living standards. According to the residents evaluation due to the measures undertaken by the administration of Yakutsk and the government of the Sakha Republic (Yakutia) the quality of life has improved considerably compared with the early 2000s. Yakutsk is the only city in the Russian Far East where there is a rise in birth.

Due to the undertaken measures and the implementation of the program the resident population of the city is increasing. Since 2000 the stable increase of the population has been due to the natural increase and migration. The natural population growth compared with 2000 (799) was 3142 people in 2009, 3076 in 2010. The natural growth is sustained by the significant increase of birth: 3191 were born in 2000, 5490 in 2009 and 5547 in 2010.

The migration balance remains positive. From 2000 to 2010 the number of arrivals to the city for permanent residence was 88.5 thousand people exceeding the number of departures by 26.2 thousand people.

Given the preliminary results of the National Population Census 2010 the population of Yakutsk at the beginning of 2011 amounted to 296.4 thousand people. Thus, for the period between the censuses of 2002 and 2010, the population of the city of Yakutsk has increased by 20 percent.

Number of large families is growing every year in Yakutsk. The Russian Government provides money incentives to women who give birth (adopt) to a second, third and subsequent child as a State Mother Certificate. In the city of Yakutsk, the number of certificates issued in 2007 was 1207, in 2008 was 1856, in 2009 was 2675 and in 2010 was 5394 totaling 3 billion 673 million 650 thousand rubles.

Yakutsk is one of the leading cities in Russia by the number of senior residents and the long living people. By January 1, 2009 in Yakutsk there were 10649 residents of 70 years and older, in 2010 – 11082 people, including 13 people who are over 100 years old.

Average salary of the population has increased in Yakutsk in 2010 by 9.1% compared to 2009. Consumer expenditure per capita in 2010 increased by 13.8% compared to 2009.

By construction per capita Yakutsk took a leading position not only in the Far East, but also in Russia.

Yakutsk in recent years has become a testing ground for the development of urban innovations. These projects are unique, as they prove the possibility of applying the latest technologies and materials in the harsh and extreme climatic conditions of the Far North.

5. Sustainability
The original version of the program “Integrated development of the territories of the Yakutsk city” was assigned for 2009-2013. It was decided to extend the deadlines for implementation of the program due to the high evaluation of the effectiveness of the first phase in 2009-2010. In the beginning of 2011 the city administration decided to prolong the target program "Integrated development of the territories the city of Yakutsk" for 2011-2015, covering four main subprograms (included). The total funding of the program will exceed 10 billion rubles (about $355 million), including 2.5 billion from the local budget funds, 7.6 billion rubles from the republican budget, 205 million rubles from the federal budget and 55.5 million rubles from the extra-budgetary funds.

The implementation of the program “Integrated development of the territories of the Yakutsk city” attracted investments in urban infrastructure development, ensuring proper drainage system, repair works of the road network, construction of housing and social amenities. In 2011, for major repairs and reconstruction of the eight main streets of the total length of 9850 m and 11,771 m drainage sewer will be spend almost 904 million rubles.

Constructions of public facilities have been increased with the funds from the municipal and republican budgets. A secondary school for 300 students and a kindergarten for 140 children were built in 2009. In 2010 a kindergarten for 240 places was built. In 2009, "Polyclinic № 5" and "Yakutsk City Hospital № 5" were built. In 2010 a modern building for the cardio-vascular center, was opened. The construction of several sports facilities, including unique in the permafrost swimming pool has been started. These will be commissioned in 2012. In 2009 on the construction of social and domestic purposes 202 million 177 thousand rubles were released from the local budget, while in 2010 it was 324 million 500 thousand rubles.

Together with the program “Integrated development of the territories of the Yakutsk city” a new municipal target program "Improving the sustainability of residential buildings, basic facilities and livelihood systems in the Yakutsk city, 2010-2013" was developed, which includes a set of coordinated measures to ensure the reliability of housing and social facilities.

Currently, the republican and municipal budgets annually allocate funds for the development of scientific research on the prevention of risks caused by adverse climate in the Republic of Sakha (Yakutia) and in Yakutsk.

6. Transferability and upscaling

The biggest part of the activities of the program “Integrated development of the territories of the Yakutsk city” was designed taking into consideration particular geographical position of Yakutsk, caused by severe climatic conditions and permafrost. This factor causes difficulties in the development of the urban infrastructure.

A unique experience of Yakutsk that addresses the challenges caused by the above-mentioned reasons can be applied in other populated areas located in the
permafrost area and areas with the threat of thawing and subsidence due to adverse climate change.

A long-standing sister city of Yakutsk is Fairbanks (Alaska, USA). There is an agreement on cooperation and friendly relations between the two cities. There is fruitful exchange of experience and various innovative technologies that can be applied in the development of urban infrastructure for the northern and arctic areas.

7. Innovation

Given the harsh climatic conditions, the experience of Yakutsk in the complex construction of houses, buildings, communications, roads and drainage systems is unique in the Eurasian region and the wider world. Constructions are carried out by using innovative technologies developed by the research institutions in relation to the specific conditions of the Russian North (permafrost, big temperature differences and topographic features).

Applied method of pile construction, to protect the permafrost from thawing, including the unique technology of constructing high-rise buildings on piles driven into the permafrost. All houses and other structures are built using special frost-resistant materials and cold-resistant grade of concrete and cement are used in the construction.

Communications are located at the soil surface due to shallow permafrost and the inability of trench methodology.

A unique new drainage system is used, taking into account the permafrost, marshy terrain and complex terrain.

In 2010 and 2011 for the first time in the permafrost zone a sewage collector will be reconstructed using trenchless technology.

In 2009 the scientists are given a task to study threats caused by adverse climate change. The ground condition will be analyzed and activities preventing them from thawing will be developed. New effective types of foundations that will insure the sustainability of buildings will be developed.

8. Recognition of the initiative

In 2010, the city of Yakutsk received a diploma of the winner of the III International contest of urban practices "Best City of the Commonwealth of Independent States and the Eurasian Economic Community" for outstanding achievements in the field of sustainable socio-economic development in difficult climatic conditions (This event was covered by many media including the city of Yakutsk newspaper "Echo Stolicy" of March 21, 2011 - - http://www.exo-ykt.ru/news/25/index.php?ELEMENT_ID=3738). The program “Integrated development of the territories of the Yakutsk city” was included in the list of programs of the award-winning project "Sustainable socio-economic development of the city of Yakutsk in the harsh climatic conditions of the permafrost" (the International Assembly of Capitals and Cities http://mag.e-gorod.ru/lib/12105/).
The initiative of the city authorities to develop and implement programs of comprehensive development of the territories and housing has been approved by the experts and citizens during the public hearings (more on that news agency REGNUM [http://www.regnum.ru/news/1074063.html](http://www.regnum.ru/news/1074063.html)). The program was approved and adopted by the Yakutsk City Council (the site "Regional legislation» [http://www.regionz.ru/index.php?ds=130986](http://www.regionz.ru/index.php?ds=130986), newspaper "Echo Stolicy" of November 7, 2008).

The program “Integrated development of the territories of the Yakutsk city” in 2009-2010 was found to be effective, and therefore the duration of the program was extended until 2015 (a brief description of the program can be found on the website of Yakutsk [http://www.yakutsk-city.ru/index.php?option=com_content&task=view&id=4758&Itemid=201](http://www.yakutsk-city.ru/index.php?option=com_content&task=view&id=4758&Itemid=201)).

In recognition of sustained and stable development of the city of Yakutsk the President of the Russian Federation Medvedev issued an order to hold as part of the APEC Summit the International Sports Forum "Russia is Sport Country”, the meeting of the Presidential Council on development of physical culture and sports and the 5th International Sports Games “Children of Asia” in Yakutsk in 2012 (more on this and about the main directions of socio-economic development can be found in an interview with the mayor of Yakutsk Yuri Zabolev on the official website of the Mayor: [http://zabolev.ykt.ru/component/blog_calendar/?year=2010&month=12&day=14&modid=20](http://zabolev.ykt.ru/component/blog_calendar/?year=2010&month=12&day=14&modid=20)).

Since 2009, the planned construction of Yakutsk is carried out taking into account the mandatory program activities for the integrated development of the territories (the article "How Yakutsk to grow?" In the newspaper "Echo stolicy" from October 26, 2009 [http://www.exo-ykt.ru/articles/24/index.php?ELEMENT_ID=1406](http://www.exo-ykt.ru/articles/24/index.php?ELEMENT_ID=1406)).

The program for the integrated development of Yakutsk can also be found in detail in the magazine "Russian municipal practice» (№ 12, 2008).