

**Summary of the Chairman of the International Scientific Conference
“Problems of Adaptation to Climate Change ”
(7-9 November 2011, Moscow, Russian Federation),
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The current challenges to sustainable development, such as shortages of freshwater, energy and food, decline in biodiversity, increase in the number and intensity of natural disasters, soil degradation and others are, in many ways, driven by climate change. Consequently, the international community is paying increasing attention to adaptation to ongoing and anticipated climate change, in addition to analysis and forecast of related hazards to reduce disaster risks. As we approach the negotiations on the future climate regime in Durban and the United Nations Conference on Sustainable Development “Rio+20,” there is an increased need for scientific justification of ongoing and anticipated climate change adaptation efforts, as well as exchange of international practices and plans on adaptation. In designing joint international adaptation efforts, the resilience of countries’ economies to climate change and climate related hazards, as well as the entire spectrum of potential losses and benefits from proposed actions, should be taken into consideration.

Proactive, timely and preventive adaptation measures will help reduce risks of disasters and potential damages associated with weather and climate impacts. Studies of climate change impacts on global, regional and national levels, development of adaptation measures, including infrastructure and technology innovations, are crucial for the implementation and verification of national climate change policies and measures.

There is growing interest among scientists in many countries for new approaches to stabilize the current climate using geo-engineering technologies. In conjunction with efforts to cut anthropogenic emissions of greenhouse gases, new technologies are being developed to regulate incoming solar radiation flux and intensify greenhouse gas uptake from the atmosphere with the aim of curbing the rise of and stabilizing global temperature. Such new technologies, along with the enhanced capacity to protect the global climate system, will make it possible to minimize the adverse impacts of climate change and reduce adaptation efforts. Meanwhile, it should be noted that the development of such new technologies requires the greatest caution.

In convening the International Scientific Conference, “Problems of Adaptation to Climate Change” (PACC-2011), the Russian Federation understands the need for scientific discussion on adaptation issues, international exchange on adaptation practices and plans, as well as considering options for climate stabilization at an acceptable level using geo-engineering technologies. The proposal for conducting PACC-2011 was supported by G8 leaders in Muskoka (Canada, 25-26 June 2010). The PACC-2011 was organized by the Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet) as mandated by the Government of the Russian Federation. It engaged federal authorities and government bodies, the Russian Academy of Sciences, businesses and NGOs. It was also supported by the WMO, UNFCCC, IPCC, IOC of UNESCO, FAO, UNDP, UNEP, UNISDR and the World Bank.

The PACC-2011 international organizing committee defined the key topic areas for the conference, namely the assessment of climate change impacts on sustainable development, vulnerability, risks, losses and benefits, adaptation to ongoing and anticipated climate change, large-scale weather anomalies and their consequences, including development of observational networks and early warning systems, as well as developing new approaches contributing to climate stabilization.

A total of 625 members from academia and experts attended the conference, representing 34 developed and developing countries of Europe, Asia, Africa, America, New Zealand, island states, NGOs, businesses and international organizations. In accordance with the PACC-2011 agenda, plenary meetings, three parallel section sessions, a poster session and three round tables were organized. There were 36 oral presentations and 106 poster presentations made on three key topic areas of the conference. Thirty-seven (37) interventions were made at the roundtables.

The conference presentations on adaptation policy and economy represented most regions of the world and covered a wide range of topics, including general issues of adaptation, disaster risk reduction, climate impacts on ecosystems and economy sectors, macroeconomic aspects of adaptation, human health in the context of adaptation and ethical aspects of adaptation policy.

Delegates of the conference noted that international organizations and individual countries have already accumulated a large amount of climate data which, can be used for developing adaptation policy and economic mechanisms. However, available data is incomplete and inconsistent. To enable efficient adaptation measures, international and national databases have to be developed, updated and made consistent, in particular, databases on economic statistics. This approach will allow the accurate assessment of the effects of climate and climate related-hazards on human health and economic systems, along with its related losses and potential benefits.

Conference delegates agree that every effort should be made to bridge the gap between the need for climate information, climate science capacity and climate risk management. Uncertainties in estimates of future regional climate changes are hindering effective political and economic decision-making. To resolve such uncertainties and lack of information, the role of scientific research should be increased and appropriate funding be provided for a whole spectrum of adaptation and mitigation issues. In this context, but the best option is to develop and use high technology (including supercomputers and satellites) for climate studies, as well as to continue the establishment and the development a the Global Framework for Climate Services (GFCS).

Another urgent issue is the interpretation of scientific findings by decision-makers, general public and media. The dialogue between producers of climate information (scientific community) and its users (authorities, business, population) needs to be urgently and drastically improved. Vagueness in the terms and concepts need to be resolved, in particular concepts related to adaptation and “green growth” and “green economy”.

In concert with reducing the human impact on climate, the conference stressed that climate change adaptation is key to reducing climate and disaster risks,, and is an important element in the implementation of sustainable development strategies. According to the conference delegates, priorities for scientific research should include extension of the set of economic indicators used for developing adaptation policy. In many presentations, emphasis was made on the need to go beyond conventional indicators, such as costs and expenses as they relate to GDP, and to develop indicators comparable to actual or prevented losses due to climate impacts. Such indicators and data to be collected on climate risks promotes the central role of disaster risk reduction and aligns climate change adaptation efforts with the priorities of the Hyogo Framework for Action, the agreed international blueprint for disaster risk reduction, and the recommendation of the Chair’s Summary of the 2011 Global Platform for Disaster Risk Reduction.

Methodologies are required to account for the contribution of ecosystem services, in particular the use of climate resources in economic development. From a broader perspective, the interpretation of scientific findings by policy

makers, businesses, general public and media, as well as bridging the gap between the need for climate information and climate science capacity, calls for development of educational capabilities and human resources, using national resources and international cooperation, especially within the UN system.

The presentations dealing with the analysis of socio-economic aspects of adaptation policy concluded that a more holistic and balanced approach has to be implemented with respect to indigenous people and poorer populations most vulnerable to the consequences of climate change. The principles of utilitarianism, often prevailing in adaptation policy, should give way to the ethics of social justice and social responsibility of businesses, with special emphasis on the mentioned population groups. Targeted national programs should be developed to help reduce the adverse impacts of climate change, provide for the adaptation of health care systems for indigenous people and strong support for their traditional lifestyles. Regulatory and economic support should also be provided to help adjust their customary practices and use of natural resources to adapt to emerging conditions. In parallel, the experience and knowledge of indigenous peoples should be leveraged when establishing climate change monitoring networks and developing adaptation plans for climate vulnerable regions.

Furthermore, the major difference in approaches to adaptation policy development and implementation pursued by developed and developing countries needs to be streamlined. The discussion at the conference indicated that climate change adaptation in some of the least developed countries is not a top national priority. The significance of the problem is also underestimated by the political establishment in many countries with economies in transition as well as in some developed countries. Several speakers noted that climate issues should be incorporated in national development plans for countries with economies in transition, and be part of their bilateral and multilateral economic and political cooperation. Such cooperation can often include enhancing food, energy and environmental security as well as reducing the severity of cross-border conflicts and disaster risks. Mainstreaming climate change issues into social and economic policies presupposes broadening the concept and strategy of sustainable development, which needs to incorporate climate and disaster risks in addition to ecological and resource aspects. Implementation of this strategy, however, would be impossible without pulling together efforts from the scientific community, policy-makers, businesses and civil society.

When discussing the issues of private and government partnerships in resolving adaptation problems, delegates spoke about the need to further enhance the role and social responsibility of businesses. Although businesses often lead the way by supporting technological solutions for climate adaptation, the long-term development goals call for greater commitment and involvement of businesses. This requires that scientists carry out studies and provide rationale for fiscal and taxation policies in different countries, so that businesses are incentivised to be involved in resolving adaptation problems. A number of speakers related efficiency of adaptation actions to appropriate support from regulators and binding international agreements.

Special attention was given to completeness and quality of data on the state of climate and climate change provided by national meteorological services, institutions that are indispensable in addressing adaptation problems. Efficient performance of these institutions is crucial for accuracy of air, inland water and ocean data. Conference delegates believe that international cooperation in global hydrometeorological observations should be continued and expanded.

The geo-engineering issues on the agenda have been defined by the Statement of 13 leading science academies of the world made in Tokyo (March 2008), which proposed exploring the use of emerging technologies for stabilization of the current climate.

The discussion has shown that several geo-engineering technologies to counter climate warming are being developed in addition to conventional techniques. The new geo-engineering technologies presented include: 1) use of submicron aerosol particles injected in the lower stratosphere, 2) CO₂ ocean fertilization, 3) modification of cumulostratus clouds above ocean to increase their reflectivity and others.

The most discussed method was that of creating a stratospheric aerosol layer. It was reported that a series of limited scientific field experiments has been conducted for the first time in the world to study aerosol impact on incoming solar radiation. Some experts noted a high potential of the proposed approaches and support continuing research with a view to developing geo-engineering methods for climate stabilization; with due regard for both positive and possible negative effects. Some of the experts feel that it would be desirable to promote international cooperation in use of emerging technologies of climate stabilization, as some of the emerging methods can be implemented only through broad international cooperation. There were other experts who referred to major uncertainties in assessing climate modification consequences and relying on the principle "Don't be evil". They proposed that a focus be placed on continuation of theoretical studies; using mathematical modeling tools and, if absolutely necessary, conduct field experiments which would have limited impact.

According to some delegates, the UNFCCC may be the most suitable body for discussing the results of geo-engineering studies. Furthermore, there is a need to establish a Protocol for regulating scientific studies in this sphere and application of such methods.

During the closing session, section and roundtable co-chairs presented key conclusions and assessments followed by presentation from the poster sessions. Despite some disagreement in the scientific assessments and conclusions, a common opinion was formed regarding further actions needed to address problems with climate change adaptation.

The participants concluded that a primary emphasis should be placed on reducing uncertainties in the environmental and economic estimates of the impacts of ongoing and anticipated climate change, in particular at the regional, national and local levels.

The Global Framework for Climate Services (GFCS) proposed by World Climate Conference-3 was deemed as the best elaborated initiative in pulling together efforts of the global community to provide scientific support to adaptation problems and build capacity for climate services worldwide. GFCS would also be instrumental for cooperation and coordination between international organizations within the UN system, as well as other international organizations dealing with adaptation. Conference delegates agree that no single agency will be able to deliver all information and services needed for decision makers. Such coordination will ensure high quality of climate services, in particular, with respect to climate change adaptation for which scientific knowledge remains to be the foundation and key factor.