Science and Adaptation to Climate Change: Overcoming Difficulties

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Global warming is unequivocal and there is a high probability that it will be escalating in future. Climate change impacts on natural and economic systems and people living in different regions across the world are diverse and often negative. Although for some regions, and a part of the Russian territory among them, climate change may bring not only losses, but certain potential benefits.

The greatest threat to sustainable development, in terms of climate change, is posed by extreme weather and climate events. Increased frequency and intensity of extreme events is seen in many countries and scientific projections indicate that droughts, heat waves and floods in various regions, most likely, will be growing, both in the short and long term. Take Russia for example, 350-450 severe weather events occur every year in the country, causing 40-60 billion rubles worth of damage, as estimated by International Bank for Reconstruction and Development. Sometimes, damage can reach values an order of magnitude higher than that. For example, the abnormally hot summer of 2010 caused the overall losses of 250-280 billion rubles for the economy of Russia. The problem of adaptation to climate is especially acute in the northern latitudes, with stronger manifestation of global warming effects as compared to other regions in the world. Changes in permafrost, which occupies more than 60% of the territory of Russia, have already had a noticeable impact on the state of ecosystems and, in particular, are reducing the ground bearing capacity.

Data required for adaptation actions are not just climate impact assessments. We need to know when, where and what has to be done and, most importantly, how much this will cost. Lack of scientific knowledge and ensuing uncertainties in predictions, particularly on regional scale, do impede development of adaptation measures, but cannot be excuse for inaction. Science, being a primary adaptation resource, is to push the boundary of what we know. It is also the responsibility of the scientific community to communicate uncertainties in estimates and assist decision makers in their interpretation.

To reduce the climate vulnerability of the Russian economy and population, Climate Doctrine of the Russian Federation and Strategy for Hydrometeorology and Related Activities through 2030 (considering climate change issues) were adopted. In these documents a major emphasis is placed on integrated studies of weather and climate.

The state-level adaptation management requires economic justification for adaptation measures, assessments of how climate information influences effectiveness of economic activities, estimates of climate resources in the context of changing climate, as well as legal and economic mechanisms for private-government partnership in the area of adaptation .

A lot of effort have to be made to bridge the existing large gap between needs for climate information and what climate science can deliver. This places the Global Framework for Climate Service (GFCS) in the context of adaptation. It may be worthwhile to consider establishing a global initiative for accelerating adaptation to climate change with a view to harmonize efforts through the UN specialized agencies (WMO, UN FRCC, UNESCO, ISDR, UNEP, UNDP and others), given involvement of regional and non-governmental international organizations. The upcoming extraordinary session of the WMO Congress devoted to GFCS will provide a basis for discussing this initiative. This will also take alignment of available concepts and programs and precluding their duplication. Taking into account that the GFCS is focused on the time scales from days to several years, there may be good reasons for extension of its mandate to include longer time intervals covering decadal to century climate changes.

Adaptation, together with measures to protect the current climate, has the potential to contribute significantly to sustainable development, while science is called upon to make these actions effective.