Submission of the Russian Federation on suggestions for the research dialogue, including information on the technical and scientific aspects of emissions and removals of all greenhouse gases in terrestrial ecosystems (Research and systematic observations – SBSTA)

The Russian Federation welcomes conclusion of SBSTA, accepted at the 37th session (FCCC/SBSTA/2012/L.25) and invitation to provide information on the technical and scientific aspects of emissions by sources, removals by sinks, and reservoirs of all greenhouse gases including emissions and removals from terrestrial ecosystems such as steppe, savannah, tundra and peatlands with a view to identifying and quantifying the impact of human activities. The Russian Federation notes with appreciation that SBSTA in the abovementioned conclusion takes into account the views of the Parties concerning the significance of terrestrial ecosystems representing considerable reservoirs of carbon, including such as steppe, tundra and peatlands. The impact of human activities to a great extent modifies emissions and removals of all greenhouse gases by terrestrial ecosystems that offer the potential of activities on mitigation of climate change and adaptation measures to be undertaken.

Area of tundra in Russia is 280 million hectares (16% of the land in the country). Carbon stocks of humus and peat of the soil vary from 100 to 200 tons of Carbon per hectare for different types of tundra, total carbon storages in soils of tundra in Russia is 28.6 Gigatons. The major part of the tundras of the world is located within the limits of permafrost distribution. Degradation of permafrost, instrumentally observed by currently in many tundra regions, is reflected in the increase of the permafrost temperature, the increase of seasonal thawing depth and activation of the destructive processes. Permafrost is the reservoir, preserving the greenhouse gases, organic matter which is the substrate for greenhouse gases production and microbial community since the time of freezing for millennia. Permafrost degradation under climate warming causes the release of these agents, which most often leads to increase in the greenhouse gases emissions by terrestrial ecosystems such as tundra. The human modification of ecosystems on permafrost into the sources of greenhouse gases occurs more rapidly than natural. The main reasons for this are the disturbance of the thermoinsulating covers and thermal regime of permafrost during construction operations, and thermal contact of constructions and permafrost during the exploitation. The impact of human on the ecosystems on permafrost could be reduced by permafrost environment management, which is the application of measures aimed to reduce the thermal effect from constructions.

Peatlands are the most significant terrestrial long-term removals of atmospheric carbon. They affect the fluxes of methane and nitrous oxide. Climate change substantially alters these functions, which further enhanced by the impact of human. Degradation of peatlands is a constantly growing factor enhancing the emissions of the greenhouse gases to the atmosphere. Development of measures aimed to management and restoration of peatlands is essential for both adaptation and mitigation of climate change. Ranking first on the planet by area of peatlands (more than 140 millions of hectares, and more than 370 millions of hectares when taking into account waterlogged shallow peaty lands) and providing ¼ to ½ of carbon storages in peatlands, Russia substantially contributed to increased attention to peatlands from the CBD, the Ramsar Convention, and FCCC Parties during the last 10 years. Concerning the adaptation the issues associated with the most vulnerable peatlands, located in critical conditions (permafrost, arid regions, peat fires), or subject to the impact from human activities are urgent. Concerning the mitigation efforts should be aimed at development of methodology of estimation and elaboration of measures to reduce emissions of the greenhouse gases resulting from protection, optimizing the use, irrigation and restoration of peatlands.

Steppe, grassland, and its anthropogenic modification on chernozems, including fallow and grazing occupy 220 millions of hectares in Russia. These are the most productive

ecosystems in temperate latitudes, with 7-10 tons of Carbon per hectare per year, and total net production exceeding that in northern and southern taiga belt. Natural steppe stores huge stocks of carbon in chernozems as humus and organic compounds. Carbon stocks in soils of steppe ecosystem in Russia (about 13% of the territory of the country) estimates 130 Gigatons of Carbon, which is 30% of carbon stocks in soils of Russia.

Almost complete plowing of European steppes by the end of 19th century and large-scale exploration of virgin steppes in Volga, Southern Urals, south of Western Siberia, Northern Kazakhstan and Altay in the middle of 20th century were the two crisis, which led to release of huge volumes of carbon from chernozems, drastic change of albedo, transpiration and flow of steppe rivers. All of these factors resulted in emission of significant volumes of the greenhouse gases. The other important disturbance or the steppe ecosystem, resulting in emission of carbon is wildfires. Steppe and agricultural fires are substantial source of black carbon in the atmosphere.

The Russian Federation pays serious attention to studies of climate regulative functions of terrestrial ecosystems. Russian Academy of Science (Institute of Geography, Institute of Forest Science, Center of Ecology and Productivity of Forests, etc.), Russian Hydrometeorology Agency, administrations of protected areas, non-governmental organizations, and other organizations perform different programs and projects aimed at finding effective solutions in tundra, peatland, and steppe management under climate change. The results of these studies identified high priority challenges necessary for further research and analysis. Nevertheless the coordination of international research efforts is unsuccessful to preserve and effectively manage climate regulating functions of these ecosystems under climate change.

Below are the several science and technical issues, significant in the framework of the dialogue on research, from the point of view of the Russian Federation:

- improvement of the system of areal evaluation of tundra, peatlands, and steppe ecosystems and the respective anthropogenic modifications;

- detailed quantitative analysis of biogenic (phytomass, primary production, mortmass) and soil (humus, peat, organic compounds) components of carbon cycle in tundra, steppe, and peatlands;

- synthesis of the data on carbon balance in tundra, steppe and peatlands taking into account modifications from various extent of human impact (mechanical disturbance and pollution of tundra; draining, alteration of the water regime for peatlands; plowing, grazing, fallow successions, invasive species for steppe);

- development of the schemes and mechanisms of economical stimulation of preservation and restoration of steppe, tundra, and peatlands for sequestration of carbon and decrease of the greenhouse gases emission;

- development of techniques of monitoring of the greenhouse gases emission resulting from natural and anthropogenic fires at the steppe fallows and drained peatlands;

- evaluation of contribution of the efforts to preservation of tundra, steppe and peatlands at protected areas, natural reserves and national parks to national activity on reduction and prevention of the greenhouse gases emission.

In accordance with paragraph 17 of the Draft conclusions proposed by the Chair concerning agenda item 7 of the Thirty-seventh session SBSTA (Doha, 26 November to 1 December 2012) «Research and systematic observation» (FCCC/SBSTA/2012/L.25) the Russian Federation is ready to provide detailed information on abovementioned technical and scientific aspects in the framework of the next Research dialogue planned for the Thirty-eighths session of SBSTA (Germany, Bonn, 3-24 June 2013).