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## **Intended Nationally Determined Contribution of the Republic of Serbia**

Although non-Annex 1 Party to the Convention, the Republic of Serbia express its willingness to contribute to global GHG emissions reduction in accordance with its capabilities, national circumstances and development goals. Those contributions are even greater taking into account extreme, already observed and projected climate change and its impacts on sectors and systems.

According to the national analyses, the period 1960-2012 is characterized by an average trend of mean annual temperature of 0.3°C per decade. Depending on the scenario, a rise in temperature will ranging between 3.2 and 4°C by the end of the century and precipitation deficit of up to 20%. These will be followed by the intensification of extremes, particularly in regard to temperatures.

The most vulnerable sectors are agriculture, hydrology, forestry, as well as human health and biodiversity. From the mid-20<sup>th</sup> century, the river discharges in Serbia generally records a negative trend. Average annual long-term trend in river discharges, excluding large rivers, is negative and about -3% per decade, with variable spatial distribution. This reduction is expected in the future, particularly after 2050, ranging from a few to over 20%. These changes will cause, among other things, problems related to water availability, water quality and the intensity and frequency of floods and droughts.

Droughts, insect invasions and the occurrence of forest fires have significantly influenced forest ecosystems in R. Serbia. In the long run, climate change may cause a transformation of entire forest ecosystems, changing the distribution and composition of Serbian forests. By the end of the 21st century, about 90% of today's beech forests will be outside the bioclimatic niches they inhabited in the 20th century and around 50% will be found in the zone where mass mortality is likely to occur.

Climate change will affect the spatial variation in agroclimatic conditions, the conditions for plant breeding and the selection of suitable varieties. Warming will also affect the phenology of plants, leading to faster development. Certain scenarios for the period 2071-2100 indicate the expected corn yield reduction from -52 to -22% for the whole territory of the Republic Serbia, for conditions without irrigation. The impact on other crop and vegetable varieties can also be expected.

As regards biodiversity and natural ecosystems, changes in climate may lead to changes in the phenological cycles; morphological changes, physiology and behavior of species; loss of existing habitats and emergence of new species; changes in the number and distribution of species; increased number of pests and diseases; genetic changes and extinction of species unable to adapt.

Impacts of climate change on health are becoming more pronounced in recent years. During the heat wave in July 2007, increased mortality was recorded in Belgrade. Climate change will certainly lead to changes in the distribution and increase in frequency of vector borne infectious diseases (malaria, dengue fever, West Nile virus, etc.), as well as the spread of infectious diseases through water.

Since 2000 the Republic of Serbia has faced several significant extreme climate and weather episodes that have caused significant material and financial losses as well as losses of human lives. The two most prominent events are the drought in 2012 and the floods in 2014. The drought in 2012 was particularly strong, and contributed to a decrease in yields of some crops by 50%. Estimates show that the droughts in 2000, 2003, 2007 and 2012 caused over 3.5 billion Euros worth of damage and the floods in 2014 over 1.5 billion Euros. Estimates show

that the material damage incurred by forest fires in the period 2000-2009 is worth more than 300 million Euros.

Taking into account the impacts of climate change and the need to reduce the risk thereof, and recognizing the importance of its contribution to global GHG emission reduction, the Republic of Serbia has identified GHG emissions pledges at the national level.

**Type** Overall emission reductions compared to GHG base-year emissions

GHGs which are not controlled by the Montreal Protocol:

**Scope**

- CO<sub>2</sub>
- CH<sub>4</sub>
- N<sub>2</sub>O
- HFCs
- PFCs
- SF<sub>6</sub>

**Base year** 1990

**Period** 1 January 2021 - 31 December 2030

**Level of GHG emission reduction** GHG emission reduction by 9.8% until 2030 compared to base-year (1990) emissions

**Percentage of GHG emissions covered** 100%

**Planning process** Climate change strategy with an action plan, that should be finalized in 2017, will further define the precise activities, methods and implementation deadlines

**Fair and ambitious** In 2010, the Republic of Serbia, as a developing country, associated with the Copenhagen Accord and in the letter of support expressed readiness for voluntary GHG emission limitation until 2020 by 18% compared to emissions in 1990. The Republic of Serbia, as an EU candidate country, harmonizes national with the EU legislation, contributing on that way additionally to national emissions reduction.

## Key Assumptions

**Calculation method** Global warming potential on a 100 time scale in accordance with the IPCCs 4th Assessment Report

**Methodologies for assessing GHG emissions** IPCC Guidelines 2006 and IPCC 2013 KP Supplement

## Scope

**Sectors/Source categories** In accordance with IPCC Guidelines 2006 and IPCC 2013 KP Supplement

## Needs for adaptation measures

**Sector vulnerability and impacts of climate change** The greatest impacts of climate change have been observed and reflected in agriculture, hydrology, forestry, human health and biodiversity sectors.

## Loss and damage associated with extreme events in the period 2000-2015

The total damage caused by extreme climate and weather conditions, since 2000, exceeds 5 billion euros, and more than 70% of the losses are associated with drought and high temperatures. Another major cause of significant losses was floods. Currently there is no

**Type****Overall emission reductions compared to GHG base-year emissions**

analysis of the damage resulting from long-term slow changes in the climate system that has been observed in the past decades. The total estimated investment in implementation of projects that can be considered as adaptation measures in the period 2000-2015 amounts to approximately \$ 68 million. There are no estimates for long-term investments in the area of adaptation to climate change in the Republic of Serbia.