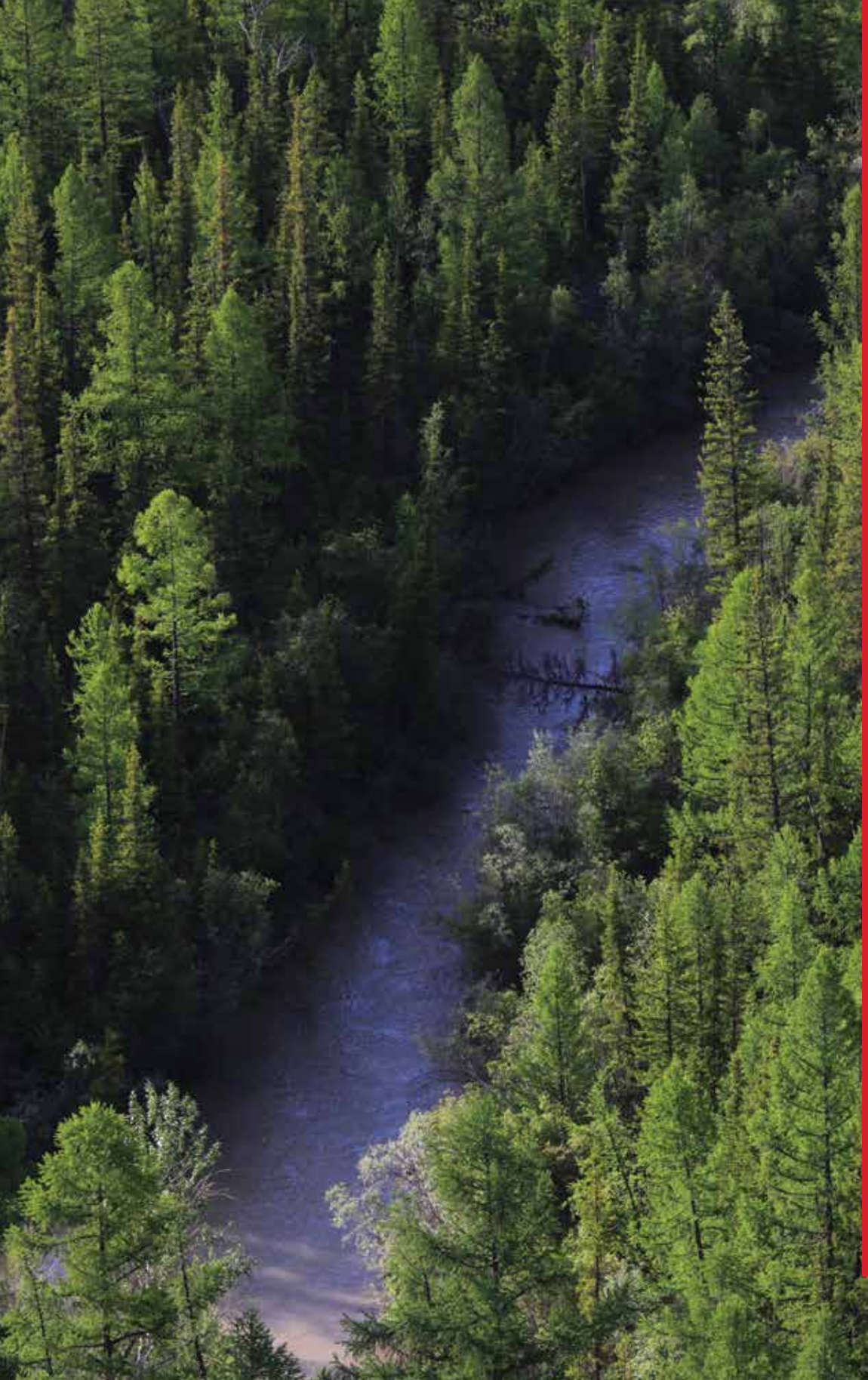
4° Turn Down the Heat

Confronting the New Climate Normal

THE CLIMATE CHALLENGE FOR THE FORESTS OF THE RUSSIAN FEDERATION

WORLD BANK GROUP



WE ARE HEADING TOWARDS A MUCH HARSHER CLIMATE

In a sobering assessment *Turn Down the Heat: Confronting the New Climate Normal* documents that if no further action is taken, there is a 40% chance to exceed 4 degrees Celsius (ºC) warming before 2100—within our children's and grandchildren's lifetime.

It paints a grim picture of what that world will look like. As weather extremes become the new normal and risks to food, water and energy security increase, everyone will feel the impact—particularly the poor.

Prepared in collaboration with the Potsdam Institute for Climate Impact Research and launched by the World Bank Group in November 2014, the report reviews the latest scientific evidence on climate change risks to development.

The third in the *Turn Down the Heat* series, this report examines climate scenarios in three regions, Latin America and the Caribbean, the Middle East and North Africa and Europe and Central Asia, including the prospects and implications for the forests of the Russian Federation in that challenging climate regime.

But the good news is that this future does not have to be our destiny. Solutions exist. First we have to accept the reality of what scientists are telling us and to truly understand that we are the last generation that can save the planet. It will require a concerted effort and change in every aspect of human life—substantial technological, economic, institutional and behavioral change. And most of all, it will require leadership at every level of society.

FACING THE NEW CLIMATE NORMAL

THE REALITY TODAY

Weather extremes are already affecting people everywhere, damaging crops and coastlines and putting livelihoods at risk.

- The world is already 0.8°C above pre-industrial times, with observed climate change impacts such as sea-level rise (up 19 centimeters between 1901 and 2010), disappearing glaciers, and extreme weather events on the rise;
- Losses from extreme weather events increased from US$50 billion a year in the 1980s to just under $200 billion over the last decade;
- Warming of close to 1.5°C above pre-industrial times is already locked into the Earth's climate system because of past and projected greenhouse gas emissions (such as carbon dioxide and methane). It means that climate change impacts including heat-waves, droughts, storms and other weather extremes may be unavoidable;
- To underscore this data, scientists announced that 2014 was the hottest year in recorded history.

THE GLOBAL FUTURE—4°C AND CLIMBING

We are experiencing human-induced climate change at a rate unprecedented in human history. Despite efforts until now, global greenhouse gas emissions continue to rise unabated. Scientists and researchers have concluded that with 'business as usual' we will hit that new climate regime—4°C or even higher—before 2100, with alarming consequences:

- Unprecedented heat extremes becoming more frequent;
- Changes in rainfall patterns impacting water availability;
- Reduced crop yields with resulting rising food security concerns;
- Accelerated loss of biodiversity and species extinction;
- Prospects of ocean acidification affecting marine ecosystems, fisheries and tourism;
- Sea level rise continuing for centuries, possibly rising two meters for every degree of warming;
- The West Antarctic Ice Sheet dislodging adding to abrupt sea level rise;
- Carbon sinks like forests and permafrost holding methane becoming greenhouse gas emitters that could be disastrous game-changers for the climate of the planet.

THE CLIMATE RISK FOR RUSSIA'S FORESTS

It is no exaggeration to say that Russia's climate risks are the world's climate risks. The future health of Russia's forests may help determine how the world fares with climate change.

The Russian Federation has the largest forest area in the world—20% of the global total, and its forests play an important role in the global carbon cycle. Russian forests account for about one-third of the net annual carbon accumulation in all forests worldwide. Russia holds the largest terrestrial carbon pool associated with boreal forests that currently provide significant carbon-sequestration service to Russia and other countries. As such, the future of global climate will be largely influenced by Russia's land-use policies and management practices.

That makes the sustainable and far-sighted management of Russian forest ecosystems of critical global importance. If not managed properly, major carbon and methane stocks now held in trees and permafrost could be released into the atmosphere. The unspoken fear is that the release of those vast stores of carbon and methane could create a tipping point for the world's climate with disastrous consequences.

In a 4°C world:

- Changing climatic conditions would likely lead to a northward shift of the tree line while forests would give way to steppe ecosystems at lower latitudes.
- There could be significant impact on timber harvest, and even more so when increased prevalence of pests, diseases and fire due to climate change is taken into account. The number of days with high fire risk—the single most important disturbance today—could increase by 20–30 days.
- Climate change could also trigger large-scale changes with predicted global repercussions, such as:
  - Methane emissions from thawing permafrost could increase by 20–30% in just a 2°C warmer world, risking infrastructure stability and releasing a potent greenhouse gas into the atmosphere.
  - As the boreal forest would expand onto tundra, the larger darker area of forest would trap more heat, potentially adding to faster temperature increase.

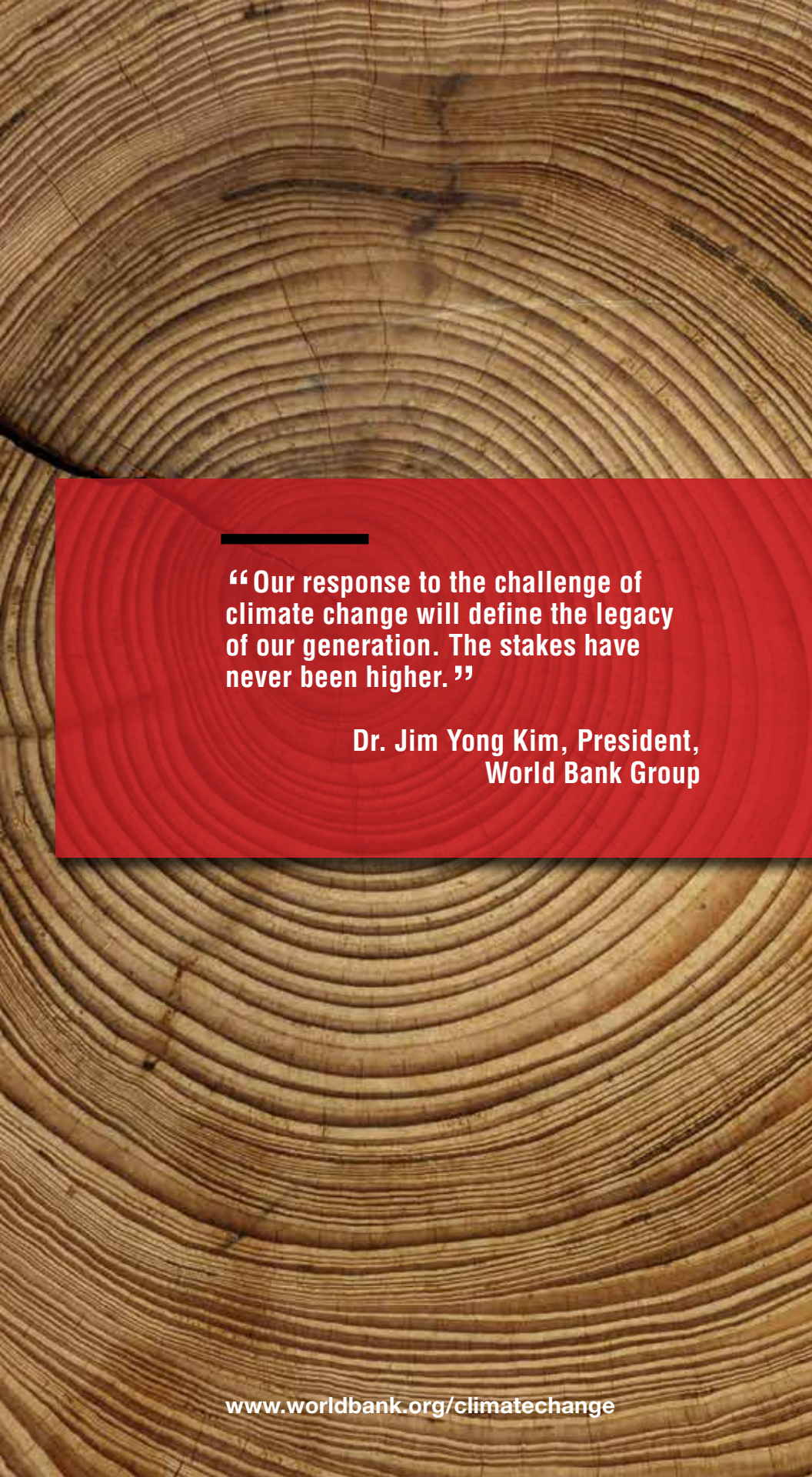
RISING TO THE CLIMATE CHANGE CHALLENGE

That 4°C degree or higher scenario does not have to be the future for Russia or the world. With a concerted effort, we can turn down the heat. Many of the worst projected climate impacts outlined in *Turn Down the Heat* could be avoided by holding warming below 2°C. In the meantime, efforts to build resilience and manage risks must also redouble to cope with already locked-in climate change over the coming decades.

Russia is already taking action in that regard. Russian forests today are at high risk from forest fires. Official data shows that on average there are 24,000 forest fires annually affecting 1.4 million hectares of forest, and releasing up to more than 230 million tons of carbon a year into the atmosphere. Most of those fires are human-caused. More broadly, there has been a steady increase over the past 40 years in damaged forest areas and lost forest resources due to fires, pests and disease. Total damaged forest area in 2010 totaled about 7.2 million hectares.

Since 2013, the World Bank has been working with the Russian Government on implementing the $121.3 million Forest Fire Response Project. The project is working to improve forest fire prevention and suppression in selected forest ecosystems and targeted protected areas as well as to enhance forest management in pilot regions. Lower carbon emissions because of prevented or localized fires and higher carbon sequestration through improved silviculture and forest growth are of direct benefit to the Russian economy and global climate change mitigation.

Given their vulnerability to disturbances like fire, Russia's forests will benefit from another initiative. The Government of the Russian Federation works with the World Bank on implementing the $140 million Second National Hydromet Modernization Project. This initiative supports Russia's Hydromet service in increasing the accuracy of forecasts provided to the Russian people and economy. It is modernizing key elements of Roshydromet's technical base and enhancing information systems for weather, climate and hydrological forecasting. Primary beneficiaries of the project are the regional and municipal governments, weather-, water-, and climate-dependent economic sectors such as emergency, disaster reduction/civil protection, water resources management, civil aviation and transport, agriculture, health, energy, forestry, communal services, tourism and maritime planning.



"Our response to the challenge of climate change will define the legacy of our generation. The stakes have never been higher."

Dr. Jim Yong Kim, President,
World Bank Group

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