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4° Turn Down
 the **Heat**
 Confronting
 the New Climate Normal

**THE CLIMATE
 CHALLENGE FOR
 THE WESTERN BALKANS**



**ALBANIA BOSNIA AND HERZEGOVINA KOSOVO
 FYR MACEDONIA MONTENEGRO SERBIA**



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 four degrees Celsius (4°C) 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 Western Balkans 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 such as 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 CHALLENGE FOR THE WESTERN BALKANS

The dominance of rain-fed agriculture in the Western Balkans makes the agriculture sector especially vulnerable to changing rainfall patterns and increasing temperature. The climate extremes of a 4°C warmer world in the Western Balkans would pose major risks not only to agriculture, but also to energy and population security. They include:

- The Western Balkans emerges as one of the planet's **Warming Hot Spots**, with more frequent heat waves, escalating to as much as 80% of summer months in a 4°C warmer world.
- The mean average summer temperature in the Western Balkans could actually climb to **7.5°C** above pre-industrial times. As climate warms the area's **Small Glaciers** will be gone within decades.
- **Rainfall** is projected to decline 20–30% in the Western Balkans at 4°C warming.
- The increasing occurrence (by 20%) of **Drought Days** will be a major threat to agriculture.
- **Water Availability** in summer is expected to decrease through the century. Annual river discharge could be reduced more than 45% by 2100 in a 4°C world.
- **Winter and Spring Flood Risk** is expected to increase, particularly along the Danube, Sava and Tisza rivers.
- **Crop Yields in FYR Macedonia** alone could drop by 50% by 2050 as the temperature climbs.
- **Hydropower** which plays an important role in the region's electricity supply, will be at risk. In Albania for example the annual average output from large hydropower plants could be reduced by 15% and 20% for smaller plants.
- **Health Risks** will grow as the climate warms with the growing threat of dengue fever. Heat-related mortality would increase 20% to 1,000 per million people.

RISING TO THE CLIMATE CHANGE CHALLENGE

That 4°C or higher scenario doesn't have to be the future for the Western Balkans 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.

Countries in the Western Balkans are already taking action in that regard, including through collaborations with several development partners. This brochure highlights some examples of the World Bank Group's support for climate action. These include addressing risks for water resources and agriculture, and tapping opportunities for energy efficiency and infrastructure modernization for cleaner, more efficient and competitive growth.

The findings from *Turn Down the Heat* tell us however that a major push is required for the Western Balkans to fully rise to the climate change challenge. Today's policy investment decisions will significantly shape the region's future climate vulnerability and carbon intensity. Many issues, particularly those related to adaptation capacity, water resources management or energy infrastructure, have strong regional dimensions—especially given geographic and economic interconnections. The challenge for the countries of the Western Balkans will be to leverage their actions at the national level into a concerted regional approach to climate change.



ALBANIA

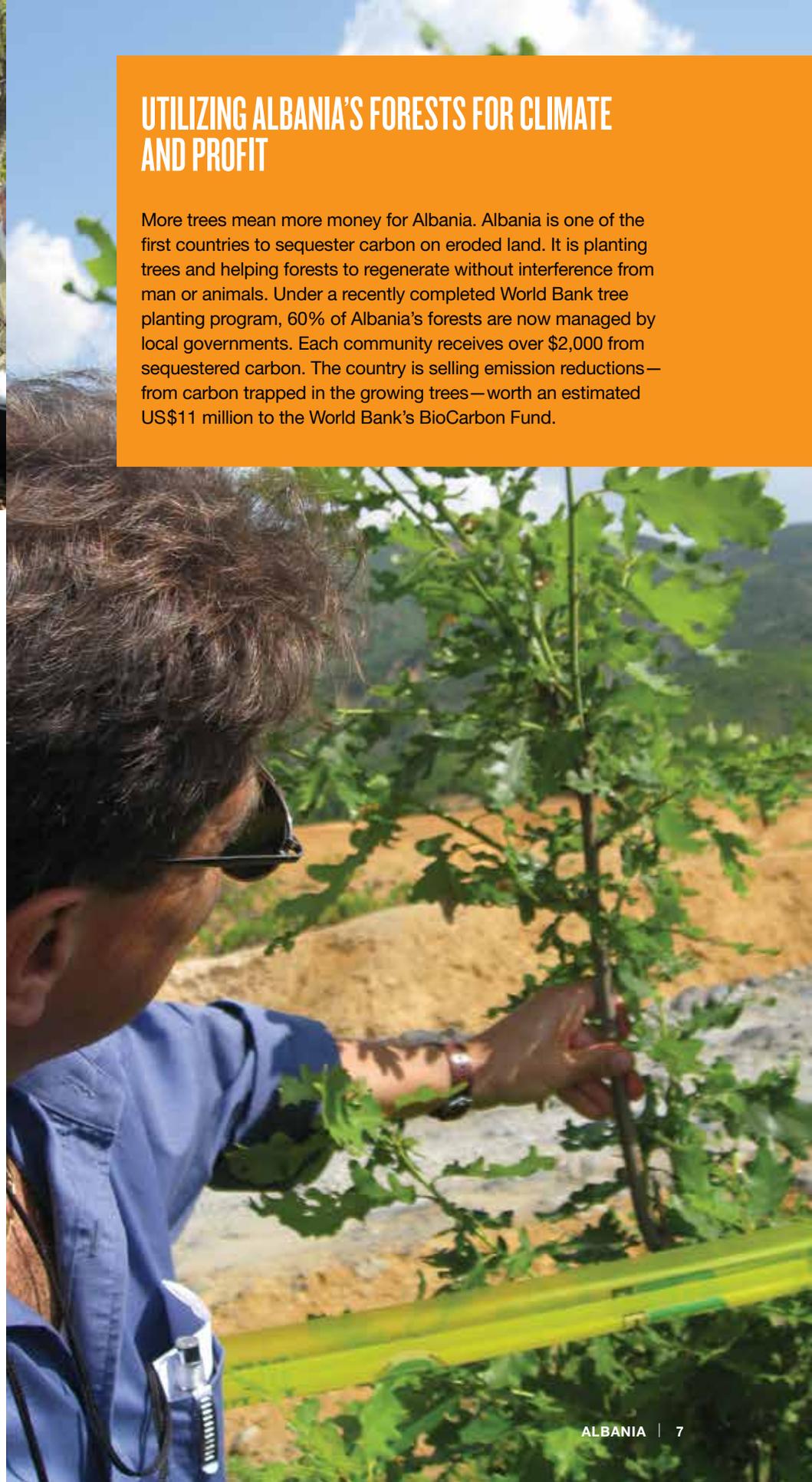
RACING AGAINST CLIMATE CHANGE

Reducing Vulnerability in the Agriculture Sector through Adaptation: More than anything else, agriculture anchors the lives of the people of Albania—providing the income basis for most of the population and serving as an employment safety net. All of that is at risk as the climate changes. Adaptation is key to the future, including: utilizing afforestation and barriers to protect arable land from soil erosion; introducing drip irrigation and modernizing existing systems; planting native crops that would be resistant to changes in climate; improving field and soil management including minimum tillage and contour cropping to slopes.

Focusing on Environmental Services: A newly approved project for environmental services—such as carbon sequestration, protection of watersheds, the supply of water for power generation, irrigation, drinking and sanitation—will support sustainable land management practices in erosion-prone rural upland areas and help to build resilience (both income and livelihoods) in communities in those areas.

UTILIZING ALBANIA'S FORESTS FOR CLIMATE AND PROFIT

More trees mean more money for Albania. Albania is one of the first countries to sequester carbon on eroded land. It is planting trees and helping forests to regenerate without interference from man or animals. Under a recently completed World Bank tree planting program, 60% of Albania's forests are now managed by local governments. Each community receives over \$2,000 from sequestered carbon. The country is selling emission reductions—from carbon trapped in the growing trees—worth an estimated US\$11 million to the World Bank's BioCarbon Fund.



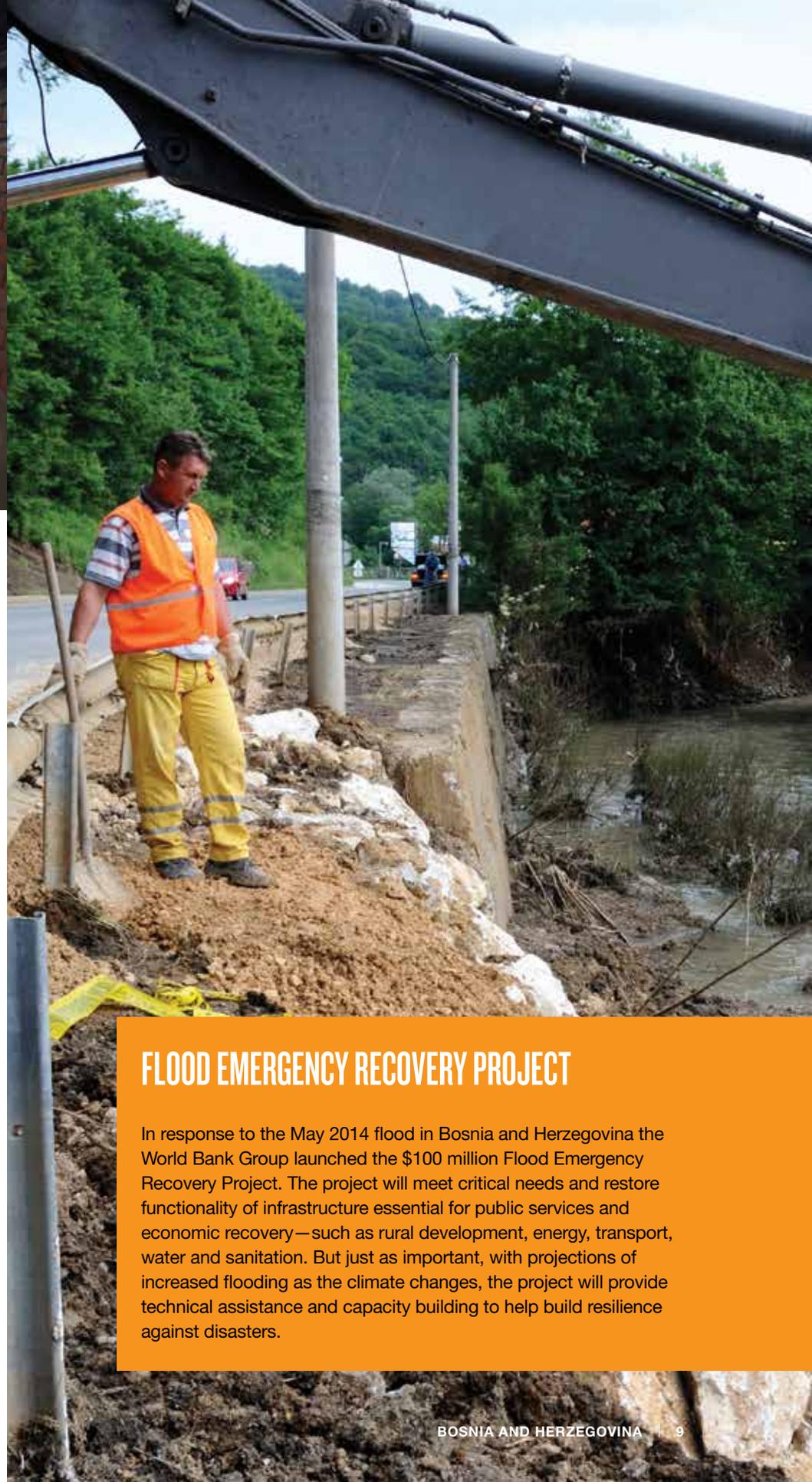


BOSNIA AND HERZEGOVINA

STRENGTHENING RESILIENCE AND ADAPTATION INFRASTRUCTURE

Irrigation Development Project: One fifth of Bosnia and Herzegovina's workforce is employed in agriculture. The aim of the project is to improve performance of irrigation systems and support farmers. It focuses on high-priority investments targeting the rehabilitation and modernization of irrigation systems. The largest irrigation investment to date in the country, it will support efforts to align with European Union irrigation policies and address issues of climate variability.

Protection against Flooding: The increasing occurrence of extreme rain and flood events as the climate changes also poses risks to agriculture and livelihoods. In May 2014, the worst flood in the country's recorded history made an estimated 15% dent in national income in damages and losses. It also destroyed lives and livelihoods. Rivers swelled, mountains eroded, and disaster struck the country. Flooding ravaged towns and inundated newly-plowed fields. Landslides destroyed roads and other vital infrastructure. People fled their homes, seeking dry land and shelter. It was a preview of what's to come.



FLOOD EMERGENCY RECOVERY PROJECT

In response to the May 2014 flood in Bosnia and Herzegovina the World Bank Group launched the \$100 million Flood Emergency Recovery Project. The project will meet critical needs and restore functionality of infrastructure essential for public services and economic recovery—such as rural development, energy, transport, water and sanitation. But just as important, with projections of increased flooding as the climate changes, the project will provide technical assistance and capacity building to help build resilience against disasters.



KOSOVO

ENERGY EFFICIENCY AND RENEWABLE ENERGY PROJECT (KEEREP)

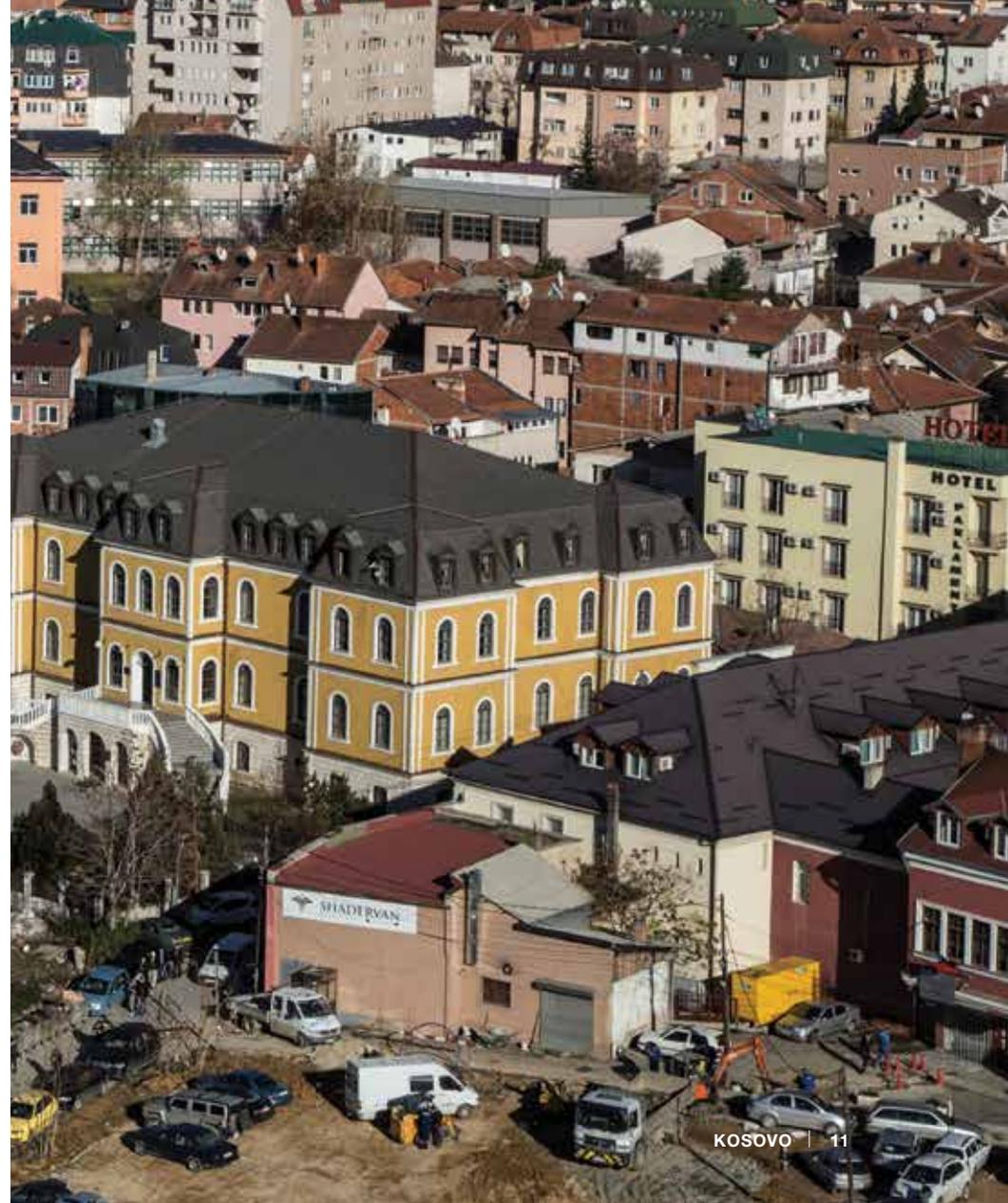
Energy efficiency and renewable energy can help mitigate Kosovo's projected power shortfalls, while enhancing Kosovo's energy security and environmental sustainability. The KEEREP project focuses on energy-efficiency, renewable energy investments in public buildings as well as policy and regulatory support for renewable energy and energy efficiency.

This is consistent with the government's National Energy Efficiency and Renewable Energy Action Plans, which call for a cumulative energy savings of 9% by 2018 and a 25% renewable energy target by 2020.

RECONCILING GROWING ENERGY NEEDS WITH CLIMATE CHANGE ACTION

Country Environmental Assessment (CEA): The Kosovo CEA is a World Bank analytical tool used to integrate environmental issues into development assistance strategies, programs and projects. It is a valuable tool for dealing with climate change. The environmental priorities of the country for the next five years are to harmonize Kosovo's environmental legislation with that of the EU. This will mean incorporating environmental legislation and methodologies into all sectors; and setting up and expanding institutions for the implementation of environmental policies. The CEA supports the government's plan to focus on, among other things, monitoring major industrial pollutants and hotspots; increasing access to clean water; creating programs for recycling wastewater and solid waste; and applying energy-efficient concepts in economic sectors.

Building Energy Efficiency and Renewable Energy into Kosovo's Future: Currently, Kosovo's electricity system cannot meet the demand that is needed to fuel the country's economic growth. Power production relies on two aging, unreliable lignite-fired power plants, one of which is scheduled to be decommissioned in 2017. This, along with the unsustainable heating of buildings, mostly from unmanaged, unregulated firewood and lignite-based electricity, is neither economically nor environmentally sustainable.





FYR MACEDONIA

LOOKING TO A GREEN FUTURE

Reducing Vulnerability of FYR Macedonia's Agricultural Systems to Climate Change:

Turn Down the Heat points out that in FYR Macedonia climate change is an immediate and fundamental threat because agriculture is one of the most-climate sensitive of all sectors and the livelihoods of rural communities are at risk. The report states that there must be a clear plan for aligning agricultural policies with climate change, developing the capabilities of key agricultural institutions, and making needed investments in infrastructure, support services and on-farm improvements.

Achieving Green Growth in FYR Macedonia:

The Green Growth and Climate Change Analytic and Advisory Support Program was launched in 2011, with funding support from the World Bank and the governments of Norway and Sweden.

A ROADMAP TO GREEN GROWTH

The Green Growth Country Assessment takes a practical approach to identifying specific challenges and opportunities FYR Macedonia faces in building its green growth future and presents them in a form useful for decision makers. The report addresses mitigation, adaptation, and the most immediately challenging resource sustainability issue, clean air. The report summarizes analytic work undertaken in sectors and on issues selected as critical for defining and understanding the green growth path of the country, with an emphasis on climate action.





MONTENEGRO

FOCUSING ON GREEN AND RESILIENT GROWTH

The Industrial Waste Management and Cleanup Project will help protect Montenegro's natural resources and reduce public health risks from exposure to selected industrial waste disposal sites that have significant environmental impacts. Industrial waste site remediation and sustainable waste management are key underlying principles of future economic growth in the tourism sector of Montenegro. The partnership between the government of Montenegro and the World Bank on this project will help Montenegro address some of the most critical environmental hot spots in the country. The \$50 million, five-year project got underway in November 2014.

Energy Efficiency Project: Studies in the mid-2000s determined that energy consumption in Montenegro was very high and the awareness of ways to achieve energy efficiency low when compared to trends and practices in European Union countries. The government developed the Montenegro Energy Efficiency Plan (MEEP) for 2008–12, supporting the development of energy-efficiency programs in all economic sectors. To complement this, the Ministry of Education and the Ministry of Health initiated programs to improve energy efficiency in public facilities, namely schools and hospitals.

IMPROVING ENERGY-EFFICIENCY PERFORMANCE

MEEP is investing in energy-saving retrofits in about 28 schools and hospitals. It is insulating roofs and buildings and upgrading heating systems, substations and networks. Facilities were selected for retrofits based on their energy savings potential, geographic distribution, number of users and social and demographic impact. To date, eight schools, a student dormitory and six hospitals have been retrofitted. Savings in heating energy range between 30 and 60%.





SERBIA

FLOOD CONTROL, IRRIGATION AND DRAINAGE

Irrigation and Drainage Rehabilitation Project:

Following a decade of declining maintenance budgets in the 1990s, the flood control and drainage infrastructure in Serbia deteriorated. This recently completed project supported the priority rehabilitation of the drainage and irrigation infrastructure. It helped reduce the risk of damage from flooding to people, land, crops, property and infrastructure, and helped as well to improve water resources management in Serbia. In total, 45 flood control and drainage systems were rehabilitated, with over 440,000 hectares countrywide protected from floods, providing an increased level of protection to over one million people. Over 20 Water User Associations were established and two irrigation systems rehabilitated.

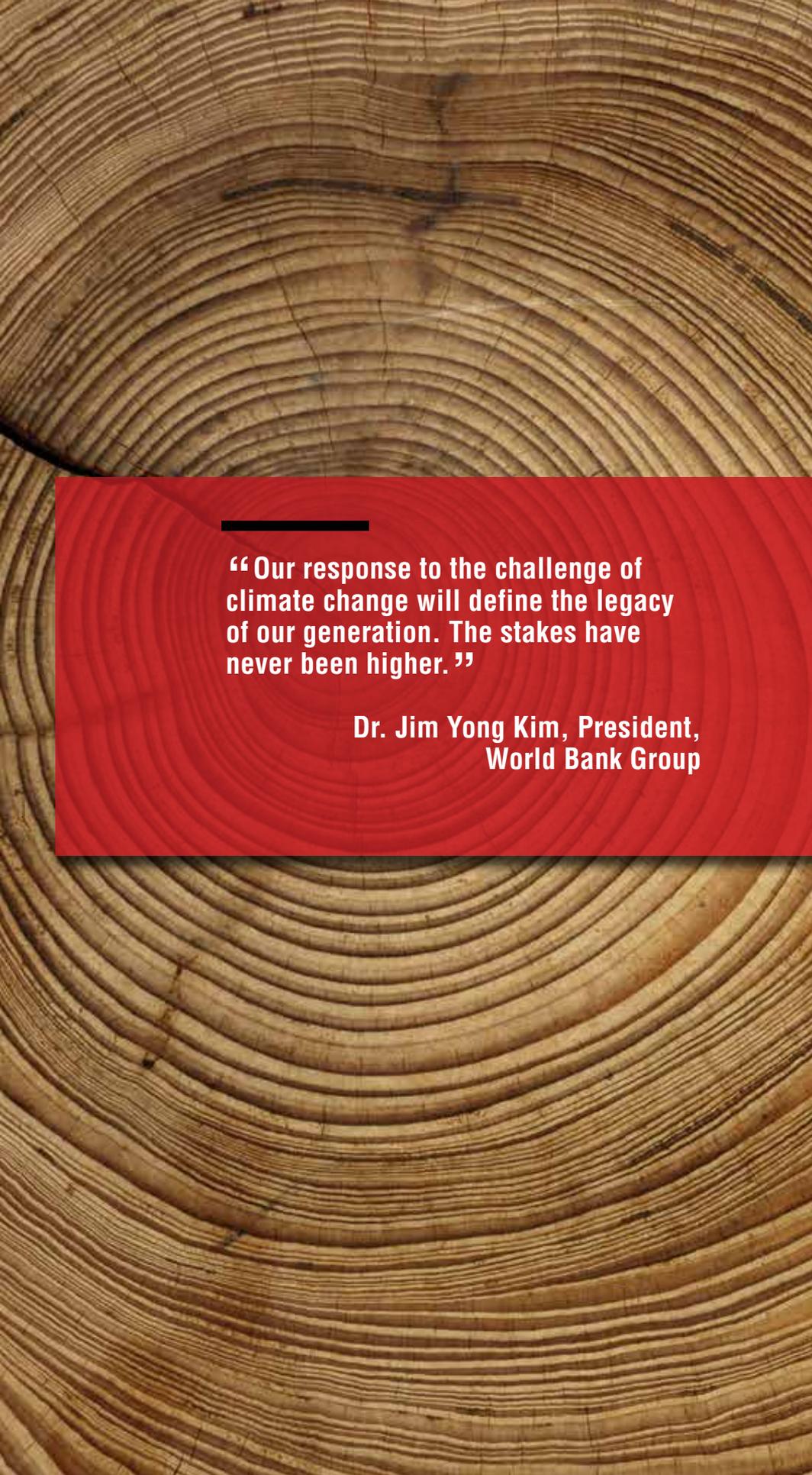
Flood Control: Unprecedented rainfall in May 2014 caused massive floods in Serbia as in other Western Balkan countries. The heavy rainfall led to a rapid increase in water levels in eight of the country's main rivers. Flash floods destroyed houses, bridges and sections of roads. The disaster claimed lives, forced massive evacuation from people's homes in flood-affected areas, and cut power to thousands of households. It was an omen of what lies ahead with climate change.

FLOOD EMERGENCY RECOVERY PROJECT

The US\$300 million Flood Emergency Recovery Project loan is supporting the country in meeting critical needs in the power and agriculture sectors, repairing damaged flood control infrastructure, and helping Serbia better respond to natural disasters.

Specifically, the operation helped close the financing gap for energy purchases to ensure power during the winter of 2014. It will recover and strengthen critical power sector infrastructure, and finance investments in energy efficiency. In the agriculture sector, the project will provide farmers in affected areas with the income security needed to invest in their farms. The project will also help improve resilience to disasters through the repairs to critical flood prevention infrastructure.





“ 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**