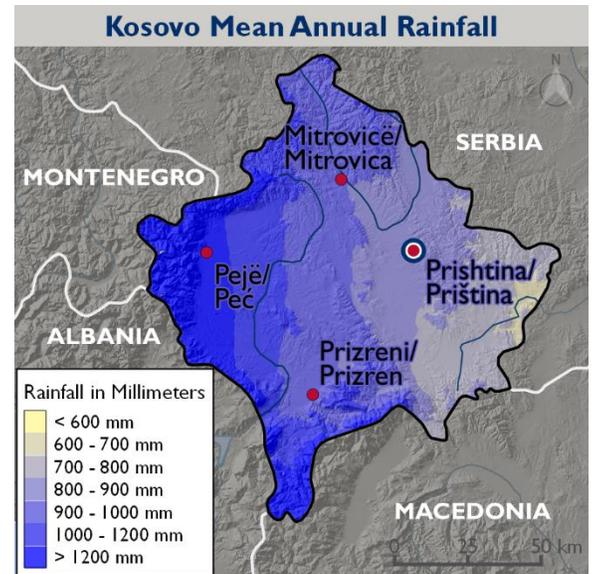




CLIMATE CHANGE RISK PROFILE KOSOVO

COUNTRY OVERVIEW

Since the end of armed conflict in 1999, Kosovo has embarked on a process of rebuilding and strengthening its physical and legislative infrastructure. Nonetheless, climate change adaptation remains a challenge and country-specific studies of climate trends, projections, and impacts are limited. Kosovo's economy has grown steadily since 2008, when it became a unilaterally declared independent state, although its unemployment and poverty rates are among the highest in Europe. While Kosovo's large service sector (67 percent of GDP) is less vulnerable to climate change, agriculture (14 percent) and industry (19 percent) are important drivers of the economy and are vulnerable to water shortages, heat waves, drought and flooding. Accelerated construction since 1999 combined with poorly regulated land use planning and lack of adherence to building codes increase the rapidly growing population's exposure to hazards. In 2014, a mild winter and record-setting dry February were followed by a record-setting wet April; exceptionally heavy rainfall triggered flash flooding and caused serious damage to infrastructure, especially in northern Kosovo. Mining of lignite (a low-energy, high-pollutant coal) and mineral deposits, insufficient wastewater treatment and lack of public environmental awareness contribute to serious air and water pollution and environmental degradation challenges that Kosovo is working to control; these will compound climate change impacts. (5, 10, 15)



CLIMATE PROJECTIONS



Increase in temperatures



Decrease in annual precipitation



Increase in incidence of extreme weather events, including droughts and floods

KEY CLIMATE IMPACTS

Agriculture

Crop loss/failure
Loss of pasture lands and water resources for livestock



Water Resources

Water scarcity
Degradation of water quality
Flooding



Human Health

Heat stress
Effects from air and water pollution
Foodborne illness



Forestry

Biodiversity loss
Increased risk of forest fires



Energy and Infrastructure

Increased exposure to climate hazards
Reduced hydropower potential



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CLIMATE SUMMARY

Kosovo has a predominantly continental climate, with warm summers and cold winters. In the southwest Dukagjini Plain, this transitions to a mild Mediterranean climate with more frost-free days and higher annual rainfall. Average temperatures range from -27°C in winter to 39°C in summer. Annual precipitation ranges from 600 mm in the eastern Kosovo Plain to 1300 mm in the western mountains. As historical climate data specific to Kosovo are limited, in part due to an interruption in hydro-meteorological measurements from 1989 to 2000, the trends and projections below are mostly for the Western Balkans region. When specific information for Kosovo was available, such as for droughts and forest fires, it is noted below. (3, 7, 9)

HISTORICAL CLIMATE

Observations in the Western Balkans include:

- Rising temperatures since 1960, with greatest warming in the summer; increased frequency and severity of heat waves.
- Changes in precipitation since 1960 are not as clear, but reflect an overall decrease.
- Since the 1980s, increased intensity and frequency of precipitation extremes; e.g., heavy rain events and droughts (including droughts in Kosovo in 1993, 2000, 2007, 2008 and 2013).
- Increase in number of forest fires since 2000 in Kosovo.

FUTURE CLIMATE

For the Western Balkans, projections include:

- Regional warming higher than the world average, especially for mountain areas.
- Decrease in overall annual precipitation, with greatest decreases in summer.
- Increases in winter precipitation, particularly in mountains, resulting in more frequent spring flooding.
- In Kosovo, a decline of 50 days per year of snow cover by 2050. (5, 12)

SECTOR IMPACTS AND VULNERABILITIES

WATER RESOURCES

Based on projections of higher temperatures, reduced precipitation and population growth, four of Kosovo's five water basins may become water-stressed or water-scarce by 2050. Renewable water resources per person are 16 percent of regional averages, and precipitation and water storage capacity are also less than half of regional averages. Reservoirs are a source of water for major towns but in rural areas only 61 percent of houses are piped to public supply systems, supplemented by wells or springs. The Dukagjini Plain in the west and south has more plentiful surface and groundwater; the Kosovo Plain in the east and north is at higher risk of water shortages due to less annual rainfall, less access to groundwater and higher population density. Additional causes of water scarcity include increasing consumption, inefficiency and leakage in pipes, and extended irrigation needs. Water quality of Kosovo's rivers suffers from lack of residential and industrial wastewater treatment and poor riverbed maintenance, further limiting availability of water for drinking supply and irrigation.

Between 2004 and 2008, 80 percent of Kosovo municipalities suffered from water shortages due to

hydrological drought and the misuse of water resources. In the winter of 2014, following depletion of reservoirs from low snow and rain levels, the state water supply company instituted water rationing in Pristina, the capital.

Kosovo is also at risk from flooding in lowlands, flash flooding in upland areas and dam breaks. Flood risk and the potential cost of damages are exacerbated by poorly maintained river channels, gravel extraction from flood embankments and construction in flood-risk areas. (4, 6, 8, 13, 16, 18)

| Climate Stressors and Climate Risks WATER RESOURCES | |
|--|---|
| Stressors | Risks |
| Rising temperatures | Increased variability of river flows, leading to reduced water availability or river basin flooding |
| | Increased drought, particularly in Ibri Basin |
| Reduced or more variable precipitation | Degraded river quality through increased concentration of pollutants in lower water volume |
| | Water shortages |
| | Increased flood risk and damages from flooding |

AGRICULTURE

Along with temperature changes, climate impacts on water resources will impact the agriculture sector. Fifty-three percent of Kosovo is agricultural land. The sector provides food and income security for Kosovo’s rural population, although its share of GDP dropped from 25 percent to 14 percent in the last 25 years. The sector is mostly semi-subsistent and small-scale – 97 percent of holdings are under 5 hectares. Half of farms are active in livestock production, especially of dairy cows. Main agricultural products are corn, wheat, barley and milk. Sector growth is limited by inadequate irrigation, which covers only 17 percent of agricultural land. Fluctuations in rainfall leave regions without irrigation exposed to drought or flood conditions. Other sector constraints include land fragmentation, outdated technology, limited market

HUMAN HEALTH

Climate changes may compound the effects of poor water and air quality in Kosovo. Kosovo faces high concentrations of atmospheric pollutants, including dust and particulate matter from coal-fired power plants, active industrial sites and old mining facilities, burning of biomass, uncontrolled waste dumping, and vehicle emissions. In addition to water scarcity concerns, inadequate design of drainage and sewage systems in urban areas makes Kosovo more prone to flooding, putting potable water at risk of contamination. Heat wave-related mortality and spread of foodborne diseases have been observed in neighboring countries, although data for Kosovo are limited. Observed vector-borne diseases include tularemia and Crimean-Congo hemorrhagic fever. (2, 5, 11, 16)

FORESTRY

Forests cover 41 percent of Kosovo, but their quality and productivity are in decline and will be further compromised by climate change. Forests are 90 percent broad-leaf trees such as beech and oak and 5 percent is coniferous forest; trees are primarily harvested for construction and firewood. Illegal harvesting on both public and private forest lands is widespread, and in steep, mountainous terrain particularly, signs exist of desertification due to serious soil erosion. Forest fire incidence in 2011 and 2012 was correlated with drought years and high temperatures. (5, 7, 16)

| Climate Stressors and Climate Risks AGRICULTURE | |
|--|---|
| Stressors | Risks |
| Rising temperatures | Diminished production and grain harvest losses |
| | Increased water demand for crop irrigation; water shortages |
| Reduced or more variable rainfall | Elevated livestock mortality and reduced productivity |
| | Increased exposure to new pests and diseases |

and credit access, and competition from subsidized trading partners. Despite its competitive potential in horticulture and livestock, Kosovo remains the largest net importer of food per capita in Europe. (1, 3, 5, 14, 17)

| Climate Stressors and Climate Risks HUMAN HEALTH | |
|---|--|
| Stressors | Risks |
| Rising temperatures | Reduced air quality and exacerbation of respiratory infections (higher temperatures affect concentration/dispersion of air pollutants) |
| | Increased incidence of heat-related health issues, such as cardiovascular conditions and heat stroke |
| Drier climate | Flood-caused impacts such as contamination of drinking supplies, increased mortality and exposure to chemical hazards |
| Conditions for increased flood risk | Spread of foodborne diseases |
| | Expansion of vector-borne diseases, e.g. Crimean-Congo hemorrhagic fever |

| Climate Stressors and Climate Risks FORESTRY | |
|---|--|
| Stressors | Risks |
| Rising temperatures | Change in species composition from conifer and beech to more mixed hardwoods |
| | Increased forest fire risk |
| | Elevated threat of soil erosion and landslides in montane areas |
| Drier conditions | Loss of construction timber from reduced forest health |
| | Increase in fuelwood harvest |
| | Increased incidence of insects and pathogens |

ENERGY AND INFRASTRUCTURE

Wartime destruction of housing stock, poorly maintained infrastructure, rapid and poorly regulated construction, and weak land use planning and enforcement increase the population's exposure to climate hazards through environmental degradation and structural vulnerability. Kosovo has difficulty meeting peak demand for electricity. Energy predominantly comes from coal-fired power plants. Hydropower supplies 3–6 percent and expansion is limited by the unequal distribution and inadequacy of water resources. (7, 10, 11, 16)

POLICY CONTEXT

Kosovo is not yet recognized by the United Nations system, so it is not a signatory to international conventions such as the UN Framework Convention on Climate Change (UNFCCC). In 2015, Kosovo signed a Stabilization and Association Agreement with the European Union, and is working to align its legislation with EU legislation as part of the EU approximation process, including environment and disaster risk reduction.

INSTITUTIONAL FRAMEWORK

The Ministry of Environment and Spatial Planning (MESP) is the responsible authority for environment and climate policy. The Emergency Management Agency is responsible for conducting risk assessments for natural and manmade disasters. As part of the EU approximation process a MESP-led interministerial working group developed a climate change framework strategy in 2014. (5, 12)

| Climate Stressors and Climate Risks ENERGY AND INFRASTRUCTURE | |
|--|--|
| Stressors | Risks |
| Rising temperatures | Increased disaster exposure for populations in informal settlements or illegally constructed buildings |
| Extreme events | Interruption of transportation from bridge collapses or other flood-related damage |
| Decreased precipitation | Reduced hydropower potential |

NATIONAL STRATEGIES AND PLANS

- [Climate Change Framework Strategy for Kosovo](#) (2014) includes a National Adaptation Strategy with 34 proposed cross-sectoral interventions.
- The [2015–2018 Program of the Government of the Republic of Kosovo](#) touches on cross-cutting issues such as water management and irrigation expansion.

KEY RESOURCES

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SELECTED ONGOING EXPERIENCES

| Selected Program | Amount | Donor | Year | Implementer |
|--|----------------|----------------------------|-----------|---|
| Climate Change Adaptation Program in Western Balkans | €3.5 million | GiZ | 2012–2018 | Kosovo: Ministry of Environment and Spatial Planning (MESP) |
| Enabling Transboundary Cooperation and Integrated Water Resources Management in the White Drin and the Extended Drin Basin | \$8.9 million | GEF | TBD | TBD |
| Kosovo Energy Efficiency and Renewable Energy Project | \$32.5 million | World Bank | 2014–2020 | Ministry of Economic Development |
| Kosovo Disaster Risk Reduction Initiative | \$500,000 | UNDP Kosovo | 2013–2016 | Red Cross of Kosovo, Swiss Platform for Natural Hazards |
| Confidence Building Through Disaster Risk Reduction in Northern Kosovo Region | \$300,000 | UNDP Kosovo | 2014–2016 | <i>Part of Kosovo Disaster Risk Reduction Initiative</i> |
| Kosovo Floods Recovery Support | \$100,000 | UNDP Kosovo | 2014–2015 | <i>Part of Kosovo Disaster Risk Reduction Initiative</i> |
| Disaster Resilience Initiative Support for Kosovo (D-RISK) | \$300,000 | UNDP / Government of Japan | 2016–2018 | MESP, Red Cross of Kosovo, Ministry of Internal Affairs/Emergency Management Agency, municipalities |
| Support for the Ministry of Environment and Spatial Planning on Environment and Climate Change | \$392,000 | UNDP Kosovo | 2010–2014 | MESP, others |