

CLIMATE CHANGE IN THE WEST BALKANS





The Environment and Security Initiative (ENVSEC) transforms environment and security risks into regional cooperation. The Initiative provides multistakeholder environment and security assessments and facilitates joint action to reduce tensions and increase cooperation between groups and countries. ENVSEC comprises the Organization for Security and Co-operation in Europe (OSCE), Regional Environmental Centre for Central and Eastern Europe (REC), United Nations Development Programme (UNDP), United Nations Economic Commission for Europe (UNECE), United Nations Environment Programme (UNEP), and the North Atlantic Treaty Organization (NATO) as an associated partner. The ENVSEC partners address environment and security risks in four regions: Eastern Europe, South Eastern Europe, Southern Caucasus and Central Asia.



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CLIMATE CHANGE IN THE WEST BALKANS

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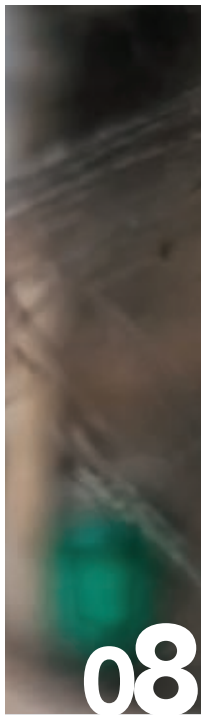
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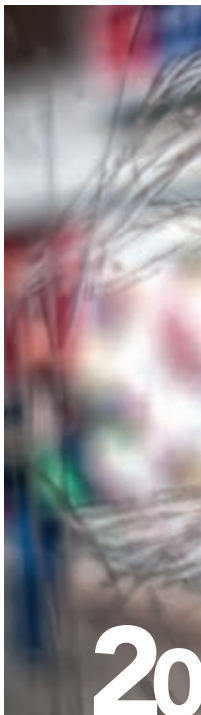
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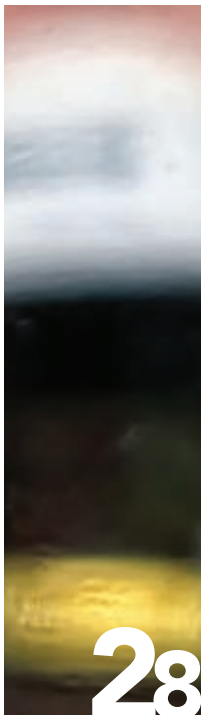
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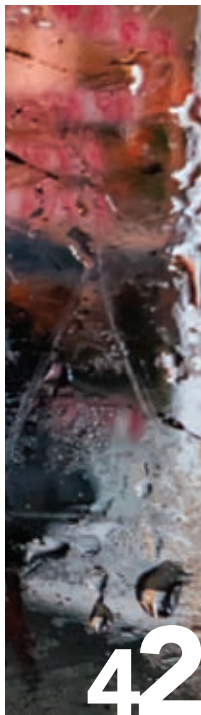
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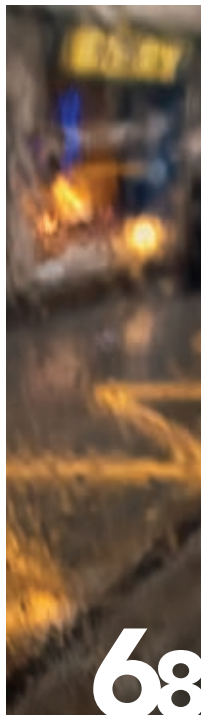
CLIMATE CHANGE
IN THE REGION



GREENHOUSE GAS
EMISSIONS AND
MITIGATION



VULNERABILITY



ADAPTATION
IN THE REGION

FOREWORD

This report forms part of an awareness-raising campaign by the United Nations Environment Programme and the Environment and Security initiative on the effects of climate change. Representatives of governments, international organizations, civil society organizations and research institutions and other experts from the region have compiled this booklet with the objective of revealing and explaining the linkages between people and the environment in the Balkans. Climate change is a complex process that can exacerbate threats caused by persistent poverty, by weak institutions for the management of resources and for conflict resolution, by a history of broken communication channels and mistrust between communities and nations and by inadequate access to vital natural resources such as water and arable land.

Our intention is to stimulate a policy debate and to contribute to a society that is better informed about upcoming environmental challenges, eventually strengthening the basis for planning for the inevitable consequences of climate change. Effective governance and political and economic

stability are crucial to a country's or a region's capacity to cope with climate change. Reporting on these sensitive and complex matters is an essential component of our work, and we strive to do so without casting aspersions. Daunting challenges in terms of climate change exposure, sensitivity and adaptive capacity are identified in the region, and we are pleased to observe that the countries are making progress in developing their strategies for adaptation to climate change. A number of regional agreements and initiatives provide a good basis for enhanced regional cooperation as well.

We hope that this report will be of some assistance to those who develop climate change policies and programmes in the region and that it will stimulate concrete actions that eventually can be reported back to the world at one of the future global meetings on climate change.

Jan Dusik

Acting Regional Director for Europe
United Nations Environment Programme

Guest list of the official COP 15 Royal Climate Change dinner in Copenhagen → <http://kongehuset.dk/publish.php?id=23249>

H.E. Prime Minister **Sali Ramë Berisha** (Albania)

H.E. President **Stjepan Mesić** (Croatia)

H.E. President **Gjorge Ivanov** (Former Yugoslav Republic of Macedonia)

H.E. Prime Minister **Milo Dukanović** (Montenegro)

H.E. President **Boris Tadić** (Serbia)

Climate change in the West Balkans: Key findings, trends and projections

	ALBANIA ¹	BOSNIA AND HERZEGOVINA	CROATIA	THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA	MONTENEGRO	SERBIA
Air temperature change (last half century)	↑	↑ ²	↑	↑	↑	↑
Precipitation change (last half century)	↓	↔ ³	↓	↓	↔	↔
Extreme weather events and climate-related hazards (1990–2009)	↑	↑	↗	↑	↑	↑
Water resources availability in the future (forecast period until 2100)	↓	↓ ⁴	↓ ⁵	↓	↓	↓
Health infectious and vector-borne diseases ⁶	↑	↑	↑	↑	↑	↑
Greenhouse gas emissions (in CO ₂ eq) for period observed	↓	n.a. ⁷	↗	↓	↓	↓
Policy instruments, actions and awareness	↑	↗ ⁸	↑	↑	↑	↑
Climate observation and weather services (1990–2009)	↗	↗	↑	↗	↗	↑

¹ Information related to vulnerability assessment and adaptation options is based on the study focused on the Drini River Cascade (area from Kukës up to the Lezha Plain).

² Air temperature change covers only 11-year period 1990-2000 compared to reference period (1961-1990).

³ Precipitation change covers only period 1999-2008 compared to reference period (1961-1990).

⁴ Lower river flows are expected although scenarios are to be introduced in Second National Communication; "water managers are still using historical climate data to design water infrastructure and guide management decisions".

⁵ Decrease is expected, although further studies are required.

⁶ In West Balkan countries reliable health statistics on the impacts of climate change on population health, illness and mortality do not exist, since mandatory health records do not contain information for such a complex evaluation. According to National Communications under the UNFCCC, estimated data indicate an increase in the number of strokes and mortalities, mostly as a result of higher temperatures.

⁷ Greenhouse gas emissions are available only for the base year (1990).

⁸ Basic systems providing information on water resources were never rebuilt after the breakdown of the former Bosnia and Herzegovina Hydrometeorological Service during the early 1990s. One of proposed adaptation measures is the development of a Hydrological Information System.





BACKGROUND

BACKGROUND

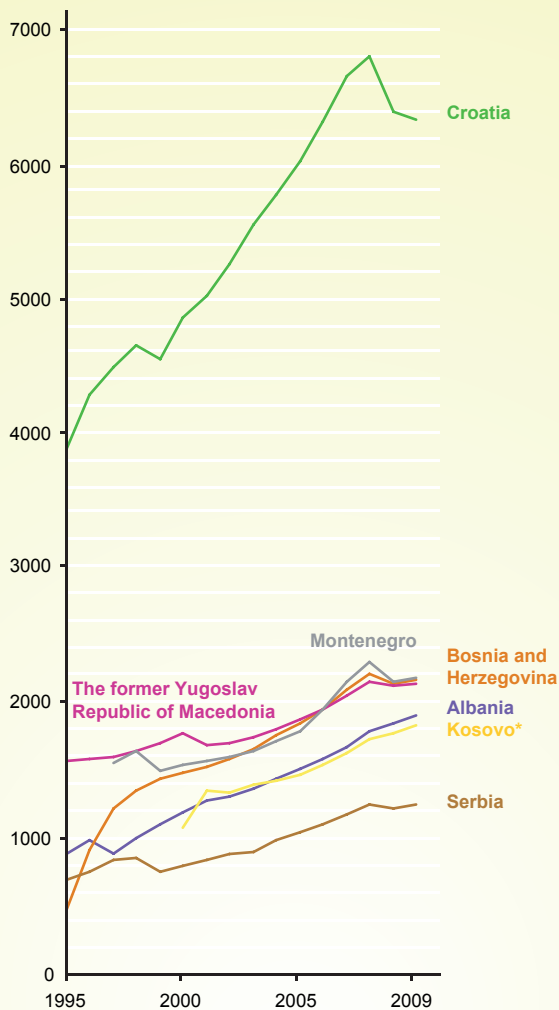
Democracy, economic development and even statehood itself are all less than secure in the Balkans, a region with a history of conflict. Now, as the countries of the region strive for individual and collective stability, they face the additional challenges brought by climate change, and do so against a background of new international borders and dynamic populations with strong ethnic identities.

In spite of these challenges, however, the six West Balkan countries (the Republic of Albania; Bosnia and Herzegovina; the Republic of Croatia; the former Yugoslav Republic of Macedonia; Montenegro; and the Republic of Serbia) that are the subjects of this report have all experienced rising GDP in the 1995–2009 period with the exception of the slight declines in 2008 corresponding to the global financial crisis. In addition, all have made progress towards membership in the European Union. And in perhaps the most encouraging sign of all, the younger generations are demonstrating an astonishingly high degree of bottom-up cooperation across a range of issues.

A series of six maps illustrates the development of national boundaries in South-Eastern Europe. The capacity of the region to respond to the effects of climate change depends to a large extent on its political stability and the effectiveness of its governance. As the series of maps suggests, political stability in the region is a work in progress that may affect the region's ability to respond effectively to climate change.

GDP in the West Balkans

constant 2000 USD per capita



* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence. Source: World Bank, 2011.



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CLIMATE CHANGE IN THE WEST BALKANS

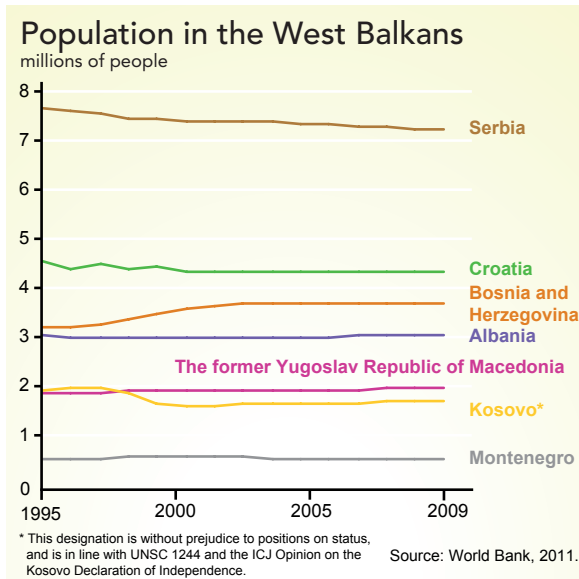


Map produced by ZOI Environment Network, February 2012.

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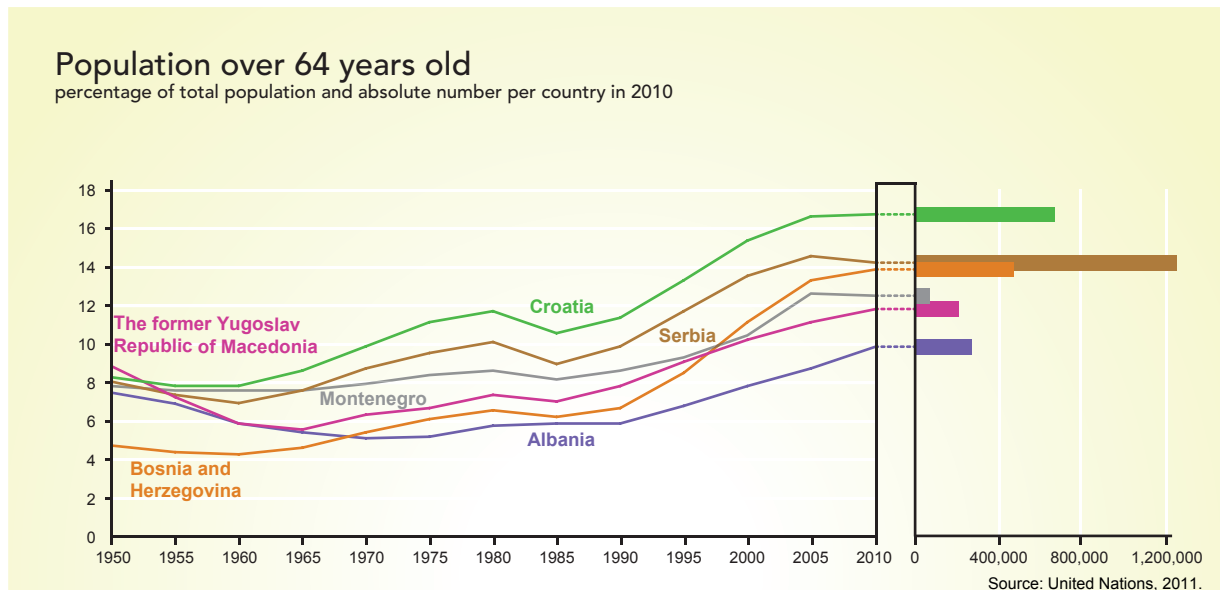
POPULATION AND MIGRATION

The demography of the Balkans is anything but static. Populations are ageing, fertility rates are declining and people are moving from rural to urban areas. Ethnic distributions within countries have political implications regarding the rationale for statehood, and international ethnic migration within the region is high as is emigration to other nearby states, Europe, the United States and other western countries.



The overall populations in Croatia, Montenegro and Serbia are declining, and Serbia's population, among the oldest in Europe and with a low fertility rate, is shrinking by 30,000 per year. In Albania, the fertility rate has fallen from 2.0 to 1.3 births per woman, and large numbers of women of child-bearing age have left the country. Emigration and war reduced the population in Bosnia and Herzegovina, but accurate figures are hard to obtain, and a political controversy is holding up progress on a 2012 census.

Population redistributions have disrupted the structure of the working age population, changed the balance in the job market and increased unemployment. The rural-to-urban movement has increased the pressure on already inadequate infrastructure. Many of the best-educated and most highly skilled workers have emigrated to destination countries outside the Balkans.





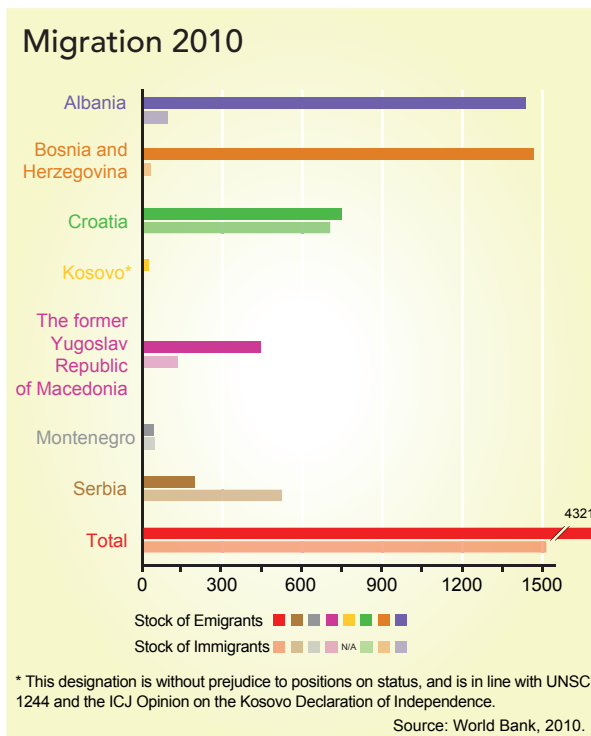
Map produced by ZOI Environment Network, March 2012.

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Source: LandScan Global Population Database 2007, Oak Ridge, TN, Oak Ridge National Laboratory (→ www.ornl.gov/sci/landscan/).

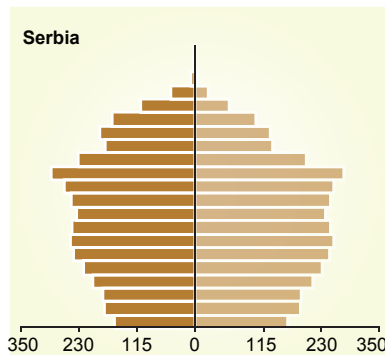
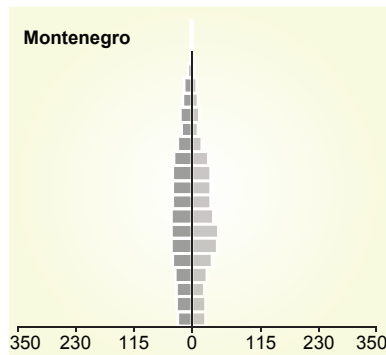
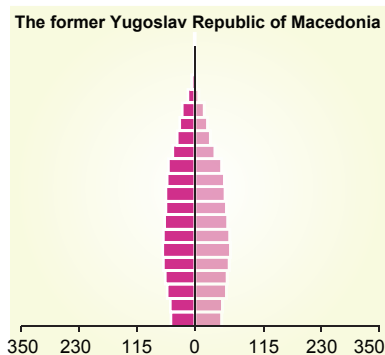
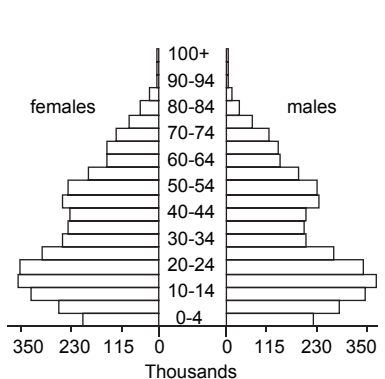
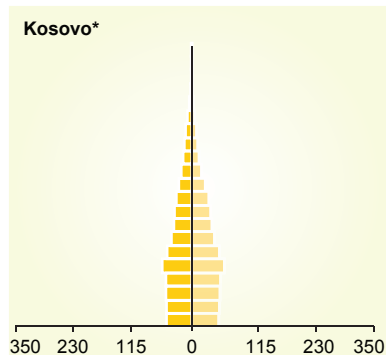
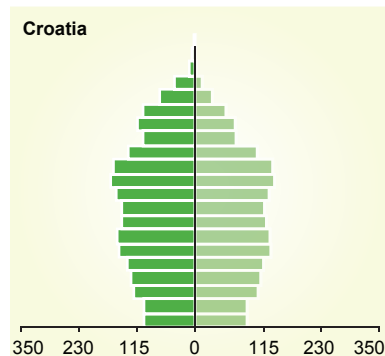
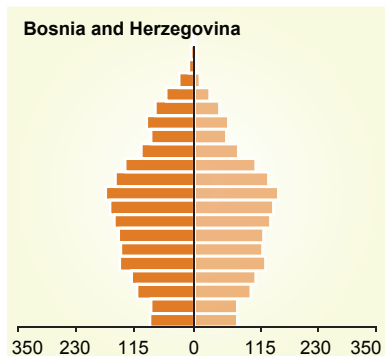
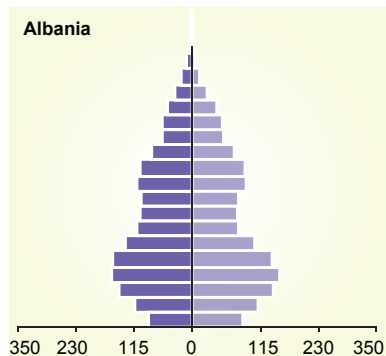
International migrant stock is the number of people born in a country other than the country where they live. The data come primarily from censuses, and the idea is to provide a snapshot of the situation in a given area on a certain date. Analysts use extrapolations and interpolations to reconcile data from different periods or sources. The 2010 migrant stock figures for the West Balkan countries indicate the extent of migration in the region.

Just more than 50 per cent of the more than 4 million emigrants from the West Balkan countries is living in other Balkan countries or in Italy, Greece or Turkey. Another 29 per cent is elsewhere in Europe, and the remaining 21 per cent is scattered across the globe with significant numbers in the United States, Canada and Australia. Of the more than 1.5 million immigrants in the West Balkans, 52 per cent comes from other Balkan countries or from Italy, Greece or Turkey.



Age pyramids

Absolute number of people per age category in 2010



* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

Source: US Census, 2011.

Internal migration is also an issue in the West Balkans as many people leave rural areas to seek opportunities in the cities. The population of Tirana has grown from 200,000 to almost 1 million since the end of the communist era, taxing the city's infrastructure. Belgrade, Sarajevo and Skopje have similar situations. Since 1992 the percentage of the population living in rural areas has declined in every West Balkan country.

All of these demographic changes reduce the region's adaptive capacity.



Population displacement, 1991-2001

-  Croats
-  Muslims
-  Serbians
-  Others (Albanians, Hungarians)

Map produced by ZOÏ Environment Network, February 2012.
Sources: Philippe Rekacewicz; Le Monde diplomatique (→ www.monde-diplomatique.fr);
UNEP/GRID-Arendal (→ www.grida.no).

Emigration from the West Balkans

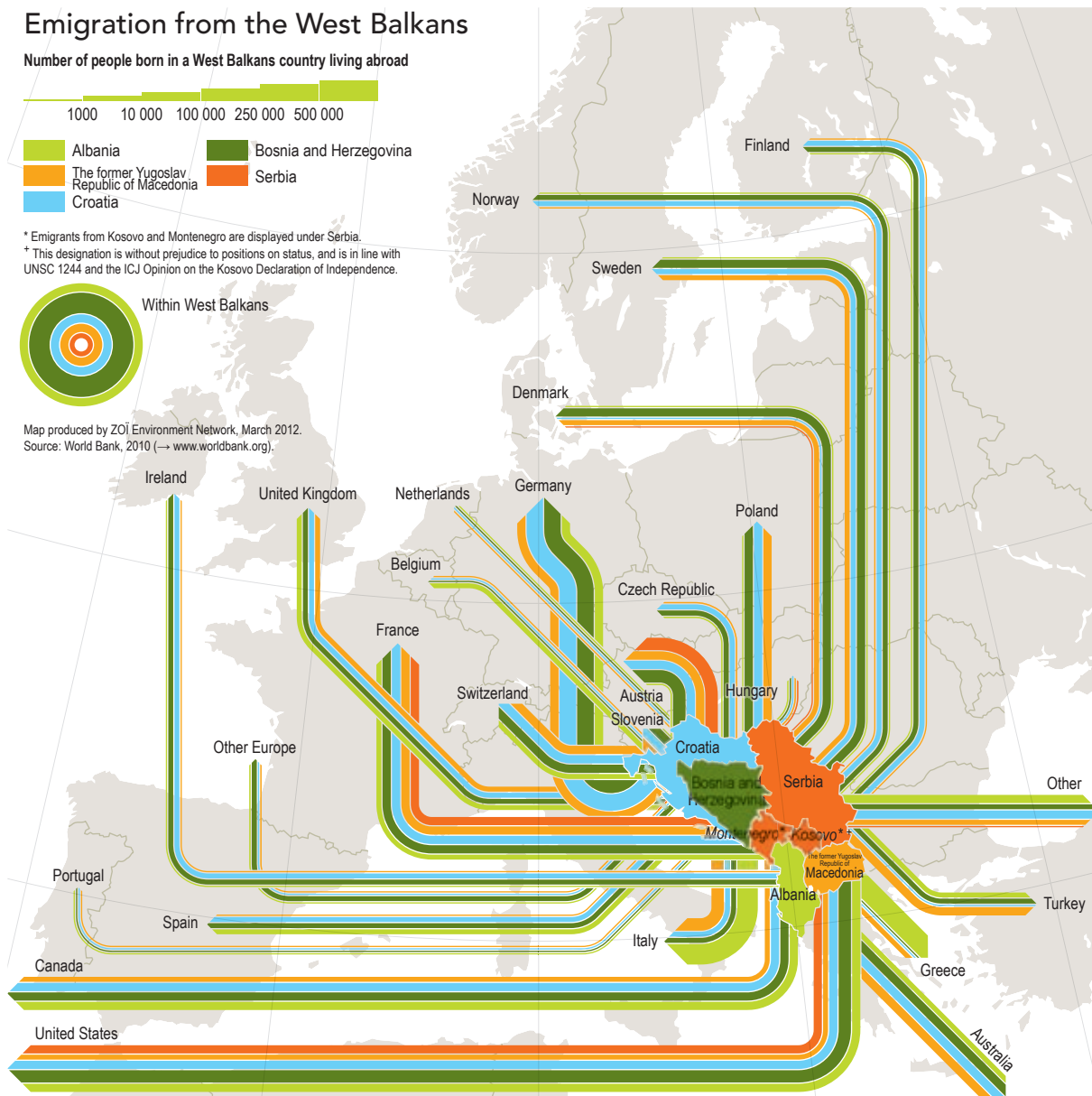
Number of people born in a West Balkans country living abroad



* Emigrants from Kosovo and Montenegro are displayed under Serbia.
 † This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.



Map produced by ZOI Environment Network, March 2012.
 Source: World Bank, 2010 (→ www.worldbank.org).







CLIMATE CHANGE IN THE REGION

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The Balkan countries experience a range of climates out of proportion to the size of their geographic area.

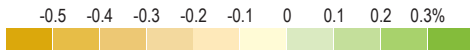
Albania has a Mediterranean climate with mild, wet winters and hot, dry summers, as does the southern part of Montenegro and the coastal and lowland areas of Bosnia and Herzegovina. The climate in the remaining areas of Bosnia and Herzegovina ranges from temperate continental to alpine. Most of Croatia has a moderately warm, rainy climate. The far north of Montenegro has a continental climate, and the central and northern parts have some characteristics of mountain climate, but with Mediterranean Sea influences on temperature and precipitation.

The climate of Serbia varies from temperate continental in most areas to continental in the mountains to Mediterranean subtropical and continental in the south-west. The climate in the former Yugoslav Republic of Macedonia varies from sub-Mediterranean to moderate continental/sub-Mediterranean to hot continental to cold continental to a range of alpine sub-climates.



Change in precipitation, 1951-2006

Per cent per year



Map produced by ZOİ Environment Network, March 2012.

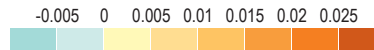
* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

Source: Climatewizard (→ www.climatewizard.org).



Change in temperature, 1951-2006

°C per year



Map produced by ZOİ Environment Network, March 2012.

* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

Source: Climatewizard (→ www.climatewizard.org).



The Balkans are getting warmer and are projected to continue on this warming trend generally in proportion to the expected increase in global temperatures. Similarly, the region is receiving less precipitation and is projected to experience further decreases, although precipitation patterns will continue to vary according to terrain, elevation and proximity to the sea. The effect of warmer temperatures on evaporation, together with the decline in precipitation, will make the region drier.


All six of the West Balkan countries conform to the general warming trend, with Albania expecting more frequent droughts. In Croatia, a reduction in annual precipitation is attributable to changes in the frequency of low-intensity rain days and to a

significant increase in the incidence of dry days. In the former Yugoslav Republic of Macedonia – where the frequency and intensity of floods and droughts has already increased – the sharpest declines in precipitation are expected to occur in the summer, along with the greatest increase in temperature; winter precipitation is expected to remain unchanged. Serbia has also experienced more frequent and intense droughts. Precipitation in both Serbia and Bosnia and Herzegovina has increased in some areas, and declined in others. Montenegro has been experiencing more frequent extreme heat since 1998, but annual precipitation has remained fairly constant with some fluctuations around the norm, and some analysts detect a slight downward trend.





Climate change hotspots



Change in annual precipitation by the 2050s

-  Increase
-  Decrease




 Temperature increase by 1.7-2.3°C by 2050 across the region (depending on the model and scenario)

Present risks intensified by climate warming

-  Risk of forest fires
-  Risk of desertification
-  Risk of decreasing farming productivity and risk of failures of rain-fed crops
-  Sea level rise impacts on coastal erosion and salt water intrusion

-  Risk of floods
-  Drought and heat waves

Projected change in mean seasonal and annual river flow between 2071-2100 and the reference period 1961-1990

-  Increase
-  Stable
-  Decrease

* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

Sources: Global Risk Data Platform (→ www.preventionweb.net/english/maps); European Environment Agency (→ www.eea.europa.eu/data-and-maps/figures/sensitivity-to-desertification-index-map); European Environment Agency (→ www.eea.europa.eu/data-and-maps/figures/projected-change-in-mean-seasonal-and-annual-river-flow-between-2071-2100-and-the-reference-period-1961-1990); Climate Wizard (→ www.climatewizard.org); The Regional Environmental Center for Central and Eastern Europe (REC) (→ www.rec.org/topicarea.php?id=11§ion=events&event=12).



Map produced by ZOÏ Environment Network, May 2012.

CLIMATE CHANGE IMPACT AND DEVELOPMENT SCENARIOS IN THE BALKANS

Scenarios are neither predictions nor strategies, but rather narratives of alternative futures that assist decision-makers and stakeholders plan in an environment of uncertainty.

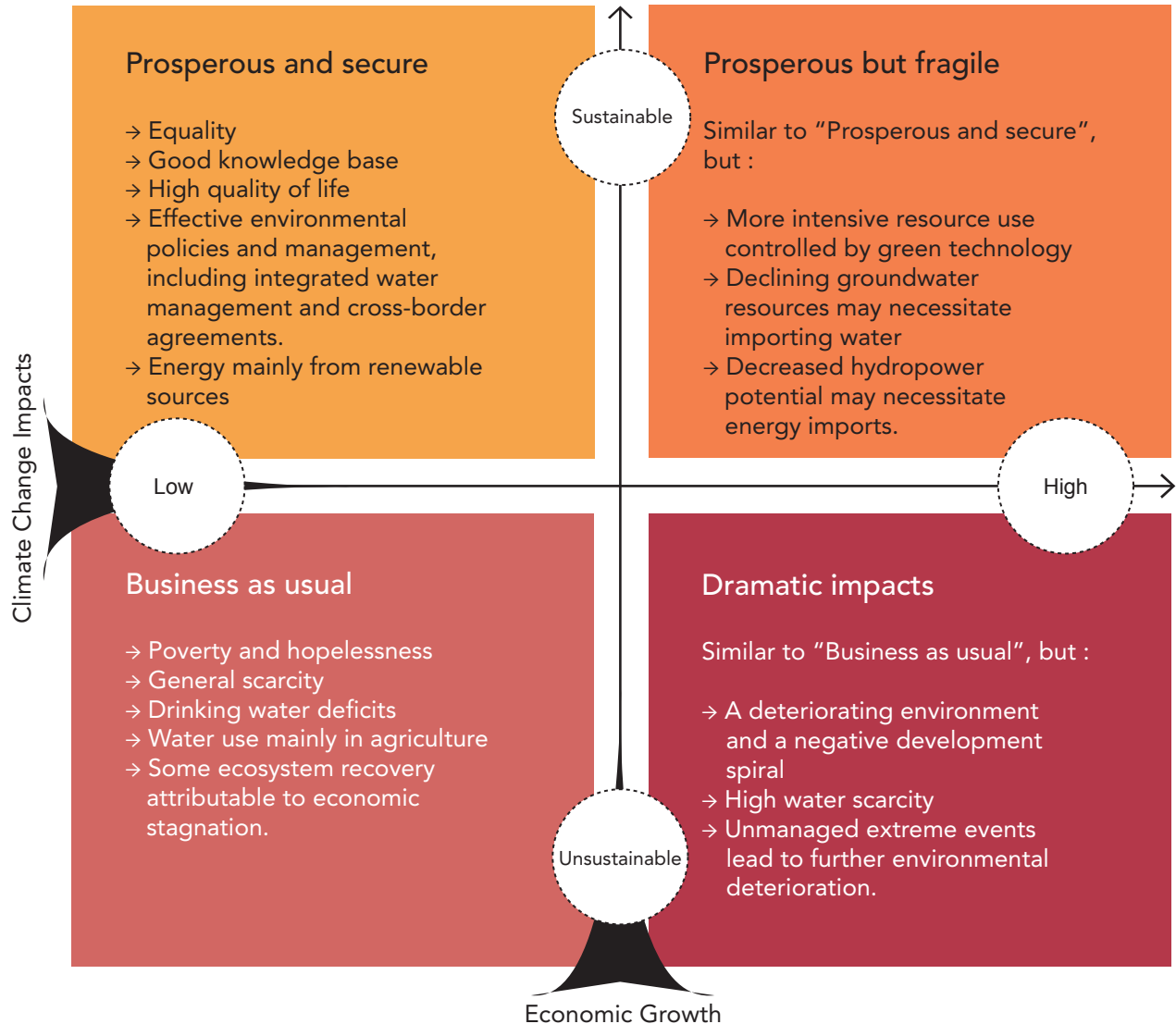
The Organisation for Security and Co-operation in Europe (OSCE) and the European Environment Agency (EEA) organized a scenario development workshop, “Opportunities for development in the West Balkans in the context of climate change impacts and water scarcity”, held in Belgrade, Serbia, 24–26 October 2011. More than 40 experts from the region participated in the event, and developed four separate scenarios based on assumptions about future climate change impacts (low or high), and about economic growth (sustainable or not). The baseline scenario combines assumptions of low climate change impacts with unsustainable economic growth.

The workshop participants considered a wide range of driving forces – social, technological, economic, environmental and political – across global, regional and local levels of influence. Those drivers contributing to greater risk included poor education and an inadequate knowledge base; low political and public awareness; ill-prepared and vulnerable industries; and unsustainable economic growth. The participants identified the following goals or pathways as essential to reaching the desired future:

- Good governance
- Education and social awareness
- Improvement in general welfare
- Political stability
- Availability of green technology.

West Balkans Scenario Development Workshop

Prospective scenario outcomes





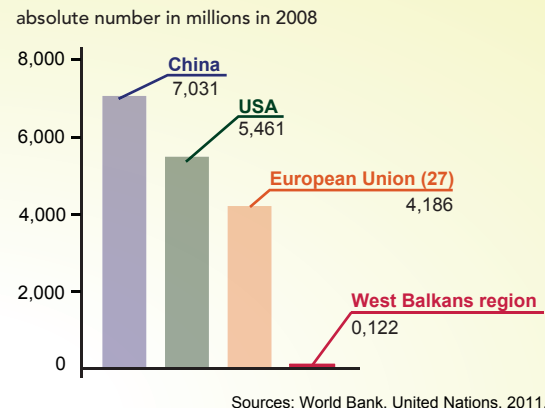
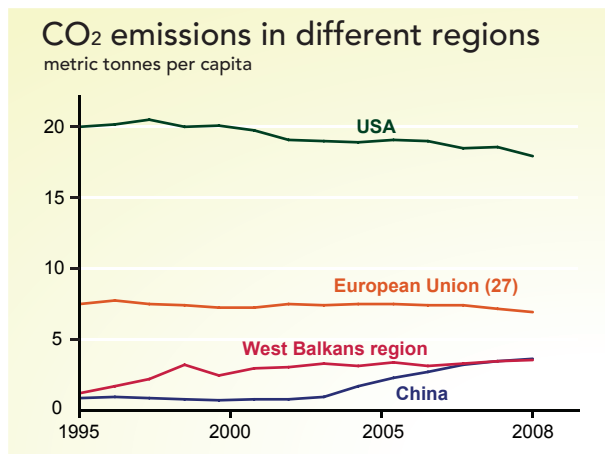
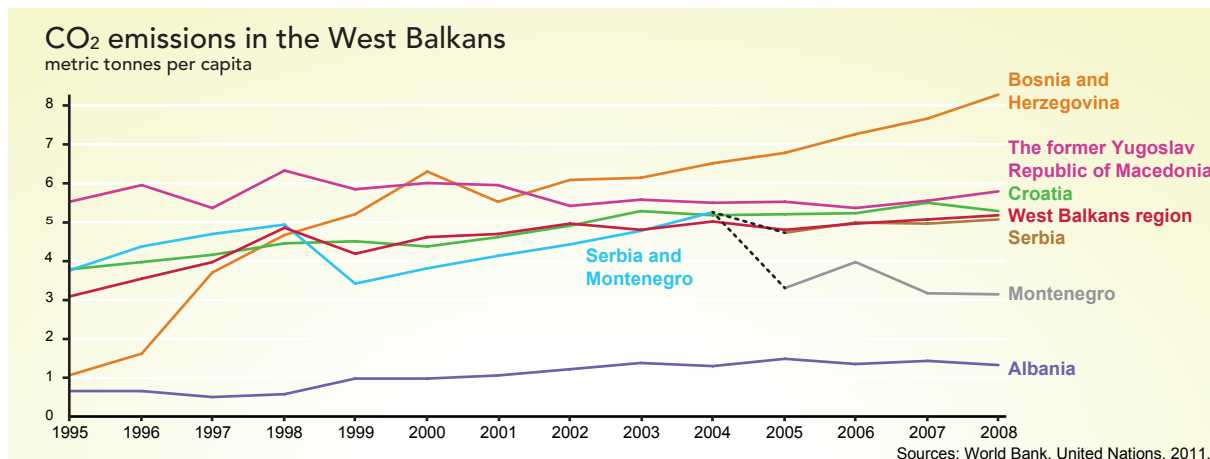
GREENHOUSE GAS EMISSIONS AND MITIGATION

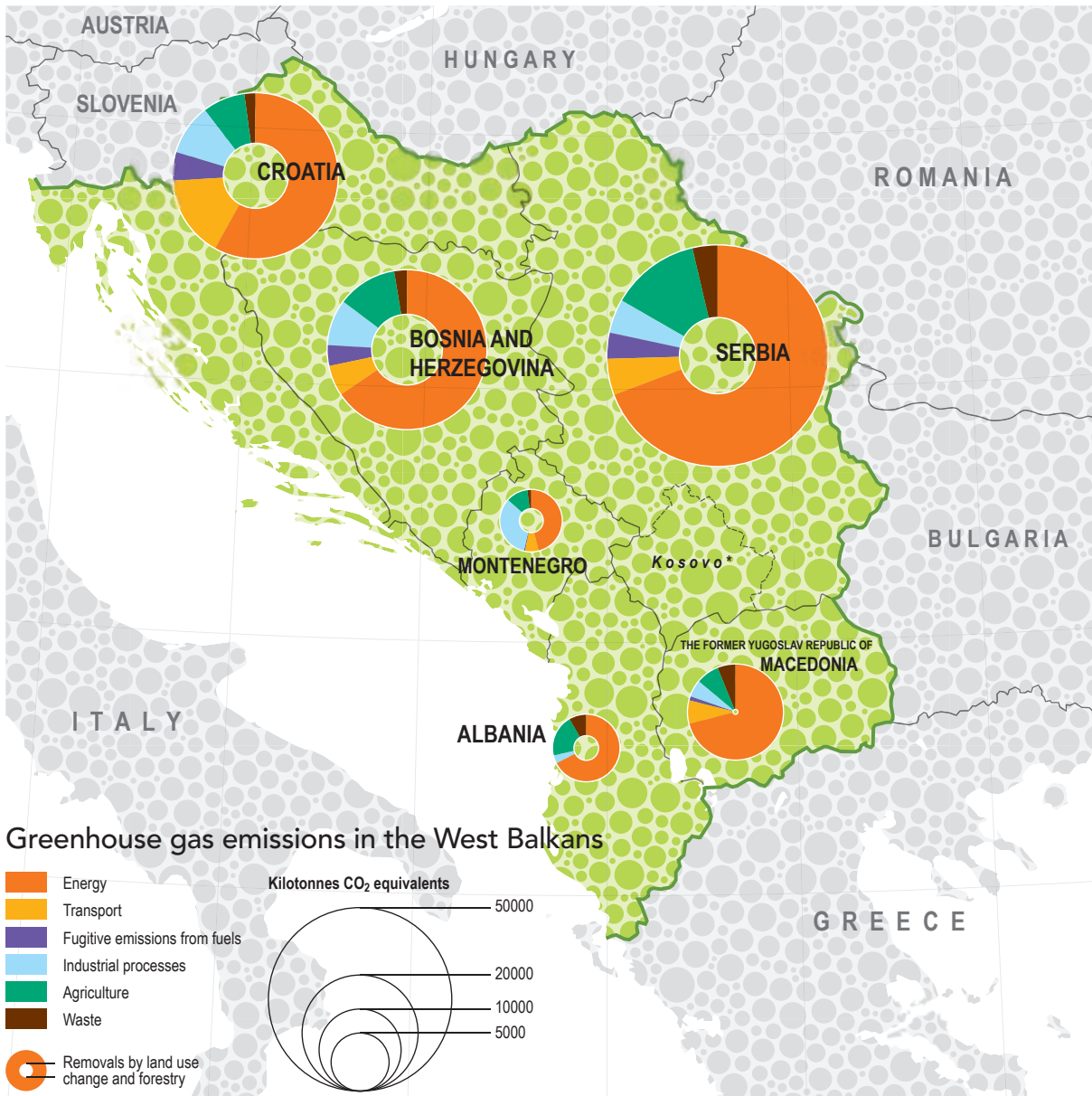
“Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations.”

– Intergovernmental Panel on Climate Change
Fourth Assessment Report

While the West Balkans are experiencing serious consequences of climate change, the region's contribution to the problem is much lower than in highly developed countries. In 2008, the CO₂ emissions for the West Balkan countries range from slightly more than 1 metric tonne to just over 8 metric tonnes per capita. As a group, their annual per capita emissions are a bit more than one half

those of the European Union (EU-27) countries, and a bit more than one quarter those of the United States. The largest disparity is evident in the total emissions figures: compared to China, the US and the EU, the West Balkans' emissions barely register. A brief overview of greenhouse gas (GHG) emissions and mitigation strategies by country follows.

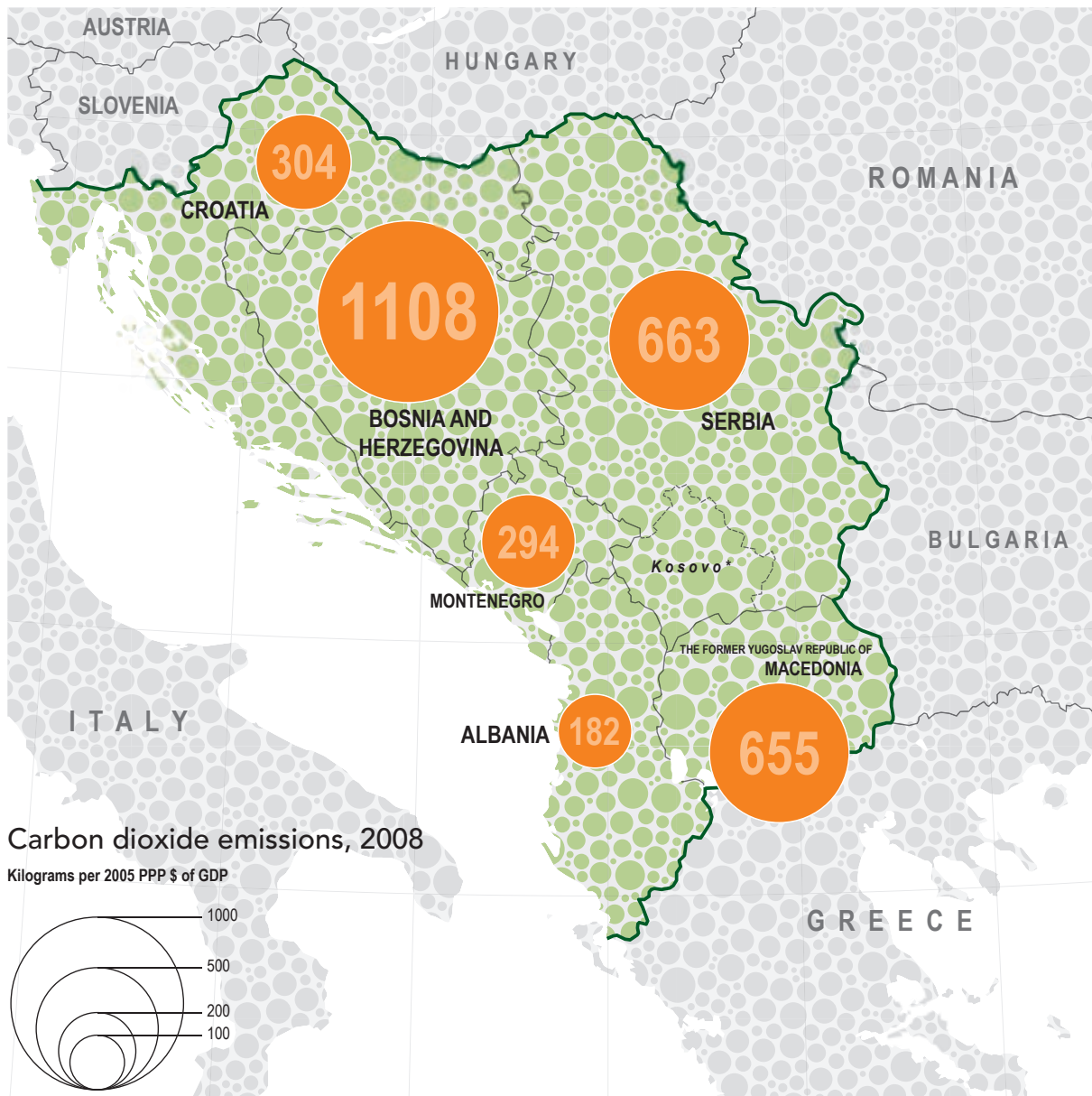




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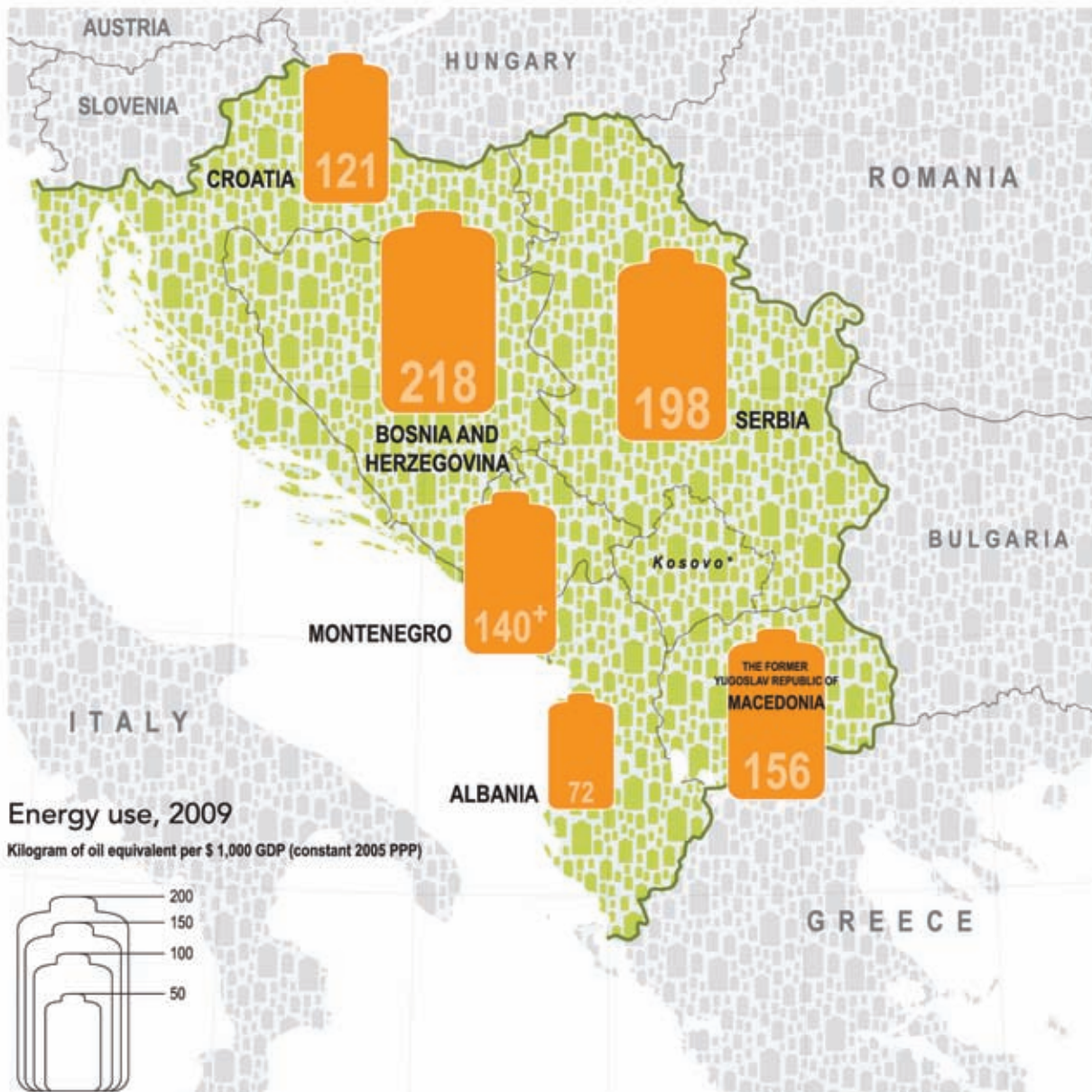
Sources: National Communications under the United Nations Framework Convention on Climate Change, latest year available (Albania 2000, Bosnia and Herzegovina 1990, Croatia 2008, Montenegro 2003, Serbia 1998, The former Yugoslav Republic of Macedonia 2002) (→ <http://unfccc.int>).



Map produced by ZOI Environment Network, March 2012.

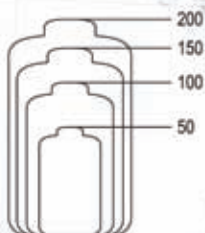
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Source: World Bank, latest available data (→ <http://data.worldbank.org/data-catalog>).



Energy use, 2009

Kilogram of oil equivalent per \$ 1,000 GDP (constant 2005 PPP)



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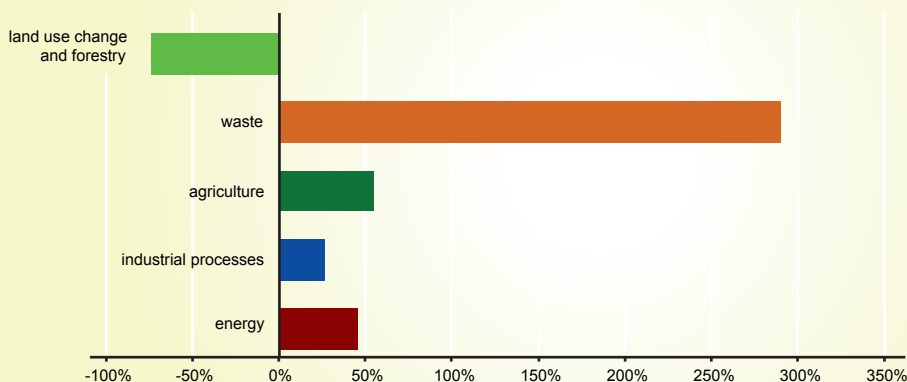
Source: World Bank, latest available data (2009, * Montenegro 2007) (→ <http://data.worldbank.org/data-catalog>).

ALBANIA

Between 1990 and 2000, Albania's GHG emissions associated with land use change and forestry declined significantly, while emissions in all other sectors increased. Because land use change and forestry represented such a large proportion of total emissions in the base year (45 per cent), the total emissions for the country declined in the period by 3 per cent. The increase in emissions in the energy sector combined with the decline in land use change and forestry emissions resulted in the energy sector having the highest proportion of total emissions in Albania in 2000. The waste sector shows the highest percentage increase, but in absolute terms, waste emissions rose less than in any other sector except industrial processes.

Albania's mitigation strategies for the energy sector include switching to power plants that use cleaner energy sources, and increasing the efficiency of boilers, refrigerators and motors. Agricultural initiatives centre on improvements in the management of manure and grazing systems, and on crop rotation. New landfills with methane recovery and solid waste incinerators are intended to reduce emissions associated with waste. The strategies related to land use change and forestry include the development of a sustainable forestry plan, improvement in forestry management practices and rehabilitation of damaged forest land.

GHG emissions change from 1990 to 2000 in Albania



Note: no data available on transport and fugitive emissions from fuels for Albania.
Note: comparison between base year and year with latest available data.

Source: Second national communication of Albania, 2009.

BOSNIA AND HERZEGOVINA

Greenhouse gas emissions data for Bosnia and Herzegovina are available only for 1990, so no trend analysis is possible. The country is working with external partners on a project intended to enable the preparation of its second communication to the United Nations Framework Convention on Climate Change (UNFCCC). The second communication will update the GHG inventory, and include additional gases not covered in its initial communication. The project aims to build capacity so that Bosnia and Herzegovina can develop data and estimates that adhere to the good practice guidelines of the Intergovernmental Panel on Climate Change.

Bosnia and Herzegovina's initial communication to the UNFCCC recommends the development of a national climate change mitigation strategy and action plan based in part on the findings of the initial communication, and prepared in conjunction with work on the second communication. Development of the mitigation strategy is to include a national mitigation policy that relates to national economic and development plans; the identification of measures and activities necessary for implementation; and provisions for the direct inclusion of the entity-level governments.

CROATIA

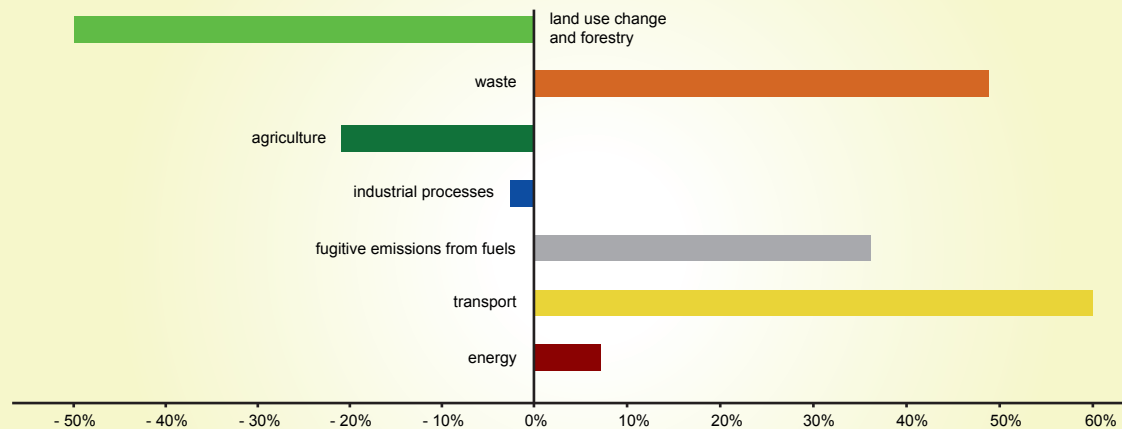
In both 1990 and 2007, the energy sector in Croatia accounted for almost 70 per cent of the country's total GHG emissions. Emissions in the waste, fugitive emissions, transport and energy sectors all increased between 1990 and 2007, while in the agriculture and industrial processes sectors emissions declined. Absorption of GHG emissions in the land use change and forestry sector increased, thus further reducing total emissions. The highest percentage changes occurred in transport, land use change and forestry and waste. The overall GHG emissions during this period increased by 6 per cent.

Croatia has already implemented an impressive array of mitigation measures across all sectors, and has identified additional measures as either adopted or planned. In the energy sector, the country has implemented measures to promote the use of renewable energy sources in electricity generation, the application of cogeneration and

the upgrading of energy efficiency in building construction, and has plans to construct a 1,000 MW nuclear power plant by 2024. The transport sector has seen the introduction of biofuel and a programme to increase the attractiveness of rail transport. New measures related to industrial processes are intended to reduce N₂O emissions in nitric acid production and volatile organic compounds emissions in solvent use. New waste measures include avoiding and reducing municipal waste generation, enhancing the recycling of municipal waste and using landfill gas for electricity generation. The efficient management of organic manure is being promoted in agriculture, and in the land use and forestry sector, efforts are underway to improve private forest management and to plant new forests.

Croatia has also undertaken a number of cross-sectoral measures and activities related to its status as UNFCCC Annex I country.

GHG emissions change from 1990 to 2007 in Croatia



Note: Croatia is the only Annex I country from the region and therefore has committed to reduce emissions of greenhouse gases by 5 per cent as compared to the base year (1990) during the first mandatory period (2008-2012) under the Kyoto Protocol.

Note: comparison between base year and year with latest available data.

Source: Fifth national communication of the Republic of Croatia, 2010.

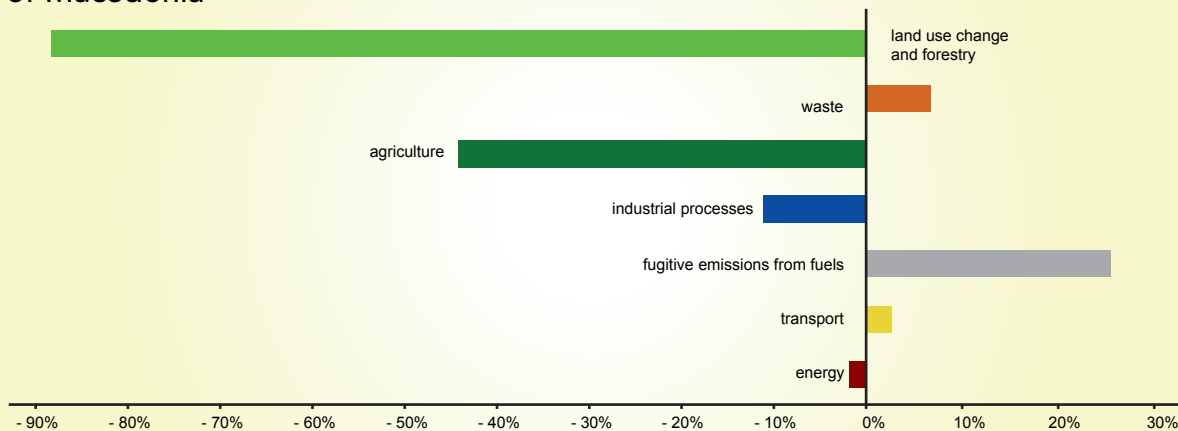
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA

The reduction in emissions associated with land use change and forestry in the former Yugoslav Republic of Macedonia between 1990 and 2002 appears to be impressive, but this sector represented only 2 per cent of the country's total emissions in 1990. The energy sector accounts for the lion's share – 70 per cent in 2002. Overall GHG emissions for the period dropped 8 per cent, largely attributable to the decline in agricultural emissions.

The second national communication of the former Yugoslav Republic of Macedonia to the UNFCCC

includes a National Action Plan for Climate Change Mitigation. In the energy sector, the plan envisions using natural gas for electric power production, maximizing the potential of hydropower and improving energy efficiency. Transport measures include improvements in the energy efficiency of vehicles and in public urban and intercity transport. The waste strategy introduces sustainable management and measures for waste selection and recycling, composting and the reduction of deposited waste. The main strategy in agriculture focuses on manure management, and in forestry on afforestation.

GHG emissions change from 1990 to 2002 in the former Yugoslav Republic of Macedonia



Note: comparison between base year and year with latest available data.

Source: Second national communication of the former Yugoslav Republic of Macedonia, 2008.

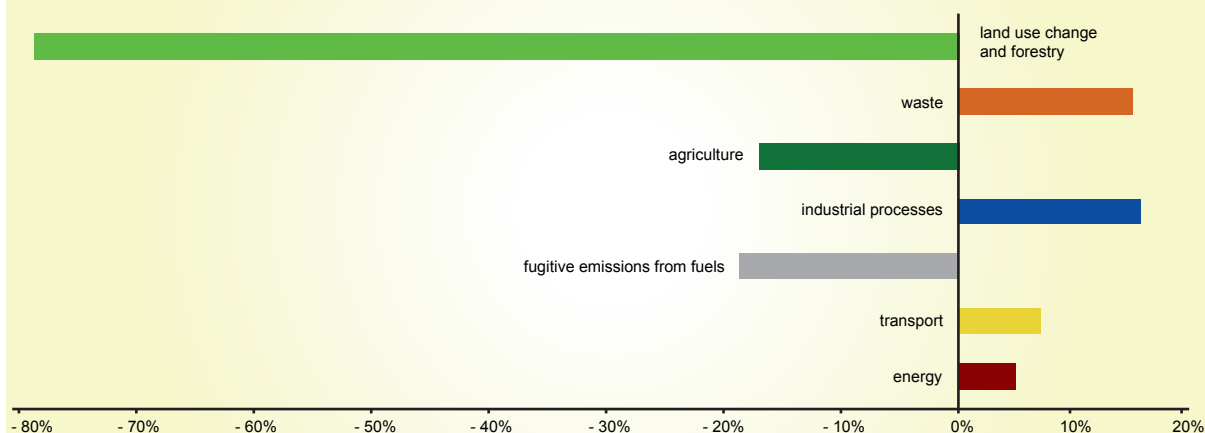
MONTENEGRO

Montenegro's overall GHG emissions decreased between 1990 and 2003 by 2 per cent, with the largest contribution coming from land use change and forestry. While energy emissions increased slightly in this period, the proportion of total emissions attributable to the energy sector increased slightly – from 51 per cent to 54 per cent. The largest percentage change in emissions came from absorption in the land use and forestry sector, but in 2003 this sector accounted for only 17 per cent of total emissions.

In its initial communication to the UNFCCC, Montenegro identifies emission reduction strategies for each sector. Strategies for the energy

sector include combining the production of heat and electric power, increasing the efficiency of industrial boilers and replacing coal with liquefied petroleum gas in industrial boiler rooms and in the production of high temperature heat. Plans for the transport sector provide for the replacement of fossil fuels with alternative fuels and for the development of a more efficient transportation system. Strategies for agriculture include the improvement of manure management and the encouragement of organic farming. In the land use and forestry sector, Montenegro intends to increase the share of highly productive forests, to rehabilitate damaged forests and to preserve and enhance woodland habitats.

GHG emissions change from 1990 to 2003 in Montenegro



Note: comparison between base year and year with latest available data.

Source: Initial national communication of Montenegro, 2010.

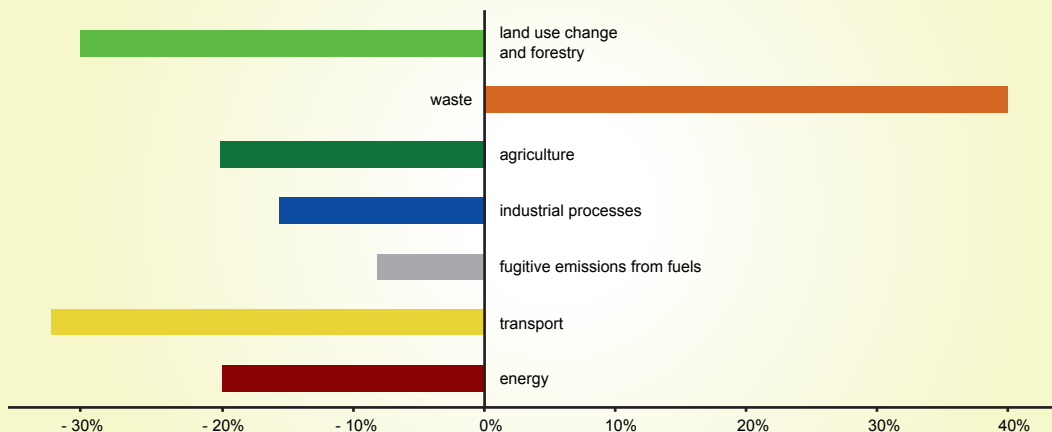
SERBIA

Between 1990 and 1998 Serbia's GHG emissions declined by 22 per cent with most of the reduction coming from the energy sector, which accounted for 79 per cent of Serbia's GHG emissions in 1998. Emissions in the land use change and forestry and waste sectors experienced significant percentage changes, but these sectors represent a small proportion of overall emissions.

Serbia's mitigation plans for the energy sector include improving energy efficiency and using more renewable energy sources. Automation, monitoring and waste energy utilization are the main strategies for reducing emissions in the

area of industrial processes. In the transport sector, Serbia seeks to re-establish an efficient international rail system, repair roads, increase the level and efficiency of river transport and cease production of leaded gasoline. New technologies in coal mine ventilation are expected to reduce fugitive emissions. The use of biogas in the production of heat and power for local consumption in large livestock operations is a key strategy for reducing agriculture emissions, and afforestation is the preferred strategy in the land use change and forestry sector. In the waste sector, Serbia plans to establish regional landfills and increase the degree of recycling.

GHG emissions change from 1990 to 1998 in Serbia



Note: comparison between base year and year with latest available data.

Source: Initial national communication of the Republic of Serbia, 2010.

“A green economy results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one that is low-carbon, resource-efficient and socially inclusive.”

– United Nations green economy report

The idea of a green economy emerged from the recognition that the economy is crucial to the achievement of sustainability, and that today's economies fail to account sufficiently for pollution, resource depletion, declining ecosystem services and the consequent inequities that affect the poor. The transition to a green economy would entail creating the conditions for public and private investments that include both environmental and social goals. Such investments would drive economic growth while reducing carbon emissions and pollution, enhancing energy and resource efficiency and preventing further losses of biodiversity and ecosystem services.

The measures for responding to climate change – both through mitigation and adaptation – are entirely consistent with the green economy model, as are sustainable development projects. The difference is that a green economy would take a more comprehensive approach, one designed so that all projects meet the tests for sustainability as a matter of course. The West Balkan countries may be able to adopt national policies that encourage a green economy while simultaneously pursuing separate sustainable development and climate change adaptation projects.





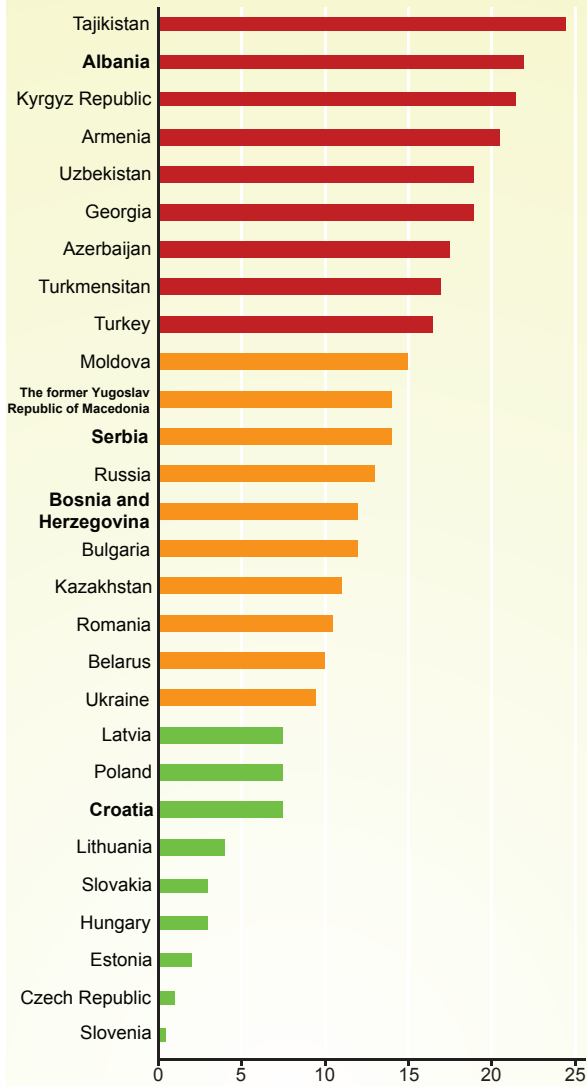
VULNERABILITY

The ability of the West Balkan countries to respond effectively to climate change – either alone or together – depends on their overall vulnerability, which is a function of three factors – exposure, sensitivity and the capacity to adapt.

Exposure accounts for the hazards associated with future climate change as compared to present conditions. Drought, for example, is a hazard resulting from higher temperatures and less precipitation. Sensitivity considers the degree to which exposure to a hazard causes harm. In an agricultural region, for example, exposure to drought may have significant consequences. Adaptive capacity captures the ability of the social, economic and political institutions to respond to the effects of climate change.

The vulnerability index combines indices for exposure, sensitivity and adaptive capacity. (These separate indices are included in the sections that follow.) On this relative scale, the higher scores signify higher overall vulnerability. Of the five countries included in this analysis, Albania is the most vulnerable to climate change, and Croatia the least.

Vulnerability index

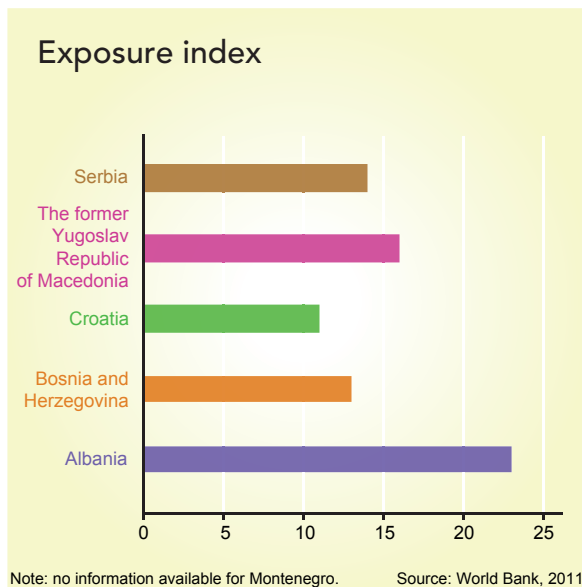


Source: World Bank, 2011.

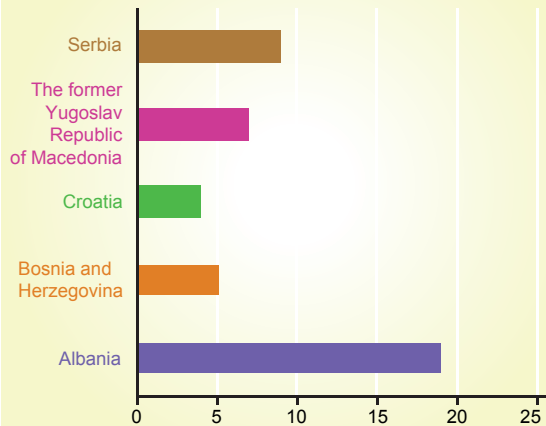
EXPOSURE AND SENSITIVITY

The exposure index measures the strength of future climate change relative to today's natural variability, and includes both annual and seasonal temperature and precipitation indicators. It combines the number of additional hot, dry and wet years; hot, dry and wet summers; and hot, dry and wet winters projected over the 2070–2100 period relative to the 1961–1990 period. On this relative scale, the higher scores signify higher exposure.

Rising temperatures and disruptions in the precipitation regime are the most significant exposures for the region. All the countries in the West Balkans face more frequent and more intense droughts and floods, and the four countries with coastal areas – Albania, Bosnia and Herzegovina, Croatia and Montenegro – also face potential hazards associated with a rising sea level. Exposure to these hazards will play out in public health and biodiversity and in key economic sectors – water resources, agriculture, forestry, energy and tourism.



Sensitivity index



Note: no information available for Montenegro.

Source: World Bank, 2011.

The sensitivity index is based on indicators likely to increase the impact of climate shocks. These indicators include the available renewable water resources per capita; the extent of air pollution; the share of agricultural employment and the value of agricultural assets; the share of electricity derived from hydroelectric plants; a measure of the overall quality of infrastructure; and the share of the population over 65 (who tend to be more sensitive to climate shocks). The higher scores signify higher sensitivity.

The sensitivity of the region to its exposure is high, and centres on the climate change effects on water resources. As the disruptions in water resources ripple through the West Balkans, the negative effects will multiply. In particular, agriculture may see diminished production and periodic catastrophic losses, and hydropower may become less reliable. The socio-economic consequences are likely to be profound, and the countries of the region – on the basis of exposure and sensitivity – are highly vulnerable to climate change.

Agriculture has a significant role in the West Balkans' sensitivity to climate change. Almost half of the land in the region is used for agriculture – 19 per cent in pastures and 29 per cent in arable land and permanent crops. Estimates of agricultural employment vary, as do survey definitions, but between 18 per cent and 58 per cent of the working population is engaged in agriculture, and the sector is an important employer in the region, maybe the most important employer. Agriculture, on average, contributes 17 per cent to West Balkans' GDP. Croatia's 6.0 per cent agricultural share of GDP, the lowest in the region, is still significantly higher than the EU average of 1.6 per cent.

Higher temperatures combined with more frequent and intense droughts increase the risk of forest fires, and the West Balkans are already experiencing more fires over larger areas – more than 38,000 fires that burned more than 450,000 hectares between 1988 and 2004 in Albania, Croatia, the former Yugoslav Republic of Macedonia, Montenegro and Serbia. No reliable data are available to estimate the economic losses, but the environmental damage includes loss of habitat, soil erosion and greenhouse gas emissions.

The region's exposure to more frequent and intense floods has implications for the economies of the countries and for the environment, to say nothing of the attendant human suffering. Flooding in 2010 in Albania, Bosnia and Herzegovina, Croatia and Montenegro forced 20,000 people

from their homes, and caused US\$ 450 million in damage. And in the summer of 2011, heavy rains overwhelmed the wastewater system in Pristina, and flooded hundreds of homes causing almost US\$ 500 million in damage.

The mining legacy in the West Balkans raises the spectre of a flood resulting in an environmental catastrophe, possibly one with international implications. Mine tailings – the waste material remaining after metal and mineral extraction – contain complex compounds and residual chemicals used in the extraction process, and are held indefinitely in tailings management facilities. The volume and contamination level of waste in these facilities can be high, and maintaining reliable storage and management of the tailings is a challenge under any circumstances.

Unfortunately, many tailings management facilities in the West Balkans are abandoned, neglected or orphaned. Without routine monitoring and maintenance these facilities deteriorate and become vulnerable to failure and the consequent release of toxic contamination. The main exposure pathways for such releases are rivers, and the combination of river flooding and tailings management facility failure poses a major threat in the region. Such an event within a country would be bad enough, but when the river crosses international borders and the event involves more than one country, dealing with the event becomes more complicated.



ADAPTIVE CAPACITY

All societies have inherent abilities to deal with certain variations in climate, yet adaptive capacities are unevenly distributed, both across countries and within societies.”

– Intergovernmental Panel on Climate Change Fourth Assessment Report

Adaptation is a risk management strategy that intends to respond to the inevitable effects of climate change, and to enhance resilience – the capacity to respond to a change in a function or in an environmental condition by resisting damage and recovering quickly. Ecosystems with a higher capacity to adapt are less vulnerable to the effects of climate change. For regions or countries or economic sectors, the capacity to adapt similarly determines their degree of vulnerability.

The West Balkan countries face several challenges to their capacity to adapt. Countries with well established, effective governance and strong, stable economies have a distinct advantage in their adaptive capacity. As the recent history of conflict in the region recedes into the past, the Balkan countries are experiencing varying levels of success in establishing effective governance and in bringing stability and growth to their economies. A country's adaptive capacity may be evidenced at the systemic level (governance, economy), the institutional level (ministries, organizations) and at the individual level (household, farm).

All of the Balkan countries aspire to membership in the European Union, and a country's status with respect to EU membership is an indicator of its stability. The framework for EU negotiations with the West Balkan countries is actually called the Stabilisation and Association¹ process, which has three goals:

- The stabilization of the countries and the encouragement of their swift transition to market economies
- The promotion of regional cooperation
- Eventual membership in the EU

Croatia, the former Yugoslav Republic of Macedonia, Montenegro and Serbia all enjoy official candidate status, and Croatia is engaged in accession negotiations. Albania, Bosnia and Herzegovina, and Kosovo² are potential candidates in the earlier stages of the Stabilisation and Association process.³

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1 More about the process: http://europa.eu/legislation_summaries/enlargement/ongoing_enlargement/114536_en.htm

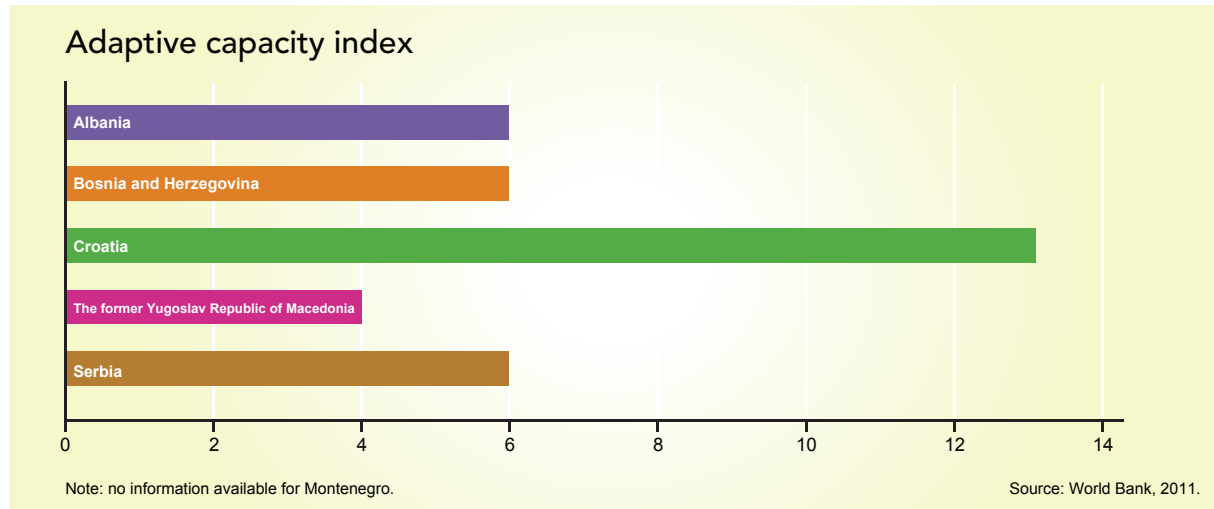
2 This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

3 Map of candidate and potential candidate countries: <http://www.bbc.co.uk/news/world-europe-11283616>

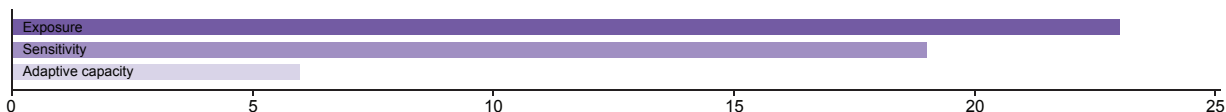
The West Balkans countries face many of the same problems on the path to stabilization – lingering boundary disputes and ethnic enclaves, gray economies, corruption, organized crime and the effects of the global economic crisis. But each of the West Balkan countries also has its own set of circumstances and challenges.

The adaptive capacity index combines social and economic measures – income inequality, GDP per capita – with institutional measures of voice

and accountability, political stability and absence of violence; and an aggregate measure of government effectiveness, regulatory quality, rule of law and control of corruption. The higher scores signify higher adaptive capacity. Croatia has the highest adaptive capacity of the five countries included in the index. The former Yugoslav Republic of Macedonia has the lowest adaptive capacity, while Albania, Bosnia and Herzegovina and Serbia fall in the middle. Montenegro was not included in the analysis.



ALBANIA



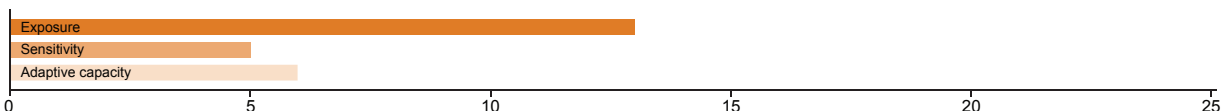
In Albania, hydro sources produce more than 95 per cent of the country's electrical energy, but as of 2007, only 12 per cent of the country's total energy supply – down from 25 per cent in 2000. Overall, the share of total demand met by renewable energy including hydro fell from 42 per cent in 2000 to 22 per cent in 2007.

Albania's expected increase in long-term mean annual and seasonal air temperature and its decrease in mean annual and seasonal precipitation are likely to reduce long-term mean annual and seasonal runoff. A 20 per cent reduction in runoff is projected to cause a 60 per cent reduction in power generation. This means that while hydropower may be good for reducing greenhouse gas emissions, reliance on hydropower can increase the country's vulnerability to climate change.

The precipitation regime is also important for agriculture, which is still the backbone of Albania's economy. Agriculture employs nearly half of the work force and generates a considerable part of the national GDP. Emerging sectors (commerce and services) are diminishing agriculture's overall proportion of the Albanian economy, but agriculture will continue to dominate.

In the transition from communist rule to multiparty democracy, Albania has experienced major political, institutional and socio-economic changes, and successive governments have grappled with high unemployment, widespread corruption, crumbling infrastructure and powerful organized crime networks, all in a contentious political environment. Albania has an informal, unreported economic sector that may be as large as 50 per cent of the country's official GDP. The transition from a centrally planned state to a more modern open-market economy has been difficult, but the government has adopted a fiscal reform package aimed at reducing the large gray economy and at attracting foreign investment.

BOSNIA AND HERZEGOVINA

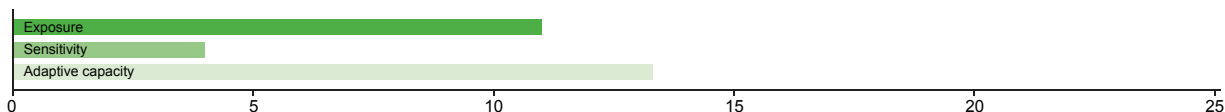


In terms of both exposure and sensitivity, the situation in Bosnia and Herzegovina is similar to Albania's. The expected effects from the changes in temperature and precipitation are the same, and pose threats to agriculture, forestry, energy and water resources management. The country anticipates that the unfavourable spatial and temporal distribution of water outflows will require construction of water management facilities of considerable scale and complexity to permit the rational use of water resources and the preservation of water quality and quantity, and to provide protection from the damaging effects of water.

The economic importance of agriculture and forestry, and to a lesser extent, hydropower means that Bosnia and Herzegovina is highly sensitive to these exposures. In addition, a lack of alternative employment options in communities dependent on these climate-sensitive sectors of the economy could make the problems worse.

In Bosnia and Herzegovina, three levels of autonomy and up to four administrative layers make for a complex public administration system. The country lacks the management and the technological and economic capabilities to adapt to climate change at the national level, and limited public awareness and financial resources constrain the capacity for individual adaptation measures. A large share of the country's economic activity remains unofficial and unreported. An analysis of competitiveness in Bosnia and Herzegovina found that the country ranks at the satisfactory level on only 18 out of 116 relevant criteria. Among the problems are underdeveloped and inefficient financial markets, a weak fiscal system and inadequate infrastructure, particularly in water management. The country possesses considerable water resources, and water is potentially a basis for economic development, but the existing water supply infrastructure is in poor condition and water resources are increasingly polluted.

CROATIA



In Croatia, concerns about water resources extend to whether the water supply can continue to meet the ever-growing drinking water requirements. The main issues in agriculture relate to both water availability and increased temperature, and focus on the prospects of diminished water supply, the greater frequency of droughts and the effects of heat stress on animals.

The tick-borne virus meningoencephalitis occurs from spring to autumn in Croatia. Warmer and longer autumns extend the period of tick activity; milder winters favour tick survival; and higher temperatures shift the altitudinal limits for tick occurrence.

Croatia still has boundary disputes with Slovenia and with Bosnia and Herzegovina, and continues to battle corruption and organized crime. It is a member of the North Atlantic Treaty Organization and the World Trade Organization, and is a party to the Central European Free Trade Agreement. While Croatia has largely achieved macroeconomic stabilization, deep resistance on the part of the public and weak political support have inhibited structural reforms. Long-term growth prospects remain strong, but difficult problems – a stubbornly high unemployment rate, a growing trade deficit and uneven regional development – still remain. The global financial crisis will create significant pressure, and Croatia's high foreign debt, anemic export sector, strained state budget and over-reliance on revenue from tourism will result in higher risk to economic stability over the medium term.



THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA



Agriculture and industry have been the two most important sectors of the former Yugoslav Republic of Macedonia economy, but the services sector has recently gained prominence. Agriculture is a priority sector that accounts for a significant proportion of GDP and employment, and contributes to social security and poverty reduction.

With its wide range of subnational climates, the former Yugoslav Republic of Macedonia expects highly varied effects from changes in temperature and precipitation: projections for the reduction in effective rainfall vary from 15 per cent to 40 per cent. Of the country's available water resources, 84 per cent are formed within its boundaries, so the country is particularly sensitive to the overall reduction in effective rainfall. Agriculture will bear the brunt of the negative consequences, and the largest effects are expected in central and south-eastern parts of the country.

The former Yugoslav Republic of Macedonia has capacity constraints at the systemic, institutional and individual levels. Shortages in resources and staff are evident in the ministries for the environment and physical planning, economy, transport, health and industry. The main economic problems of the former Yugoslav Republic of Macedonia are a low standard of living, high unemployment and relatively modest economic growth. The official unemployment rate of 31.7 per cent may overstate the case because of an extensive gray market, estimated to be more than 20 per cent of GDP. A largely obsolete industrial infrastructure has not seen much investment during the transition to a market-oriented economy. Labour force education and skills are competitive, but in the absence of adequate job opportunities, many of those with the best skills seek employment abroad. Despite making extensive fiscal and business sector reforms, the former Yugoslav Republic of Macedonia has so far lagged behind the rest of the region in attracting foreign investment and in creating jobs.



* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

MONTENEGRO



Montenegro's sensitivity to climate change is highest for forest ecosystems. Most Montenegrin forests were established by natural regeneration, and by virtue of their climate and terrain are characterized by high biodiversity. They are important producers of biomass, and are sources of fruits, medicinal herbs and mushrooms. They provide habitat for wild plant and animal species; maintain and regulate the hydrological regime; provide protection from landslides and erosion; and absorb significant amounts of carbon.

Montenegro's highly diverse ecosystems host rich flora and fauna – about 3,250 plant species, with the highest vascular flora species-to-area ratio in Europe. Of the 526 European bird species, 297 can be regularly found in Montenegro, while about 29 other species are occasionally present.

In 2007, Montenegro joined the World Bank and the International Monetary Fund, and is actively pursuing membership in the World Trade Organization. The country's small national economy was hit by a 2009 recession caused to a significant degree by negative global economic trends including the ongoing credit crunch, a decline in the real estate sector and a fall in aluminum exports. Montenegro has privatized its large aluminum complex – the country's dominant industry – as well as most of its financial sector, and has begun to attract foreign investment in tourism. Unemployment and regional disparities in development remain the key political and economic problems.



SERBIA



Like most of its West Balkan neighbours, Serbia faces exposure to the hazards associated with rising temperatures. Increasingly frequent and intensive droughts over the past two decades have already caused great damage to Serbian agriculture, and crop production is expected to decline by as much as 10 per cent in second half of this century. Projections of precipitation show increases in some areas and declines in others.

Serbia's agricultural sector is an important part of the national economy, and thus increases the country's sensitivity to climate change. Serbian agriculture employs 10 per cent of the work force, and accounts for 26 per cent of export revenues. The country relies on the sector for food security, and it is an essential component of rural development.

With unfinished privatization and incomplete structural reforms, the economy of Serbia is still in transition. The country's economic challenges include high government expenditures for salaries, pensions and unemployment; outdated technologies; degraded infrastructure; and a low level of domestic investments. Other problems include a growing need for new government borrowing combined with rising public and private foreign debt and stagnant levels of foreign investment. An inefficient judicial system, high levels of corruption and an ageing population add to the difficulties. Serbia's strategic location, a relatively inexpensive and skilled labour force and a generous package of incentives for foreign investments are all factors favourable to economic growth.



* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

KOSOVO*



The effects of climate change exacerbate Kosovo's* existing environmental problems, particularly water scarcity and pollution, land degradation, deforestation and air pollution. Rising temperatures and disruptions in the precipitation regime are likely to intensify the stress on water resources and damage ecosystems and biodiversity. Agriculture, which comprises about 13 per cent of Kosovo* GDP while employing about 24 per cent of the work force, may suffer water shortages, heat waves and droughts. The services sector – 65 per cent of GDP – is less vulnerable to climate change than more resource-dependent sectors such as agriculture and energy. Lignite is a primary resource in Kosovo*, and its use for the production of electricity contributes significantly to GHG emissions, a condition that may continue as long as economic concerns have priority over environmental concerns, or until alternatives are developed.

Kosovo* lacks the institutional and financial capacity to respond effectively to climate change. In the transition from a socialist economy to a market-based economy, Kosovo* has received substantial international donor support, but the economy remains weak and unable to sustain itself. Under the guidance of the United Nations Interim Administration Mission in Kosovo*, and with the assistance of international donors, Kosovo* is working to establish governmental institutions and a legal system compatible with European Union law.

Kosovo* joined the World Bank and the International Monetary Fund in 2009. An unemployment rate of about 45 per cent encourages outmigration and black market activity, and remittances are an important part of GDP, but the small economy with a relatively small trade sector avoided the worst effects of the global financial crisis. In fact, the Kosovo* economy grew by 4 per cent in 2009, and is expected to continue growing.

* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

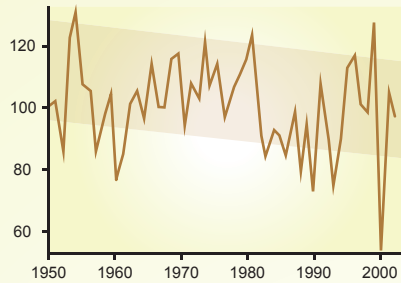


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Annual precipitation

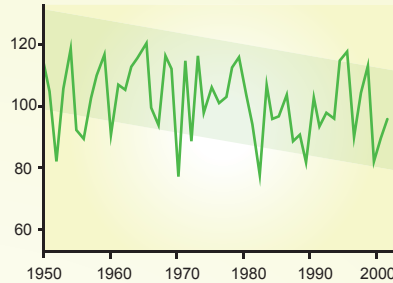
Serbia

per cent of norm, 1961-1990



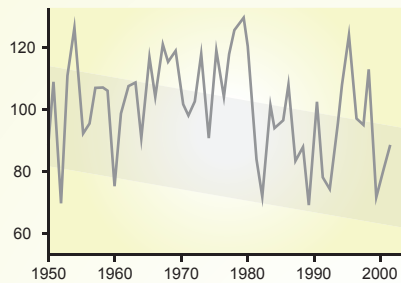
Croatia

per cent of norm, 1961-1990



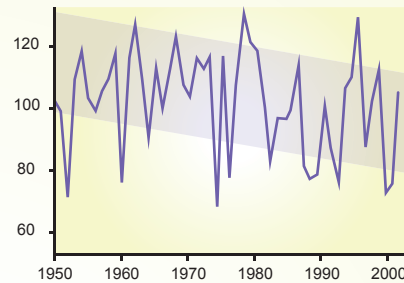
Montenegro

per cent of norm, 1961-1990



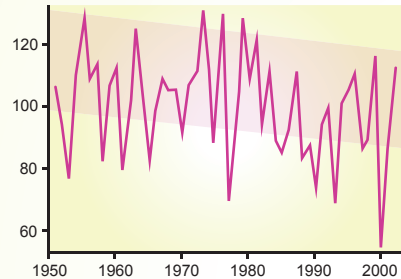
Albania

per cent of norm, 1961-1990



The former Yugoslav Republic of Macedonia

per cent of norm, 1961-1990



Bosnia and Herzegovina

No data

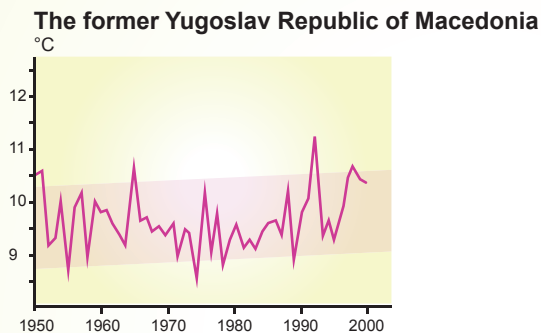
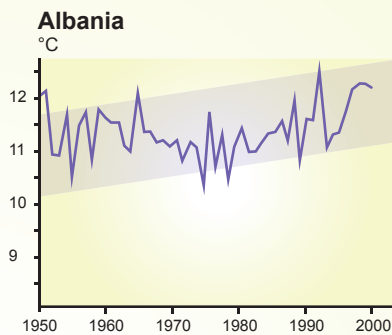
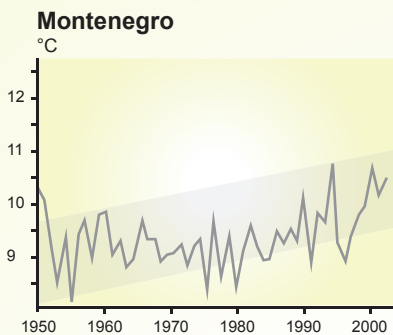
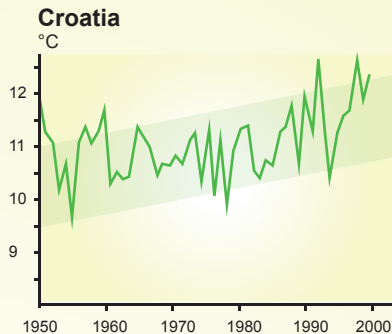
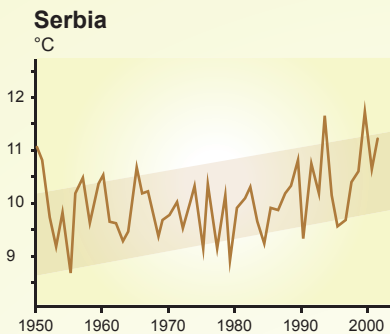
Kosovo*

No data

* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

Source: ClimateWizard, 2009.

Annual temperature



Bosnia and Herzegovina

No data

Kosovo*

No data

* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

Source: ClimateWizard, 2009.





ADAPTATION IN THE REGION

COUNTRY PLANS

Four of the six countries in this report included adaptation plans in their national communications to the United Nations Framework Convention on Climate Change. These plans are outlines and generic statements of intent to adopt more detailed strategies related to specific challenges, and they are indicative of the direction a country is likely to follow.

In the short term, Albania intends to focus on improving its monitoring and warning systems for coastal areas, agriculture and forestry. Longer-term plans contemplate participation in the Drought Management Centre for Southeastern Europe; the construction of a range of coastal protection structures; and the development of land management strategies – such as levelling and terracing – together with water control measures for agriculture.

Adaptation plans in Bosnia and Herzegovina centre on coping with drought. Measures under consideration include modifications in crop rotation, the application of new technologies to improve soil structure, the installation of windbreaks and the establishment of a drought early warning system. The plans also envision an information and education campaign related the public health and climate change.

The former Yugoslav Republic of Macedonia plans for adaptation contemplate extensive measures covering several areas – water resources, agriculture, forestry, biodiversity, public health and tourism. The water resources strategies include both structural and management initiatives. The agriculture measures include improvements in irrigation practices and the expansion of irrigated areas in combination with other changes in agricultural practices.

The Montenegro adaptation plans also consider agriculture, biodiversity and public health, but have a special focus on coastal zone protection. The adaptation measures include improvements in monitoring and infrastructure, and call for the eventual relocation of 10 per cent to 20 per cent of the urbanized coastal population.

South-East European Climate Change Framework Action Plan for Adaptation

Summary of proposed activities by sector

Sector	Proposed activities
Public Health	<ul style="list-style-type: none"> • Perform regular health monitoring • Establish emergency alert systems and data sharing • Conduct impact and adaptation assessments
Water Resources	<ul style="list-style-type: none"> • Build or modernize irrigation systems in drought-prone areas • Build or rehabilitate flood protection and drainage systems • Expand and modernize the network of meteorological and hydrological stations • Improve national flood and drought insurance schemes
Agriculture and Forestry	<ul style="list-style-type: none"> • Conduct research on the impacts of climate change on planting dates and cultivars, and on yields, pests and diseases • Conduct research on the effects of extreme events on agriculture and forestry • Develop databases on droughts and forest fires
Land Use, Buildings and Transportation	<ul style="list-style-type: none"> • Improve design standards for buildings • Incorporate climate change impacts information into the construction, operations and maintenance of infrastructure projects
Tourism	<ul style="list-style-type: none"> • Develop efficiency standards for new tourist accommodations
Coastal Zones	<ul style="list-style-type: none"> • Evaluate the impact of sea level rise on groundwater and water availability • Improve early warning and response systems
Biodiversity and Ecosystems	<ul style="list-style-type: none"> • Conduct research on the impacts of climate change on species survival, habitat composition and structure, invasive species, and seasonal phenomena • Assess climate change impacts on wetland and mountain ecosystems
Energy	<ul style="list-style-type: none"> • Conduct research on the impacts of climate change on renewable energy sources • Conduct integrated research on the impacts of climate change on water resources (precipitation and runoff) and energy production and consumption
General	<ul style="list-style-type: none"> • Organize information and awareness campaigns and training programmes • Create and develop maps • Establish early warning systems • Raise awareness • Incorporate climate change adaptation into national and urban plans

Note: Information presented in this table is excerpted from table 2 in the South-East European Climate Change Framework Action Plan for Adaptation.

WATER RESOURCES IN THE BALKANS

Although all of the West Balkan countries have fresh water resources sufficient to meet the needs of sustainable development, climate change is expected to disrupt water regimes. As the requirements for drinking water grow, and the demands for hydropower production increase, the water resources of the region may come under pressure from users with conflicting interests. New international boundaries add yet another wrinkle.

Twenty years ago the Balkans had six international river basins. Now, as a result of the new international borders, they have thirteen, as well as four transboundary lake basins. In terms of exposure and sensitivity, water resources in the Balkans are particularly vulnerable to climate change, and what happens in the water sector will influence what happens in agriculture and energy, two other highly vulnerable sectors.

The implications for the development of adaptation strategies are enormous. The water resources problem is more regional than national in scale, and effective adaptation in the region cannot occur on a strict country-by-country basis. This means that the Balkan countries must work together on regional adaptive strategies, and that their capacity to cooperate on mutual problems is a major element in their overall adaptive capacity.

REGIONAL INITIATIVES

All six of the West Balkan countries covered in this report are founding members of the Drought Management Centre for Southeastern Europe, the mission of which is “to coordinate and facilitate the development, assessment and application of drought risk management tools and policies in South-Eastern Europe with the goals of improving drought preparedness and reducing drought impacts.” These goals fit comfortably in adaptation plans, and by virtue of their participation in the Drought Management Centre the countries stand to advance their knowledge and capacity.

In its national communication to the UNFCCC, Bosnia and Herzegovina makes a strong case for a regional approach to climate change adaptation, and suggests that the provision of water, energy, transport and communications is enhanced by regional cooperation. In this spirit, five of the West Balkan countries – all but Croatia – reached agreement on a South-East European Climate Change Framework Action Plan for Adaptation creating a common platform for subregional cooperation on climate change.

The plan does not go to the level of detail of specific programmes or adaptation projects, but rather provides a comprehensive framework that the countries can follow to develop their own. It begins with the fundamentals – strengthening the systems for climate observations, monitoring and forecasting; improving the quality of data and database management; enhancing the capacity to work with the regional and international

organizations; and improving the availability and applicability of climate modelling in the region. The plan also identifies the improvements in knowledge and capacity necessary to reduce the risks associated with climate change and to incorporate socio-economic considerations into the analysis.

Most of the proposed actions in the plan are preliminary steps – information and awareness campaigns, training, research, assessment, mapping and analysis. The focus on such basic measures reveals how far the West Balkan countries have to go in order to develop concrete adaptation measures. A close reading of the list raises a number of questions: Who does what? How? In what time frame? At what level of analysis – local, subnational, national or regional? And how does the preliminary work, once completed, get used to develop specific adaptation programmes and projects?

The West Balkans are still developing their institutions, but progress is evident. All six of the West Balkan countries have participated in projects funded by the United Nations Development Programme Global Environment Facility, and as result have enhanced their capacity to manage climate change adaptation. Through the process of complying with UNFCCC assessment and reporting requirements, the countries have already demonstrated an increased awareness and knowledge of climate change. In addition, all of the West Balkans countries and Kosovo* participate in the Dinaric Arc and Balkans Environment Outlook, a platform for integrated environmental assessments.

* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

The South-East European Climate Change Framework Action Plan for Adaptation is a regional forum with a promising beginning, but has no institutional or political authority, and other models for regional cooperation may be able to incorporate the plan into a stronger scheme with international partners and the opportunity for significant funding.

The EU Stabilisation and Association process could become the organizing focus for a regional approach to adaptation. As part of this process, the EU finances the Regional Environmental Network for Accession (RENA). All of the West Balkan countries are already engaged in the process, and the RENA structure offers a logical place for the coordination of regional adaptation strategies, but whether the EU would consider taking responsibility for the additional mission is an open question. The scheme makes more sense for the period of transition to EU membership than it does in the long run.

The Alpine and Carpathian Conventions – each of which provides a platform for cooperation for environmental protection and sustainable development – offer a template for the Balkans, and the United Nations Environment Programme is an independent player who may be able to assist in the development of a Dinaric Arc Convention. The existing conventions and the prospective Balkan convention arose from the recognition of transboundary issues related to ecosystem protection, and all three are defined by

transboundary mountain regions. They relate more to the Convention on Biological Diversity than to the UNFCCC, but a Dinaric Arc Convention could nevertheless provide a platform for regional climate change adaptation strategies, and may be able to bring all the existing agreements together under one roof.

Any new scheme designed to coordinate adaptation in the West Balkans would do well to consider the array of organizations, programmes, initiatives and agreements currently contributing to adaptation projects and strategies in the region. The idea of having one comprehensive regional adaptation mechanism may be attractive, but in light of the myriad efforts already in place, the best overall approach may emerge from a recognition of what each component can contribute to the cause.

ALL THINGS CONSIDERED

Croatia, with its higher adaptive capacity and lower exposure and sensitivity, is the least vulnerable country in the region, while Albania's high exposure and sensitivity rank it as the most vulnerable. Each of the countries faces its own challenges with political and economic stability, demographic changes and institution-building, among others. The generally low adaptive capacity rankings reflect the difficulty of these challenges and the relatively short time the countries have had to make progress. The individual country adaptation plans and the South-East European Climate Change Framework Action Plan are promising beginnings, and participation in the Global Environment Facility, the Dinaric Arc and Balkans Environment Outlook and the EU Stabilisation and Association process are further evidence of progress.

All of this work lays the foundation for the even more challenging regional work that lies ahead. A regional strategy for the management of water resources appears to be the key to successful climate change adaptation in the Balkans. The water resources in the region have a high exposure and sensitivity to climate change, and the fates of the agricultural and energy sectors are closely tied to the water sector. In addition, the international implications of an environmental catastrophe resulting from a flood that wipes out an abandoned mine tailings facility are too serious to ignore. With so many transboundary river and lake basins, the countries of the region have the best chance of managing their water resources in cooperative fashion, whether through an existing agreement or a new one or a series of bilateral efforts.



Major watersheds in the West Balkans

Map produced by ZÖI Environment Network, February 2012.

* This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

Sources: Zinke Environment Consulting (→ www.zinke.at) and Fluvius Floodplain Ecology and River Basin Management (→ <http://fluvius.com>).

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