GLOBAL LAND OUTLOOK

Central and Eastern Europe Thematic Report

Ecosystem restoration for green recovery and a sustainable future

United Nations
Convention to Combat Desertification

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Global Land Outlook, Central and Eastern Europe Thematic Report: Ecosystem restoration for green recovery and a sustainable future

Coordinator: Jamal Annagylyjova (UNCCD)

Author: Assoc.Prof. Baris Karapinar (Center for Economics and Econometrics, Bogazici University, Istanbul)

Co-editors: Jamal Annagylyjova, Sasha Alexander (UNCCD)

Contributors: Dianna Kopansky (Global Peatland Initiative, UNEP), Salome Begeladze (IUCN), Jürgen Blaser (Bern University of Applied Sciences), Franziska Tanneberger (Greifswald University), Gabriel Daldegan (Conservation International), Alexandra Ibragimova (IUCN), Barron Joseph Orr (UNCCD), Sara Minelli (UNCCD), Daniele Gelz (UNCCD), Pablo Munoz (UNCCD), Ashot Vardevanyan (Armenia), Leyla Aliyeva (Azerbaijan), Andrei Kuzmich (Belarus), Andrey Pinigin (Green Economy, Belarus), Zoran Maletic (Bosnia and Herzegovina), Marjana Kapovic-Solomun (Bosnia and Herzegovina), Emiliya Velizarova (Bulgaria), Nino Chikovani (Georgia), Sophiko Akhobadze (Regional Environmental Center for Southern Caucasus), Martins Turks (Latvia), Biljana Kalibarda (Montenegro), Mirko Knezevic (Montenegro), Mihail Grigoras (Republic of Moldova), Mihail Daradur (Republic of Moldova), Vesna Indova (Republic of North Macedonia), Constantin Jan Sebastian (Romania), Sergey Vasiliev (Russian Federation), German Kust (Institute of Geography of Russian Academy of Sciences), Olga Andreeva (Institute of Geography of Russian Academy of Sciences), Ana Repac (Serbia), Natasa Lalic (Serbia), Jaroslava Sobocka (Slovakia), Beata Houšková (Soil Science and Conservation Research Institute, Slovakia), Yuriy Kolmaz (Ukraine)

Technical Assistants: Alesya Grishkun (UNCCD), Oleksandr Cherniaiev (UNCCD)

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United Nations Convention to Combat Desertification (UNCCD)
Platz der Vereinten Nationen 1
D-53113 Bonn, Germany
Tel: +49 (0) 228 815 2873
www.unccd.int

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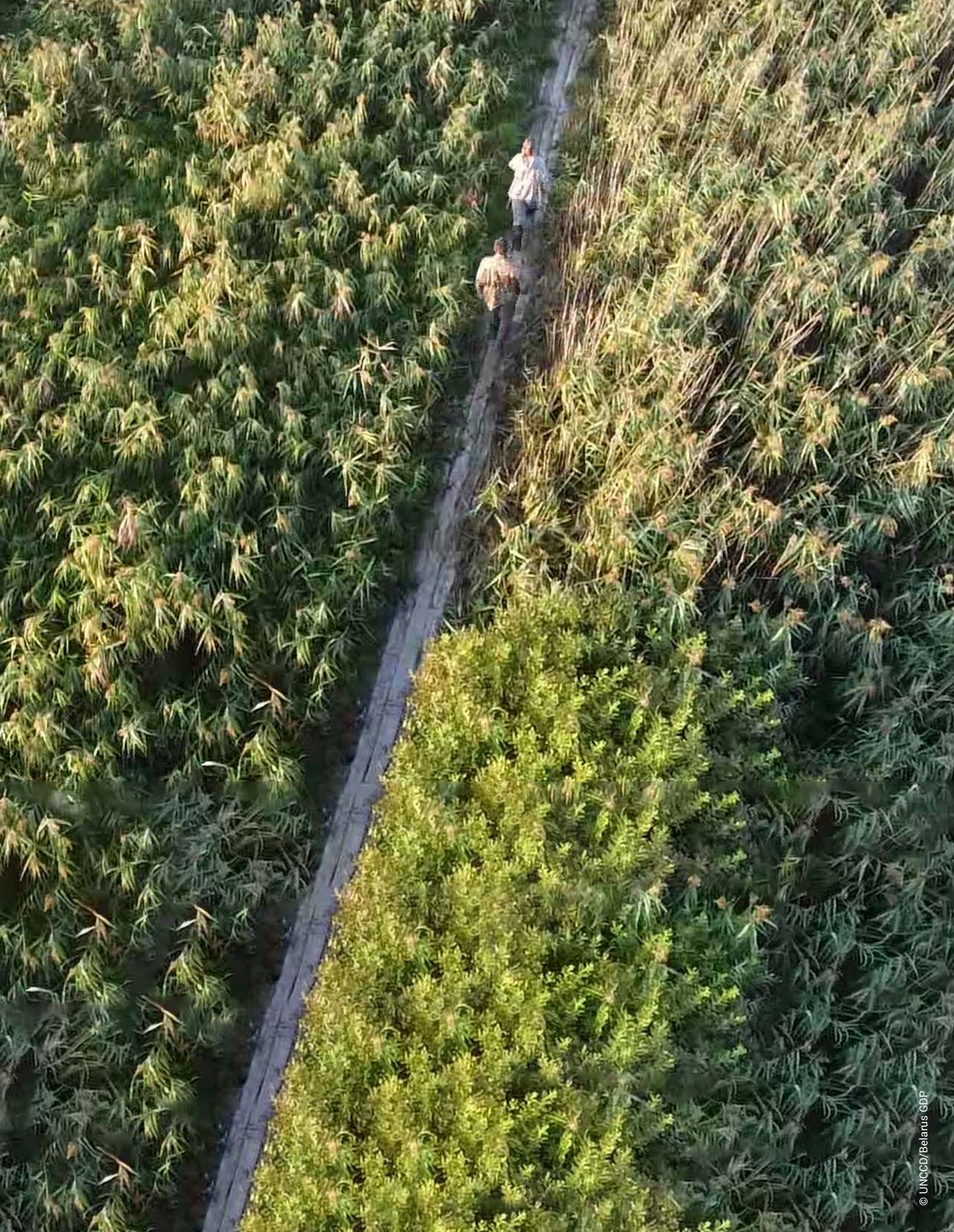
Contents



Executive summary

In the past few years, catastrophic wildfires, droughts, floods and other extreme weather events have occurred throughout the world with increasing frequency and severity. Critical earth system thresholds fundamental to the maintenance of existing ecosystems and human activities are likely to be exceeded, with increasing global warming, especially beyond 2°C. As elsewhere, central and eastern Europe (CEE) is increasingly exposed to a range of climatic risks which have the potential to aggravate existing pressures on ecosystems and accelerate land degradation trends.

The CEE region is home to 20% of the world's forests, and around 230 million hectares of both peatlands and croplands. Restoring and protecting the health and productivity of these managed and natural ecosystems is critical to stabilizing climate change, stopping biodiversity loss, and enhancing societal well-being at regional and global scales.

This Regional Thematic Report is the first comprehensive analysis of commitments under international and national initiatives promoting land and ecosystem restoration in the region. However, the area covered by restoration commitments – currently 13.5 million hectares, or 5% of the total degraded area – is not sufficient to address the extent of degradation and loss in the region's forests, croplands, grasslands, and peatlands. More ambitious targets for both quantity and quality of restoration and protection are urgently needed.

The UN Decade on Ecosystem Restoration calls on governments and other stakeholders to massively scale up restoration efforts across diverse ecosystems. The UN Decade estimates that more than USD 1 trillion is needed over the next decade to achieve global restoration goals. Given its large degraded area, the cost of land restoration in the CEE region will be a substantial part of this total. Nonetheless, the CEE region offers vast opportunities, potentially being one of the world's largest carbon sinks.

Central and eastern Europe (CEE) has been hit hard by the COVID-19 pandemic, with serious consequences for its people and ecosystems. But the crisis is also an opportunity to leverage economic recovery efforts to recast the relationship between people and nature and 'build back better'.

Today, many communities and ecosystems are edging towards the limits of their coping capacity. Restoring a balance with nature is key to post-COVID-19 green recovery, food systems transformation, and meaningful reductions in greenhouse gas emissions. Public and private investments in avoiding, reducing, and reversing land degradation will play an important role in creating green jobs, building a circular economy, and addressing inequality.

Land and ecosystem restoration, along with other nature-based solutions, can accelerate progress towards achieving both the Sustainable Development Goals and those of the 2015 Paris Agreement on climate change. Response actions pledged under voluntary land degradation neutrality targets can provide wide ranging societal benefits, such as poverty alleviation and a more equitable distribution of resources.

Restoring ecosystems at the scale required to meet these ambitious goals will require strong political leadership, and the support of versatile and dynamic institutions. Addressing these 21stC challenges, including recovering from the pandemic, building long-term resilience, and achieving the Sustainable Development Goals, in the CEE region and beyond, will depend on it.

Key messages

The central and eastern Europe (CEE) region includes unique high-carbon and biodiversity-rich terrestrial ecosystems which should be treated as global commons in need of protection, restoration and sustainable management.

- The region contains 20% of the world's forests, covering 850 million hectares. The remnant native forest of central and eastern Europe is a unique biological asset and has a high conservation value
- The region includes nearly 230 million hectares of croplands, vital for global food security. The region produces more than 120 million tonnes of wheat, nearly 20% of current global outputs
- The region's peatlands cover 226 million hectares and hold some of the world's largest carbon stocks. The protection of the region's peatlands is crucial to achieving the Paris agreement climate change targets
- The region is also host to a large fraction of the total Arctic and permafrost areas, the protection of which is fundamental to safeguarding both the climate and biodiversity

Trends in land use and land degradation differ significantly within the CEE region, due to its vast geographical scale and rich ecological diversity. A range of direct and indirect drivers contributes to land degradation: urbanization, wildfires, climate change and land tenure (due to a legacy of major political transitions in the region). Re-establishing a more balanced and sustainable human interaction with these ecosystems is of crucial importance to regional and global sustainability.

- Approximately 16.5% of the region's land is considered degraded according to the latest UNCCD baseline assessment
- The area of land used for human settlement increased by almost 80% between 2000 and 2018, with some countries registering notably higher rates. This increase was largely at the expense of croplands, which have shrunk by 380,000 hectares since 2000. Land fragmentation and agro-economic instability have resulted in 52.5 million hectares of abandoned farmland in the region, of which 32.2 million hectares are in Russia

- While general trends indicate an overall increase in forest coverage since 2000, satellite-based observations show a total of 67 million hectares of tree cover was lost between 2000 and 2019. In many parts of the region, there have been significant losses of native forests, which provide more ecosystem services than reforested land and plantations
- Large parts of the region show stable (and not stressed) or improving land productivity. Yet over 10% of land exhibits early signs of stress, and 9.3% suffers from declining productivity
- Arctic and permafrost areas in the region are under immense pressure from climate change. Some studies estimate that due to thawing, the amount of methane and carbon dioxide which could be released exceeds that currently present in the atmosphere by a factor of two to three

The size of the area covered by restoration commitments under international and unilateral initiatives is not adequate to address the challenges that the region's forests, croplands, grasslands, and peatlands face. More ambitious targets in relation to both the quantity and quality of restoration and protection are needed urgently. Transboundary initiatives for ecosystem restoration, underpinned by international co-operation, are needed to ensure long term impact and success.

- As of 2020, the total area covered by ecosystem restoration commitments in the CEE region is nearly 13.5 million hectares, or 5% of the total degraded area
- Commitments totaling slightly over 3.5 million hectares relate to protected areas, making this the largest category of commitment by total area
- The second largest category is forests, where restoration commitments amount to nearly 3.5 million hectares. This constitutes just 0.5% of the region's total forest area
- Croplands are the third largest category, with commitments of around 3.2 million hectares. This covers just 1.5% of the region's total croplands, which are exposed to increasing pressures that could lead to degradation
- Grasslands are the fourth ranked category with a total area of 1.4 million hectares committed for improvement of grazing land management, pasture revitalization, and conservation of biodiversity in floodplain meadows
- The smallest category of commitments is peatlands, with pledges amounting to less than 0.5 million hectares. Only 0.2% of the region's peatlands are protected, yet they are among the world's most important carbon stocks

The cost of land degradation is enormous. In eastern Europe alone, the cost of inaction for the next 30 years is estimated to be nearly USD 150 billion per year, while the cost of land restoration is estimated to be just USD 25 billion per year. Such a cost-benefit ratio of up to one to six offers substantial economic returns. International finance and local private-sector investment are essential to scale up investments in restoration.

- Since 2010, the number of regional projects supported by the Global Environment Facility (GEF), which targets climate change, agriculture, biodiversity, and land degradation, passed 200. The total funding mobilized by the GEF for these projects amounts to some USD 18 billion. The Green Climate Fund (GCF) provides funding to developing countries in the region to address climate change mitigation and adaptation. Since 2016, the GCF has directed over USD 4 billion to the region
- Businesses operating in the region must make strong and measurable commitments to reduce land degradation and urgently restore high carbon ecosystems
- CEE countries should use the learning and knowledge platforms created by the UN Decade on Ecosystem Restoration to foster national communities of restoration best practice, applied restoration research, economics, and to share local knowledge

Land ecosystem restoration must be a vital component of the CEE region's efforts to steer post-crisis recovery towards a more sustainable, equitable and resilient future. Green jobs created through restoration initiatives should be central to responses to the pandemic-induced economic crisis, while enhancing environmental protection and social inclusion.

- Since the crisis has exacerbated existing levels of unemployment in the region, especially among young people, women and returning migrants, public and private investment in sustainable land ecosystems can power a post-COVID-19 recovery by creating green jobs, building a green economy, and addressing inequality
- Countries in the CEE region could undertake national or regional assessments, tailored to a country context, of potential employment opportunities in a land-based green recovery
- Green tourism and local land stewardship programmes could be developed and implemented to generate revenues and large number of green jobs for youth, women, and marginal local/rural communities
- The region could tap into growing European demand for 'green' and sustainable agricultural products. Scaling-up investments in the sustainability of croplands, as well as in 'short and smart' food supply chains, could help both consumers and the region's artisans and small-scale farmers prevent soil and land degradation

Land- and nature-based solutions bring multiple benefits for nature and societies including improved soil fertility, climate change mitigation and adaptation, biodiversity conservation, and disaster risk reduction while potentially generating millions of jobs

- Climate change accelerates existing land-degradation trends, leading to vegetation loss, more frequent, intense, and prolonged droughts, wildfires, and lower crop yields – all impacts that have been observed in the CEE region. Extreme weather driven events like landslides and flooding are becoming more frequent. However, many actions designed to combat land degradation may contribute positively to climate-change adaptation and mitigation by enhancing soil fertility and increasing its carbon content and biomass
- The region's forests and peatlands should be treated as hotspots for climate-based solutions. Avoiding degradation of forests and peatlands, and focusing on their restoration, is of paramount importance not just to the region, but to the whole world

SDG 15 (promoting 'Life on Land') and SDG target 15.3 on Land Degradation Neutrality (LDN) could act in concert as accelerators of environment-focused SDGs in a post-COVID-19 world

- Four CEE countries have formally prioritized target 15.3 in their national SDG plans, and eight have included national indicators for Target 15.3 in their national statistics database. All 15 CEE countries have submitted at least one National Voluntary Review on Sustainable Development
- CEE countries should refine their LDN targets, include them in their SDG national frameworks, and report consistently through national and regional assessments
- Ecosystem restoration in line with LDN targets will be an important facet of the region's post COVID-19 climate-proof transformation: strengthening landscape resilience, recovering the provision of ecosystem services, and bolstering societal resilience

1. INTRODUCTION

Like many parts of the world, central and eastern Europe (CEE) has been hit hard by the COVID-19 pandemic, with far-reaching consequences for its people, economies, and ecosystems. Yet the pandemic offers an opportunity: to leverage global and regional efforts to recover, recasting the relationship between people and nature to 'build back better'. Stable and healthy ecosystems will be the backbone of a sustainable recovery for local and national economies. They have a critical role in building resilient livelihoods, creating green jobs, developing sustainable food systems, and contributing to the decarbonization of the global economy. Against this backdrop, ecosystem restoration can help steer the region towards a more sustainable, equitable and resilient future.

The CEE region (see Figure 1) is vast and diverse. Trends in land use and land health differ significantly across its area, including trends in land cover, land productivity and levels of soil organic carbon (SOC). Overall data indicate an increase in the extent of forests in the region since 2000. However, observations also show a loss of native forests. Croplands are in decline as the dominant form of land cover. The most significant change has been an expansion of human settlement areas. While over 80% of land stocks are in a stable condition, degradation has occurred in some places.[1] Assessments show that the region's soils hold enormous carbon stocks, vital for global efforts to mitigate and adapt to climate change.

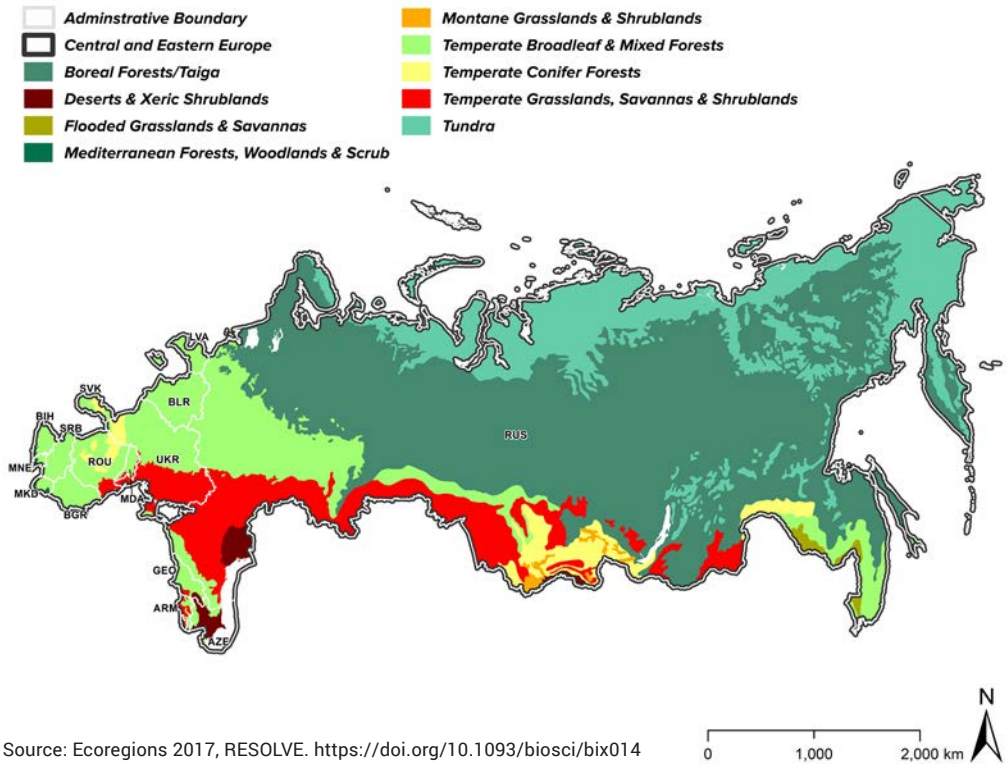
A range of direct and indirect drivers has contributed to land degradation, including urbanization, wildfires, climate change and land tenure issues. Different ecological and socio-economic factors are at play in different parts of the region.

FIGURE 1
Map of the CEE region

In this publication, the region is defined as including 15 country Parties to the United Nations Convention to Combat Desertification: Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Georgia, Latvia, Moldova, Montenegro, Northern Macedonia, Romania, Serbia, Slovakia, Russian Federation, and Ukraine.[2]

Central and Eastern Europe Quick Facts

FIGURE 2
Main biomes in the CEE region



Source: Ecoregions 2017, RESOLVE. https://doi.org/10.1093/biosci/bix014

- The CEE region includes a wide range of ecosystems: polar desert, tundra, forest tundra, taiga, mixed and broad-leaved forest, steppe, semi-desert and subtropical
- Forests cover 850 million hectares, over 20% of the global area
- The region's 230 million hectares of croplands are vital to global food supplies
- Peatlands cover 226 million hectares and represent one of the world's largest carbon stocks
- Lakes and wetlands cover 15% of the region and are connected by 120,000 rivers
- The Carpathians and the Caucasus are among the most biologically rich regions on Earth
- Nearly half the land in the ecoregion has already been transformed and is under severe pressure from human activities
- The CEE region primarily contains upper middle-income countries, with a few lower middle- and high-income countries
- The populations of CEE countries are expected to decrease significantly over the next 30 years, driven by low birth rates and outward migration

Countries in the region and beyond have made commitments to combat land degradation and restore ecosystems under multi-lateral agreements, including the three Rio Conventions (the United Nations Convention to Combat Desertification (UNCCD); the United Nations Framework Convention on Climate Change (UNFCCC); and the Convention on Biological Diversity (CBD)), the Sustainable Development Goals (SDGs), and initiatives such as the Bonn Challenge. As of November 2020, nine of the 15 CEE countries[3] have committed to setting voluntary targets for achieving land degradation neutrality (LDN) by 2030,[4] a key goal of the UNCCD and the SDGs.

COVID-19 recovery efforts in the region primarily comprise fiscal measures and policies designed to ease its short-term economic impacts. In some parts of the region, these packages include 'green' measures, largely aimed at the energy and transport sectors, and, in a few cases, nature-based solutions that contribute directly to land restoration.[5] The impact of these measures on land ecosystems will likely vary substantially within the region. New institutional approaches are needed to foster the vertical, intersectoral and cross-border collaborations that could further strengthen a focus on ecosystem restoration as an engine of green recovery.

Efforts to develop innovative financing opportunities for ecosystem restoration have been growing. Business cases exist for sustainable impact investment across the region, including low-cost decarbonization options, sustainable agriculture, and afforestation.[6, 7] Some companies have already announced commitments to invest in ecosystem restoration and reduce their environmental footprint. In both the public and private sectors, ecosystem restoration can become an important generator of green employment in a post-COVID-19 era.

Against such a backdrop, this regional report assesses the potential implications of the COVID-19 crisis for regional economies and key ecosystems; elaborates on regional land-use trends and the drivers of land-use change, including through country case studies; maps out national targets on ecosystem restoration; and showcases important ecosystem restoration initiatives, including LDN targets and climate commitments. The report elaborates on the social, economic, and environmental pillars underpinning a potential nature-positive transformation for the region. It identifies opportunities for ecosystem restoration, highlighting financial mechanisms and private sector commitments that can help achieve transformational change. In the light of lessons learned from the COVID-19 crisis, the report proposes new institutional approaches to harness ecosystem restoration to promote green jobs, resilient food systems, and climate change mitigation and adaptation. Finally, it provides data and analysis to assist the region during UNCCD intergovernmental negotiations and other regional and international processes.

2. COVID-19: A MULTI-DIMENSIONAL THREAT AND CATALYST OF CHANGE

The COVID-19 crisis has had substantial impacts on the CEE region's economies, people, and ecosystems, aggravating existing challenges and accelerating existing trends. Like the rest of the world, countries in the region entered a deep economic recession by mid 2020. Together with a challenging political environment in some regional countries, the second wave of the pandemic created unprecedented impacts. Economies in the region have experienced a rise in unemployment and a loss of income. They have been affected by lower global commodity prices, disruption to regional supply chains, weaker currencies and heightened financial risks. The national economies were estimated to have contracted by an average of 4% in 2020. The recession has been deepest in countries such as Bulgaria, Montenegro, Romania, and Russia.[8] As of February 2021, the recession is expected to continue until at least the second half of 2021.

2.1 An economic shock

The COVID crisis has affected all major economic sectors. The service sector generates 37-65% of gross value added (GVA) in the region and accounts for the bulk of employment. Travel restrictions and social distancing measures have hit services particularly hard. Tourism – which contributes over 30% of gross domestic product (GDP) in Montenegro, nearly 10% in Bosnia and Herzegovina, and 6% in Serbia – has suffered an especially sharp downturn.[9]

In the manufacturing and energy sectors, a collapse in domestic and foreign demand has led to the loss of jobs and livelihoods. Most countries in the region have strong trade relations with the European Union. As a result, a significant decline of output in export-oriented sectors has been observed, especially in Bosnia and Herzegovina, North Macedonia, and Serbia. The World Bank estimates that the manufacturing sector in eastern Europe is likely to have shrunk by a double-digit percentage in 2020.[10]

Similarly, energy net exporters in the region — Azerbaijan and Russia – have faced plummeting prices for crude oil and natural gas. As a result, the fiscal position of these countries has been weakened.[11] The region also experienced a slump in foreign direct investment.

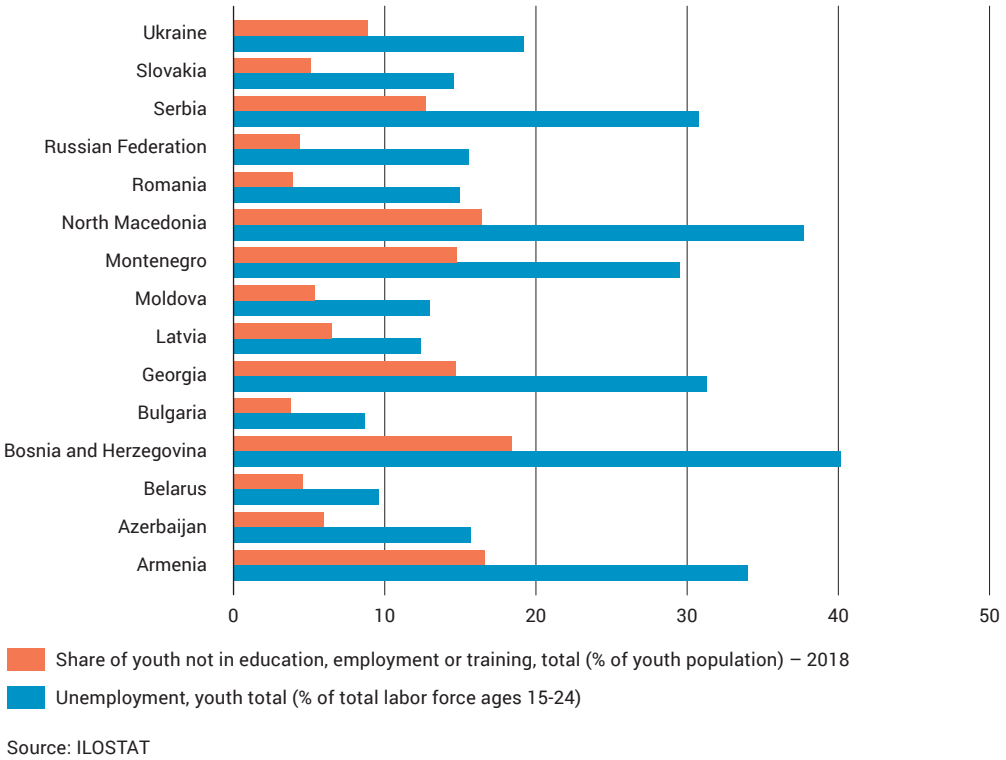
The agricultural sector contributes 2.5-12% of GDP in the region. The sector is labor-intensive, especially in eastern Europe, where it employs one in four workers. The crisis disrupted supply and trade channels. Nonetheless, overall cereal production is estimated to have increased by 4% from 2019 to 2020, mainly due to a good Russian harvest. Yet some countries experienced substantial drops in cereal production: up to 55% in Moldova and 14% in Georgia.[12] Despite this, overall food supplies were sufficient, and a major food crisis has been avoided.

The pandemic has underlined the importance of a well-functioning regional food system. Authorities in the region enacted measures including border closures, quarantines and export bans that restricted people's access to food during the pandemic. Russia, the world's largest exporter of wheat, imposed an export quota on grains between April and June 2020, albeit also partially in response to drought conditions in its wheat-producing regions. Romania and Ukraine followed with their own export restrictions. As experienced during the food crisis in 2007-2008, export restrictions are imposed to reduce domestic food prices. However, they create price hikes in food importing countries and affect regional and global markets.[13, 14]

2.2 A setback for social equality

The COVID-19 pandemic has exacerbated existing social problems, including inequality. Young people and women have been disproportionately affected by massive job losses due to the economic slowdown. The estimated unemployment rate in the region reached an average of 9.5% in 2020, with youth unemployment at 22%. The jobless rate for youth

FIGURE 3
Unemployment in CEE countries, 2020 (estimate)



Source: ILOSTAT

exceeded 30% in some countries in eastern Europe and the southern Caucasus (Figure 3).[15]

Regional labor markets are typically characterized by a large gender gap. Women's participation in the workforce is under 50% in most countries. Most women work in sectors heavily affected by the pandemic, including health, social care, food and nutrition, accommodation, retail, and tourism. The participation of women in these sectors is higher in eastern Europe than elsewhere in the region.[16]

Workers in low- and middle-income CEE countries suffered the most because many were employed in hard-hit sectors and in countries characterized by high rates of informal employment, typically around 25% in Western Balkan economies.[17] Informal workers suffered from a lack of access to public health services, social safety nets and formal financial services. This pushed many into poverty during the crisis.[18]

Countries in the region have experienced higher unemployment rates due to a return of workers from abroad. In North Macedonia, the unemployment rate is estimated to have risen from 16.8% in 2019 to 20.4% by the end of 2020. Moldova also observed high levels of unemployment – one-third of its citizens work abroad. The International Organization for Migration found that thousands of migrants indicated a willingness to return home, increasing pressure on domestic job markets.[19]

BOX 1
The peri-urban rush in Russia

As elsewhere, the spread of COVID-19 in Russia has prompted an exodus from large cities to the suburbs, smaller cities, and the countryside. The increase in remote working presents better-off urban dwellers in particular with an opportunity to move.

In April 2020, interest in long-term rentals of cottages and townhouses increased by about 200% and 170%, respectively, compared to a year previously. Demand for dachas increased by 90%.[22]

According to a survey by the Center for Strategic Development, 68% of Russian companies will allow some employees to continue working remotely after the pandemic, suggesting current trends will continue.[23] This will change Russian society's expectations of housing and the urban environment.

For similar reasons, the pandemic could also spur shifts in internal migration towards southern regions, which offer a more favorable climate.

Living standards and government revenues in some CEE countries are significantly tied to remittances. It is estimated that Serbia and Montenegro recently experienced a 20% drop in remittances. In Moldova, one-third of households rely on remittances for up to half of their income. Generally, dependence on remittances is even higher in rural areas. Reductions in remittance-driven consumption and fiscal revenues present these economies with major challenges.

Some countries in Eastern Europe have long suffered from a 'brain-drain' of citizens. Limited job opportunities and low pay force many skilled and educated young people to seek job opportunities elsewhere, mainly in western Europe. This includes many health professionals, and in Romania and Bulgaria such outward migration has already driven staff shortages in the health system. The current crisis may have accelerated the outflow.

The COVID-19 crisis has accelerated digitalization. A study of the wider CEE region found that millions more people were using online services. In some countries, online use of government services more than doubled. This underlines the growing importance of investing in e-governance capabilities. Several regional governments and their technology partners have invested in health-related online applications for the public.[20] The potential of new digital services is yet to be fully utilized to deliver improved and inclusive ecosystem management in the region.

2.3 Ecosystem management disrupted

An initial assessment of how the COVID-19 pandemic and subsequent restrictions affected sustainable forest management in eastern Europe shows negative impacts such as delays and reductions in management activities, reduced inspection and investigation of illegal activities, and obstacles to data collection and monitoring. But the crisis also presents opportunities to address current and future challenges by fostering increased public awareness of the benefits of forests and green recreational spaces, as well as improvements in digitalization and communication.[21]

The pandemic and associated containment measures have affected people's social lives, particularly in urban areas. Cities have been hit hardest by the pandemic and the imposition of social distancing threw up many challenges. Lockdowns and a widespread pivot to remote working by white collar employees have increased housing demand in neighborhoods with better local services and more green space. The pandemic is likely to have sped up existing trends in relocation from big cities to peri-urban areas and small towns seen to offer a safe and clean environment. While this trend might catalyze the development of smart and green cities, it increases demand for land to feed the expansion of peri-urban areas. This drives land-use change, potentially at the expense of croplands and biodiversity in rural areas near cities in the CEE region.

3. A CARBON STOCK-RICH REGION SHAPED BY DEMOGRAPHY AND CLIMATE CHANGE

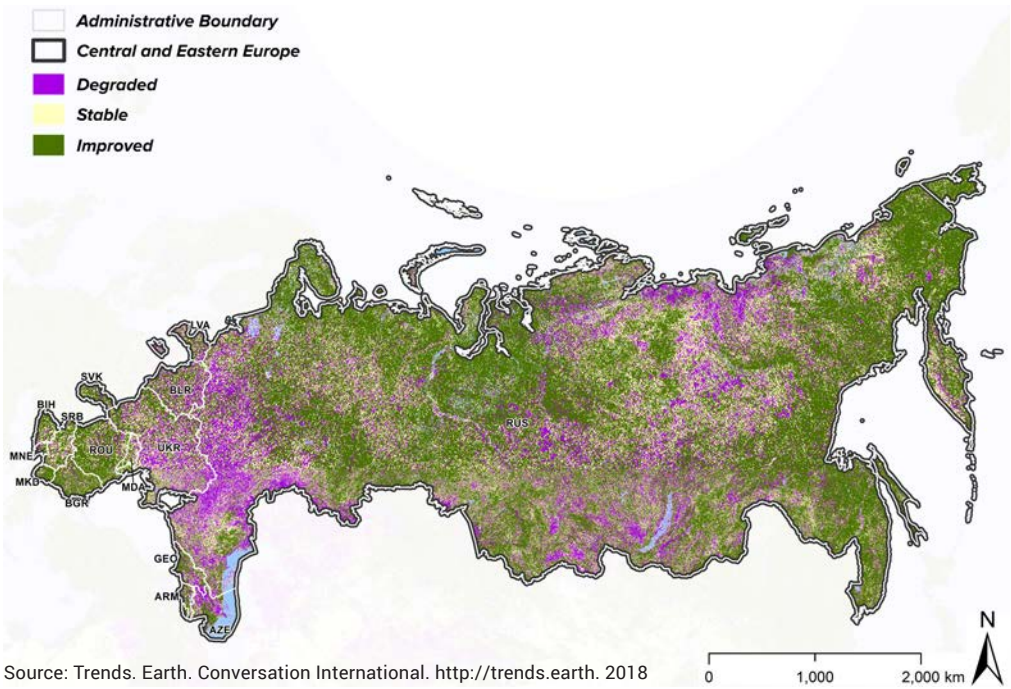
How land is used and transformed varies significantly within the region depending on socio-economic and ecosystem diversity. This section examines trends in land use based on three key parameters: land cover, land productivity, and levels of soil organic carbon (SOC). It draws out sub-regional trends and sheds light on high-value ecosystems that can be seen as global commons. For example, the section describes the region's vast carbon stocks and their vital role in climate mitigation. Using case studies, it identifies direct and indirect drivers that contribute to land use change and degradation, including urbanization, wildfires, climate change and land tenure.

3.1 One sixth of the region degraded

Based on the UNCCD's definitions, land degradation can be identified by examining three key indicators of land health: land cover, land productivity, and SOC levels. Under a 'one out, all out' principle, a significant negative change in any of the parameters shows degradation has occurred.

Applying this methodology, also used for an indicator for SDG 15 (Life on Land), to available global data, **an estimated baseline of 269 million hectares of land in the CEE region experienced degradation in the period from 2000 to 2015, or 16.5% of the total area** (excluding water bodies).

FIGURE 4
Land degradation in the CEE region, 2000-2015



Source: Trends. Earth. Conservation International. http://trends.earth. 2018

3.2 Land cover shaped by urbanization and deforestation

Understanding land cover change and its drivers is key to recognizing the interplay between society and the ecosystems we depend on. The result of complex interactions between natural and socio-economic factors, land cover transformation affects climate change, biodiversity, water quality and storage, and the provision of other critical ecosystem services. In the CEE region, land cover has shown important changes over the past two decades.

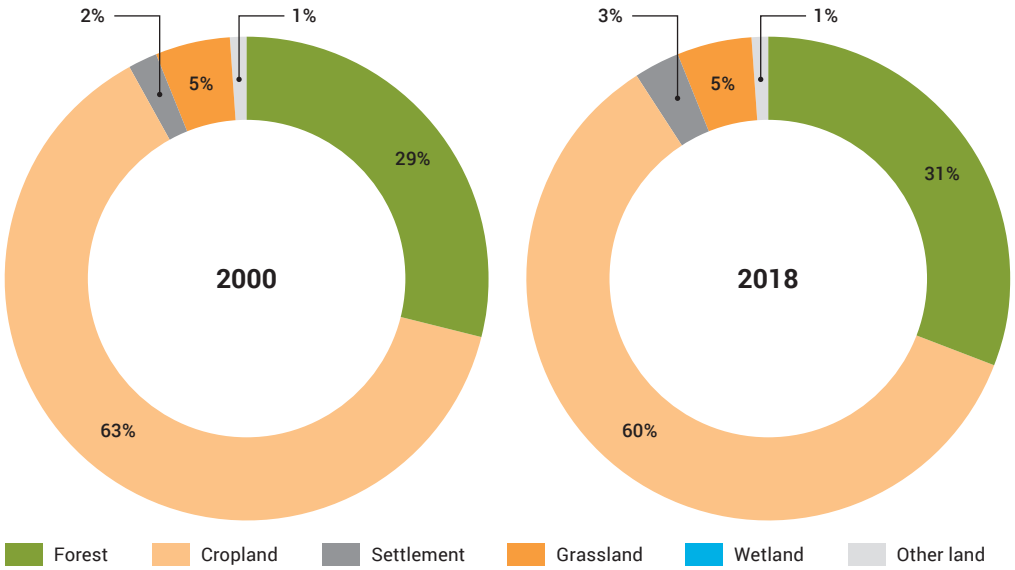
The region's land use trends have been influenced by the major political transitions that took place in the 1980s and 1990s. Some structures built up by the former Soviet Union and Yugoslavia still affect land use. Nonetheless, all countries, except for Bosnia and Herzegovina and Belarus, have since undergone land reforms, which in most cases have led to the privatization and fragmentation of land. For example, across CEE countries, 50-80% of all arable lands have been privatized or subject to restitution. The political transition also led to changes in CEE timber markets resulting from the end of state purchase guarantees for timber producers.

It is important to note that Russia covers an area almost ten times larger than the rest of the region combined. To account for sub-regional differences, this analysis presents separate data for Russia and the rest of the region, where relevant data is available.

As of 2018, the dominant land cover class in the region excluding Russia was cropland, at 60.1% of the total area.[24] Forests, grassland, settlements, and wetlands represent 30.6%, 4.9%, 2.9%, and 0.4% of the total, respectively (see Figure 5). The remaining areas are classified as 'other' land, cover just 1% of the total, and include permanent snow and ice, and other bare land.

In Russia, forest dominates, accounting for 49% of land, with cropland covering just 8%. Grasslands and settlements represent 6% and 1%, respectively. Wetlands and 'other' land cover are significant, covering 14% and 22% respectively.

FIGURE 5
Proportions major land cover classes in the CEE region (excluding Russia), 2000 and 2018



Source: Earth Map

BOX 2
The emptying countryside in Bosnia and Herzegovina

Migration from rural to urban areas started in the 1960s and sharply accelerated during and after the Bosnian War between 1992 and 1995. The rural population decreased by an estimated 34% between 1950 and 2017.[28] This trend is projected to continue.[29, 30]

In 2010, fallow, uncultivated and abandoned land together made up 48% of the country's total arable land.[31] It is reported that abandoned land areas have increased since.[32]

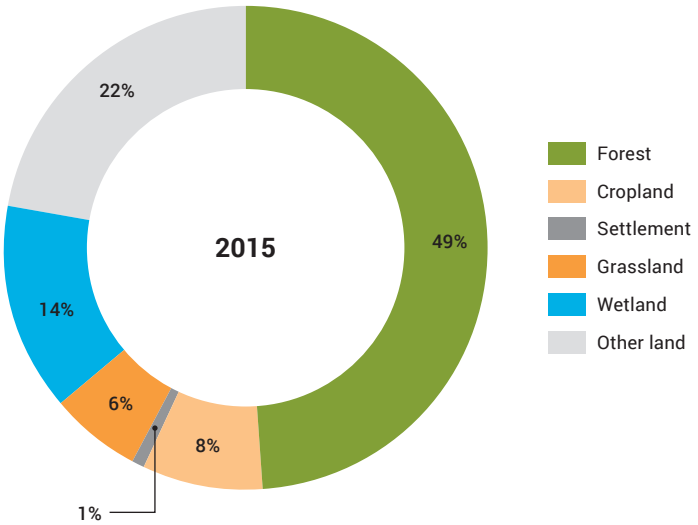
Rural out-migration often results in the conversion of mixed crop and grazing land to a limited number of monocultures, and widespread bush encroachment. Despite the existence of partial natural regeneration processes, the depopulation of rural areas and abandonment of agriculture presents both socio-economic and environmental challenges.

As a part of its LDN target-setting process, Bosnia and Herzegovina has committed to revitalize 100,000 hectares of abandoned land. The Republic of Srpska has committed to improve cropland productivity in 42,000 hectares by 2030; and Brčko District has committed to increase the productivity of agricultural land through measures to combat drought and floods.[33]

Data show that the most significant recent change in land cover has been an expansion in settlement areas at the expense of cropland. In the CEE region excluding Russia, the settlement area increased by almost 80% between 2000 and 2018, with some countries registering even higher rates. For example, growth in settlement areas tripled in Azerbaijan and more than doubled in Belarus. This trend towards increased artificial areas and a concomitant reduction in cropland is a critical transition that leads to irreversible soil loss. The main drivers behind the trend are urban population growth, economic development, and an expansion in peri-urban areas. Between 1991 and 2018, the share of the population living in urban areas rose from 64.6% to 69.2%.

Cropland in the CEE region excluding Russia has shrunk by 380,000 hectares since 2000. Agricultural areas close to urban centers have been subsumed by suburbanization. Similarly, tourism and recreation land use increased in some countries at the expense of cropland. Land reforms during the post-socialist period resulted in fragmentation, a root causes of outwards migration from rural areas and agricultural land abandonment.[25] Earth observation data reveals 52.5 million hectares of abandoned farmland in the region, of which 32.2 million hectares are in Russia.[26] Nevertheless, the share of cropland in the region (60.1%) is still more than triple that globally (17.7%), and agricultural land use and its sustainability remains vital for the region. Russia is one of the world's largest exporters of cereals, and land use

FIGURE 6
Shares of major land cover classes in Russia, 2015



Source: Earth Map

trends in Russia are of crucial importance to global food security. At the same time, due to the prevailing small size of farms and traditional low-intensity agricultural practices, the agricultural biodiversity in central and eastern Europe is relatively rich and should be further preserved.[27]

While forest cover has increased across the CEE region, satellite observations indicate growing losses in recent years. Between 2000 and 2019, a total of 67 million hectares of tree cover was lost.[34] Russia accounts for the vast majority. From 2015 to 2019 alone, the country lost 21.9 million hectares of tree cover, an acceleration that brought the total loss since 2000 to 2.9% and led to greenhouse gas (GHG) emissions equivalent to 3.4 Gt of CO . Russia still holds a vast 167 million hectares of intact forests, which covered 45% of its land in 2010.

Primary forest in some Eastern European countries is being lost at an alarming rate.[35] For the whole region, up to 80% of the observed tree cover losses in recent years has been caused by wildfires, driven in turn by climate change led drying, land abandonment, and the drainage of peatlands (see Figure 7).

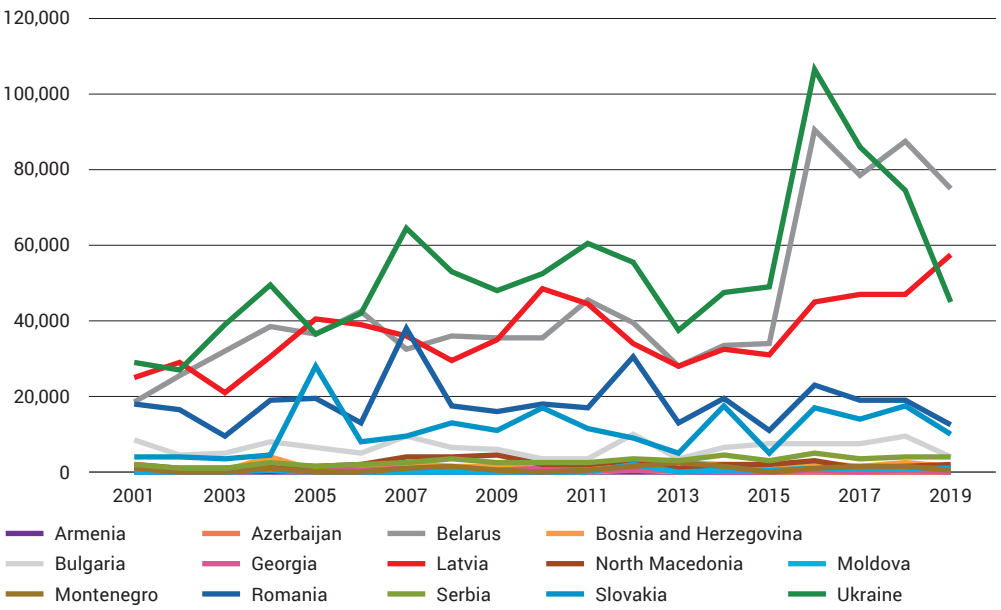
In the Western Balkans, wildfires often result from deliberately set agricultural fires that spread to surrounding vegetation. Some 60% of registered cases of wildfire are triggered by human actions or negligence. Just 3.3% are of natural origin with the remainder ascribed to unknown causes.[36] Among other countries in the region, Belarus, Ukraine, and Latvia have also observed significant loss of tree cover. Annual average losses in the three countries between 2000 and 2019 were 73,000, 72,000 and 45,000 hectares respectively (see Figure 7). However, countries including Montenegro, Moldova, Azerbaijan, and Armenia have seen losses under 1,000 hectares per year over the past five years. Tree cover losses do not necessarily mean deforestation. The proportion of forests in most of these countries increased because of reforestation and afforestation.

Yet re/afforestation may fail to compensate for losses of (mature) native forests, which provide more ecosystems services including micro-climate control and carbon storage, and conserve more biodiversity. The remaining native forest of central and eastern Europe is a unique regional asset and represents a high conservation value.

Semi-natural and natural grassland is decreasing, driven by conversion to arable land and forest (by natural regeneration following abandonment, or active forest planting). With populations in eastern Europe expected to continue to decline and age[37] this trend seems likely to continue.

While opposing trends can also be found – grasslands have increased at the expense of croplands in Moldova, for instance – the abandonment of grasslands, in parallel with declines of livestock in much of the region, is resulting in shrub and tree encroachment and the decrease of grassland biodiversity.[38]

FIGURE 7
Tree cover loss in CEE countries (excluding Russia), 2000-2019



Source: Global Forest Watch

BOX 3
Preventing and mitigating drought effects in Slovakia

During the recent years, Slovakia has seen an increased frequency of extreme weather events including the period of multi-year drought 2014-2018 which affected many Central European countries. After-drought effects left a large-scale damage on conifers forest caused by unprecedented outbreak of bark beetle in Central Europe.[39] Long-term drought took a heavy toll on agriculture in Slovakia, causing water shortage, soil drought and yield loss.

Multi-year drought triggered an adoption in 2018 the Slovak National Drought Plan to Combat Drought with a focus on green infrastructure and improvement of water retention in the urban environment, agriculture and forestry. Retaining water and applying resource saving technology is a priority for the country to mitigate the adverse effects of drought.

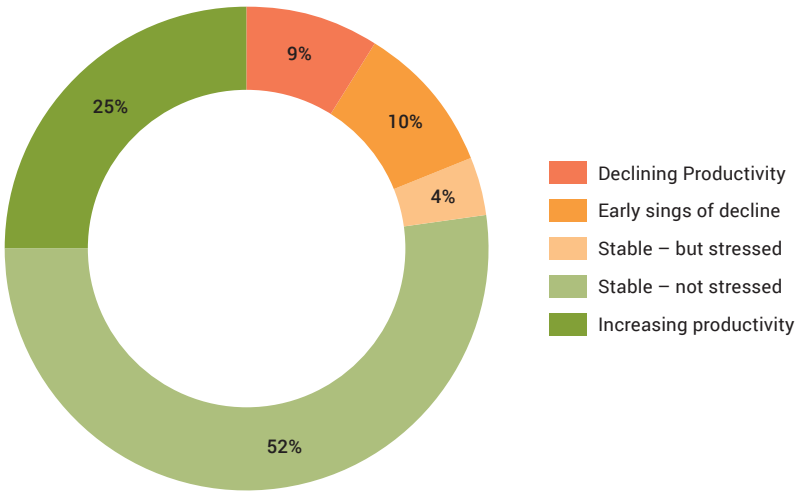
AgroKruh is one of the soil and water saving farming technology developed in Slovakia to produce organic crops. Using this technology, circular plots are cultivated using an electrically powered arm equipped with spading and irrigation equipment. The soil is not ploughed and turned, safeguarding soil moisture, its biophysical properties and biodiversity.[40]

3.3 Stable land productivity despite signs of stress

The sun's energy maintains and supports terrestrial ecosystems. As plants grow, they absorb carbon dioxide from the atmosphere, and accumulate it as biomass. Net primary productivity (NPP) indicates the capacity of the ecosystem to accumulate biomass. Analyzing the regional distribution of NPP is important to help understand vegetation dynamics, biodiversity, agricultural yields, and the potential for land-based climate action. Land degradation in the form of soil erosion, nutrient depletion, water depletion and salinization are among the major causes of reductions in NPP, which may lead to significant negative environmental and socio-economic impacts.[41]

Large parts of the region exhibit stable (and not stressed) and improving land productivity metrics, although there are signs of stress and decreasing productivity in some places. In the region (excluding Russia), over 50% of the land is stable, and around 25% shows increasing productivity. 10% exhibits early signs of stress, and a further 10% suffers from declining productivity (see Figure 8). At a more granular level, productivity is stable (not stressed) or increasing in most parts of eastern Europe, with some declining productivity in Ukraine, Belarus, Latvia and northeastern Romania. Productivity is stable and increasing in central, western, and northern parts of Russia, but there are also areas of declining productivity in southern and south-eastern parts of the country. Overall, the region exhibits land productivity dynamics similar to global trends.

FIGURE 8
Land productivity dynamics in the CEE region (excluding Russia)



Source: Earth Map

BOX 4
Farmer field schools for conservation agriculture in Ukraine

More than 300 Ukrainian farmers are receiving training on conservation agriculture and smart agricultural practices. These farmer field schools are part of the project 'Integrated Natural Resources Management in Degraded Landscapes in the Forest-Steppe and Steppe Zones of Ukraine', funded by the Global Environment Facility (GEF) and implemented by the Food and Agriculture Organization of the United Nations (FAO).[42, 43]

The field schools respond to farmers' demands to learn more about low tillage techniques, crop rotation in organic farming systems, and nutrient and plant protection systems. The schools also provide them with a platform to share experiences with different methods and technologies. The field schools also educate decision makers responsible for introducing crop-rotation technologies, agronomists, and academic experts.

One-day sessions demonstrate the application of conservation agriculture technologies in the field, giving an overview of contributing factors to land degradation and mitigation strategies. Each session focus on a single topic, such as spring sowing, biodiversity, conservation technologies, organic fertilizers, or shelterbelts.

More than 350 people took part in nine field schools between March 2019 and February 2020, including 144 farmers (working 248,220 hectares) and 98 experts. Local authorities, suppliers, NGOs, and media were also represented.

The main achievement of the program has been to bring together farmers with members of local communities of sustainable natural resource management and conservation agriculture practitioners, to foster professional networks and collaborations. Scientists and producers have found a common interest in conducting research to deal with problems faced by farmers.

3.4 The Arctic: under pressure from climate change

Arctic and permafrost areas in the region (permafrost covers 11 million hectares, or 65%, of Russian territory; the country accounts for one third of the Arctic)[44] are under substantial pressure from climate change. Both marine and terrestrial ecosystems have been exposed in recent years to unprecedented summer temperatures, wildfires, accelerated sea ice losses, and permafrost thawing.[46] These changes have impacts globally. The risks include large-scale microbial decomposition of previously frozen organic matter, resulting in the release of substantial GHG volumes. This feedback loop means that the thawing of permafrost areas represents a potential tipping point, beyond which global warming could spiral sharply upwards.[46]

Due to reductions in the duration, thickness, extent, and quality of sea ice, terrestrial and marine food production has declined in the Arctic.[48] Populations of caribou and reindeer, seabirds, fish, and marine mammals have contracted. However, reduced sea ice has opened up opportunities for industries such as fishing, tourism, mining, and shipping to operate at high latitudes. While this brings economic opportunities, it can also damage pristine natural ecosystems. The opening of Arctic shipping routes increases the risk from oil spills and the introduction of invasive species that harm ecosystems and local livelihoods. It may also lead to further marginalization of indigenous peoples.

Adaptation in the Arctic is a transboundary challenge that requires solutions through multi-national or regional processes. It includes creating knowledge and information about the impacts of climate change, proactive policies, collective adaptation activities, and the development of local measures to support sustainable livelihoods for Arctic communities.

3.5 A global commons of carbon stocks

Soil organic carbon (SOC) is vital to sustain land-based ecosystem services, including food production, water quality and retention, and for climate change mitigation and adaptation. As an indicator of soil health, it is critical to the delivery of several SDGs. Land degradation, which accelerates the release of SOC to the atmosphere, can be a significant source of GHG emissions. Conversely, protecting and restoring ecosystems through sustainable soil management is a large-scale and cost-effective way to mitigate climate change by sequestering atmospheric carbon in soil.[49] Boosting SOC also brings substantial co-benefits in the form of enhanced provision of the ecosystem services required for food production, and greater resilience and adaptive capacity against climate change.

As Figure 9 shows, some parts of the region hold enormous SOC stocks, including northern parts of eastern Europe and the southern Caucasus. By virtue of its size, Russia holds enormous SOC stocks, an estimated total of 167.4 Gt.[50]

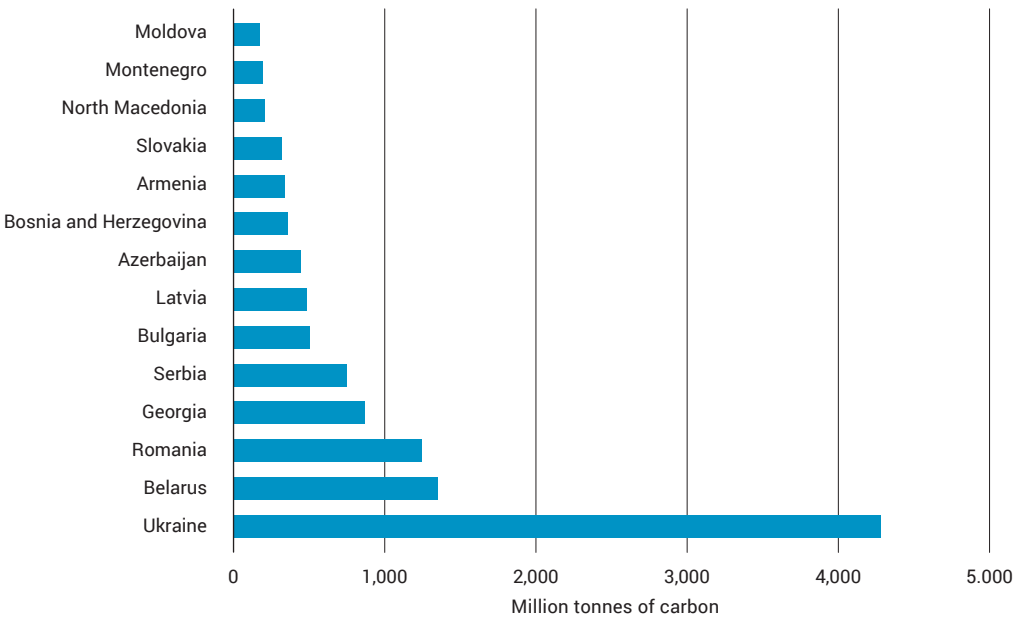
While croplands and grasslands are important carbon stores, agriculture as a whole and the livestock sector are significant sources of emissions. **The region's overall agricultural GHG emissions have been estimated at 180 million tonnes per year.**[51] Policies to support the sustainable use of farmlands, whether for livestock or arable crops, could help cut the region's emissions and contribute significantly to hitting Paris Agreement targets.

Another large source of GHG emissions in the region is thawing permafrost. Carbon-rich permafrost areas cover 60-65% of Russia or 41% of the CEE region. Recent research predicts the loss of 40% of global permafrost if temperatures rise 2°C above pre-industrial levels.[52] As well as carbon, the melting of permafrost releases pathogens and powerful greenhouse gases like methane and nitrous oxide.

Less appreciated are the landscape-scale changes in tundra ecosystems that threaten the subsistence livelihoods of indigenous people. Some 68% of reindeer rangelands (230 million hectares) are already degraded by overgrazing and uncontrolled passage of vehicles.[53]

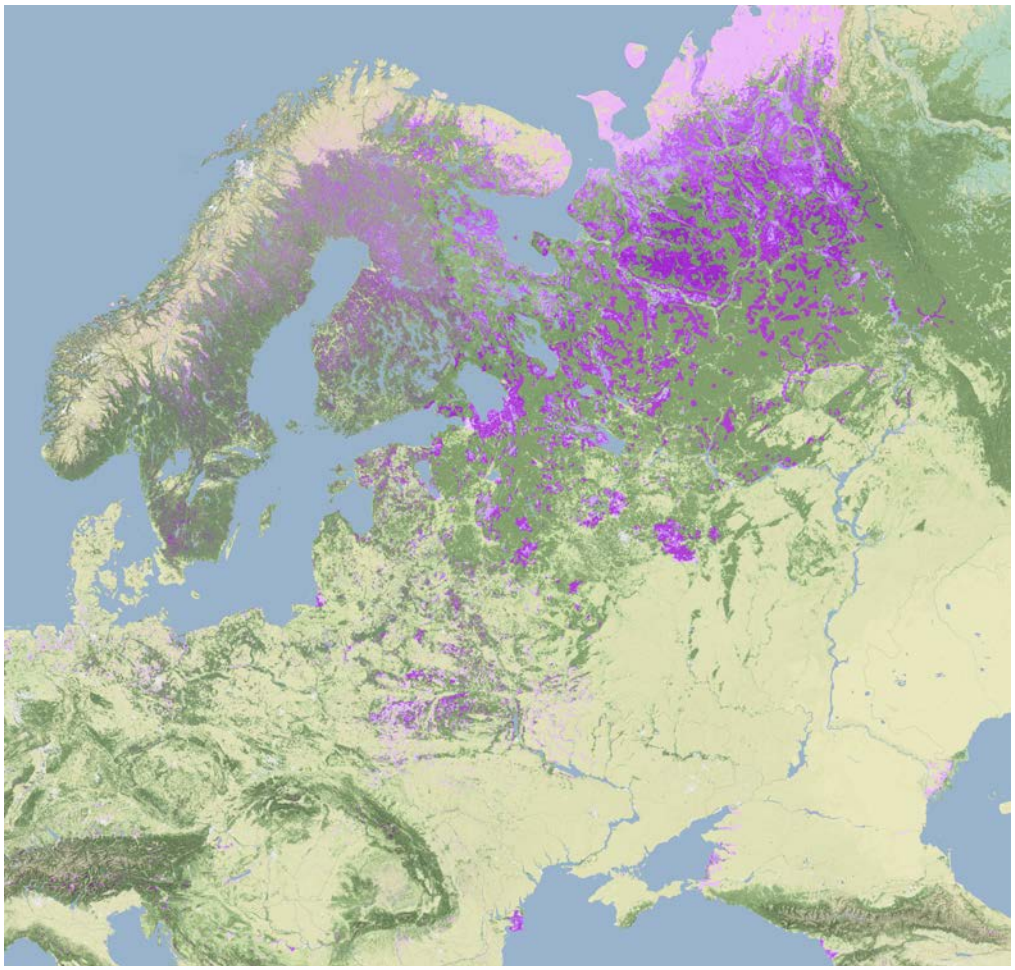
The region's peatlands hold one of the world's most important carbon stocks. Peatlands are a type of wetland characterized by the accumulation of partially decayed organic matter, forming layers of peat.[54] Vast peatlands are found in the northern part of the region and stretch across Russia, Belarus, Ukraine, and Latvia. Smaller peatlands are also found in the Western Balkans.[55] Globally, wetland SOC stocks (185.3 tonnes per hectare) are over twice that observed in forests (82.9 tonnes per hectare), a discrepancy driven largely by the very high stocks found in large areas of peatlands in the CEE region (237.6 tonnes per hectare).[56] This is mainly due to the locally cold and wet conditions that favor the formation of organic soils; wetlands in hotter and drier regions have lower carbon stocks. Current greenhouse gas emissions from drained peatlands in the CEE countries excluding Russia are estimated at up to 91 million tonnes (CO_2e) per year.[57]

FIGURE 9
Below-ground carbon in CEE countries (excluding Russia)



Source: Earth Map

FIGURE 10
Distribution of peatlands in the CEE region



Source: F. Tanneberger, C. Tegetmeyer, S. Busse, A. Barthelmes *et al*, 2017[59]

Emissions from Russian peatlands are roughly 190 million tonnes (CO_2e).[58] Due to their core role in combating climate change, the CEE region's peatlands should be treated as global commons. Urgently avoiding further degradation of CEE peatlands and supporting their restoration is vital not only to the region, but to the whole world.

Direct drivers of SOC degradation in the region's forests and peatlands include tree cover losses from both timber harvesting and wildfires. Abandonment of croplands and unsustainable crop management can also lead to SOC loss. Other major drivers are reported to be population pressure and the associated expansion of settlements.

BOX 5
The peatlands in Belarus

With 12.3% of the country covered by peatlands (2.5 million hectares), compared to a 3.4% global average, Belarusian bogs are the 'lungs' of Europe. Healthy and functional peatlands in Belarus offer ecosystem services vital for our health and well-being by:

- holding more than 7 billion cubic meters of freshwater that help ensure sustainable and clean water supplies to the region[60]
- storing about 500 million tonnes of carbon
- removing about 900,000 tonnes of carbon dioxide from the atmosphere each year while releasing 630,000 tonnes of oxygen
- providing a habitat for over 40% of the bird species, 35% of the insect species, and over 15% of the wild plant species in the country
- being home to about 40% of the global population of the aquatic warbler and 10% of the great spotted eagle, two globally vulnerable bird species

Ecosystem services provided by the Yelnya peatbog in northern Belarus have been valued at 300 million US dollars per year.[61] Extrapolated from that estimate, Belarusian peatbogs potentially deliver ecosystem services worth more than USD 4 billion annually.

However, peat cutting and agricultural development have disturbed and degraded significant areas. Nearly two thirds (or more than 1.6 million hectares) of the country's peatlands have been drained, leading to massive carbon losses, peatfires, falling groundwater levels, subsidence and the loss of rare and endangered wild animals and plants. More frequent and intense wildfires are especially damaging, increasing the risk of extinction for sensitive species, causing biome shifts, and resulting in enormous carbon emissions as well as the dispersion of harmful haze and smoke.

The government has made the protection and rehabilitation of bogs and peatlands a priority and included them in national commitments to achieve LDN and meet the Paris Agreement, as well as in activities under the Convention of Biological Diversity and the Ramsar Convention on Wetlands. Commitments to be met by 2030 include: the rehabilitation of at least 10,000 hectares of disturbed bogs; the restoration of at least 60,000 hectares of peatlands; and a reduction in the area of degraded drained land with peat soils to no more than 190,000 hectares.

A project – Restoration of Drained Peatlands in Belarus – funded by the Korea Forest Service within the framework of the Greening Drylands Partnership (Changwong Initiative) managed by the Secretariat of the UNCCD, aims to restore more than 3,000 hectares of drained peatlands in the Paliessie region. The project will prevent the release of 11.2 tonnes of CO2 per hectare, a total of 33,600 tonnes of CO_2, from the restored areas.

4. RESTORING A REGION'S ECOSYSTEMS FOR PEOPLE, NATURE, AND CLIMATE

In March 2019, UN Member States declared that 2021-2030 will be the UN Decade on Ecosystem Restoration.[62] They recognized that nature-based solutions and healthy ecosystems will play a critical role in achieving the SDGs by 2030.

4.1 A good start, but needs more ambitious commitments

As of 2021, 127 countries have committed to setting LDN targets under the UNCCD. Through the LDN Target Setting Programme, the Global Mechanism, and the UNCCD Secretariat, in collaboration with international partners, are supporting interested countries in establishing national baselines, targets and associated measures to achieve LDN. More than 100 countries – over two-thirds – have already set targets, and 70 have secured high-level government commitment to achieving LDN. **Globally, countries have committed to restoring up to 1 billion hectares, including 450 million hectares committed under LDN.**[63] Restoration commitments are also included in Nationally Determined Contributions (NDCs) under the Paris Agreement, National Biodiversity Strategic Action Plans (NBSAPs) under the Convention on Biological Diversity, as well as under the Bonn Challenge and other regional, national, and subnational initiatives.

For this report, restoration commitments for CEE region countries have been extracted from submissions under the three conventions and the Bonn Challenge. 2015 has been taken as the baseline to include commitments from NBSAPs which expired in 2020. An exception is Russia, where all LDN commitments derive from federal programmes for 2014-2020. A clear majority (11 from 15) affected CEE countries have provided area-specific data for ecosystem restoration commitments.

The analysis shows that, as of 2020, the total area covered by ecosystem restoration commitments in CEE countries is nearly 13.5 million hectares (see Figure 11), equivalent to 5% of the degraded area in the region.

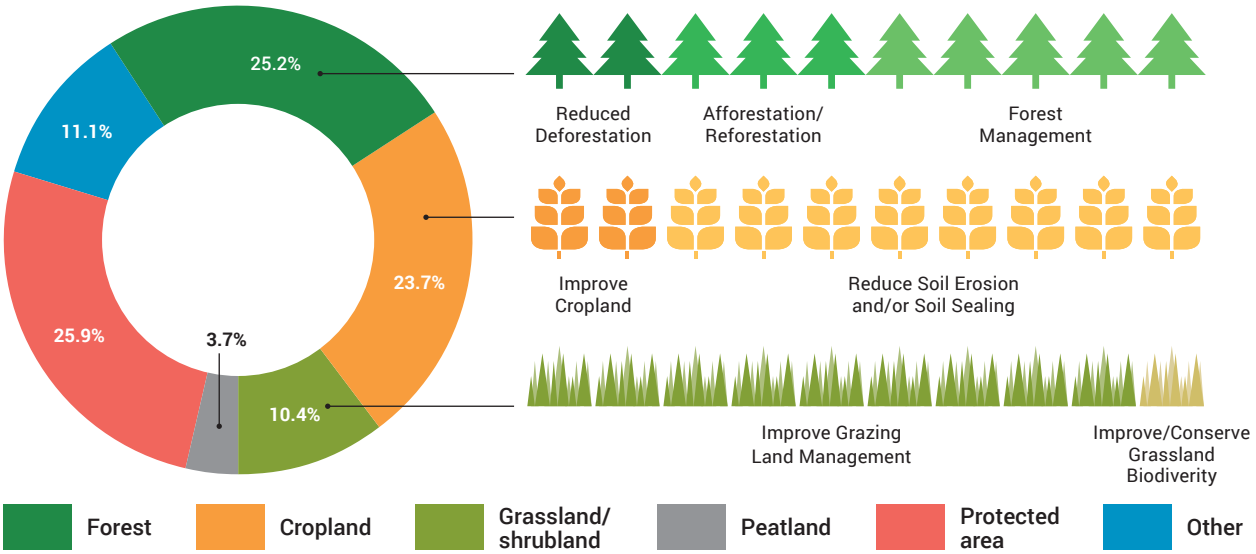
CEE region commitments have also been classified under six categories – forest, cropland, grassland, peatland/wetland, protected area, other – and up to five sub-categories (see Table below). Where a commitment straddles two categories, it has been allocated to the most appropriate category based on consultation with country representatives. The 'other' category includes commitments with no specific land cover type, such as land with high conservation value, or riparian and water basin protection strips.

TABLE 1
Categories and sub-categories used in this analysis of CEE restoration commitments

Categories					
Forest	Cropland	Grassland/ shrubland	Peatland	Protected area	Other
Sub-categories					
Improved/sustainable forest management	Reduced soil erosion/ soil sealing	Improve/conserve grassland biodiversity	Conservation and rehabilitation	Expansion	Land restoration and rehabilitation without specific land use types
Afforestation/ Reforestation	Improved croplands	Improved grazing land management		Sustainable management	
Reduced deforestation	Agroecology	Pasture rotation systems		Connectivity	
Rehabilitation	Agroforestry systems	Rehabilitation of overgrazed rangelands			
Natural regeneration	Green belts				

FIGURE 11

Total restoration commitments (LDN, NDCs, NBSAPs, Bonn Challenge) by land categories in CEE countries



Source: UNCCD estimate based on LDN National Reports, https://knowledge.unccd.int/home/country-information/countries-with-voluntary-ldn-targets

Broken down by category, **the largest share of restoration commitments in the CEE region is for 'protected areas', amounting to more than 3.5 million hectares** (see Figure 11). Six out of 11 CEE countries include protected areas in their commitments. They involve expanded or improved protection for forests, grasslands, and wetlands, though land cover or land-use types are often not specified. Based on estimates provided from NBSAPs, about 23.2 million hectares are already protected across 15 CEE countries.

The prominence of protected areas in commitments under all the Rio Conventions demonstrates their importance to CEE region countries. This prominence also aligns with the LDN response hierarchy, *Avoid -Reduce-Reverse*, which prioritizes prevention. Global biodiversity targets for 2020 included the protection of at least 17% of terrestrial ecosystems – one of the few so-called Aichi Targets that were attained. The Post-2020 Global Biodiversity Framework is still under discussion but is expected to set a 2030 target of conserving at least 30 % of the planet through well connected and effective systems of protected areas and other area-based conservation techniques.[64] While planning interventions on protected areas, it is important for countries to apply integrated approaches both within and outside protected area boundaries to ensure successful restoration and meaningful ecological connectivity between protected areas.

BOX 6
Protecting natural landscapes in Azerbaijan[65]

Protected areas in Azerbaijan have expanded their coverage by 1.8% over the last ten years to safeguard 10.3% of the country's territory. A recent study found that expanding existing protected areas, and establishing new national parks to lift the total to 15%, could provide better and more representative protection of the country's diverse natural landscapes and ecosystems.

The authors identified and mapped key 'landscape ecological systems' in the country's highlands and plains, as well as the existing network of protected areas. In addition to pinpointing key biodiversity areas in need of protection, the analysis highlighted natural corridors, like forest strips and rivers, that provide vital connections between protected areas.

The study also outlines an integrated management system – stretching from national to local levels – that could help ensure the long-term social and ecological sustainability of conservation efforts. Growing interest in the country's natural landscapes and biodiversity are an opportunity to develop eco-tourism and generate sustainable finance to support management of the protected areas.

The second largest category is 'forests', with commitments covering about 3.4 million hectares made by eight out of 11 CEE countries. Within this category, countries prioritized forest management, followed by afforestation and deforestation. The CEE region has one of world's largest forest areas, covering 850 million hectares. As analyzed in Section 4, the region's forests have been under substantial stress due to deforestation, coupled with declining productivity and SOC stocks. The extent of the area currently targeted for restoration seems inadequate to address the challenges that the region's forest ecosystems face. Widespread abandonment of agricultural land in the region offers great reforestation potential, but may have a negative overall effect on biodiversity, and result in a loss of cultural landscapes.[66] Therefore, countries should prioritize the conservation of intact forests and manage working forests more sustainably, as well as restore forests already lost.

'Croplands' is the third largest restoration category, with commitments of around 3.2 million hectares, mentioned in seven out of 11 countries' commitments. Most of the pledges aim to reduce soil erosion and leaching. A second priority is the improvement of cropland. However, the region holds nearly 230 million hectares of croplands exposed to increasing levels of degradation due to factors including intensification, urbanization, and climate change. Therefore, current commitments are unlikely to be sufficient to achieve long-term sustainability of croplands vital for regional and global food security. Countries should pay careful attention to conserving and restoring biodiversity in productive landscapes, including soil biodiversity. A wide range of techniques are available to counter cropland degradation such as agroforestry, improved fallow periods, green belts, erosion control, creating buffer zones with sand-binding tree species to control desertification, silvopastoral practices, and many others.

'Grasslands' is the fourth largest category, with a total area of 1.4 million hectares committed for restoration by four CEE countries. This commitment covers only about 1% of region's grasslands (100 million hectares in total). National commitments emphasize reducing overgrazing and revitalizing pastures, and conserving biodiversity, including endangered species, in floodplain meadows. Supporting extensive management regimes that avoid both over-intensive use and abandonment can be an appropriate strategy to restore degraded grasslands and their biodiversity in central and eastern Europe.[67]

The smallest category of commitments concerns peatlands and covers less than 0.5 million hectares. Only two countries have made commitments regarding peatlands, even though the region's peatlands cover 226 million hectares and represent some of the world's largest carbon stocks. Given the global significance of this high-value ecosystem, the regional commitments on peatlands are low. CEE countries with large peatlands are a focus of the Ramsar Convention on Wetlands, which provides scientific, technical and policy advice on the use and conservation of wetlands and peatlands. The Global Peatlands Initiative is another initiative to protect, restore and sustainably use peatlands globally.[68] More joined-up and coherent approaches can help CEE governments and intergovernmental agencies to get the most from regional and global advocacy

and restoration efforts. Protecting and restoring the region's peatlands is vital for global ecosystems, climate change mitigation and adaption, water quality and storage, and resilience. It requires not just more ambitious commitments from countries in the region, but support from the wider international community.

At 5% of the estimated area of degraded land, the area committed for restoration in Central and Eastern Europe appears small. Moreover, implementing these commitments depends on adequate financing, both domestic and external. Co-ordinated support should be provided to ensure that these commitments are realized and meet international standards for ecological restoration. Often, countries favor afforestation measures as an easily deployed and cost-effective measure. But ecosystem restoration should not be assessed on only the number of hectares under restoration, or numbers of trees planted, but also on improvements in land-based natural capital and restored ecosystem services.[69] A diverse array of skills and technical capabilities is required to design, implement, and bring to fruition large scale restoration initiatives. CEE countries should take advantage of the learning and knowledge platforms of the UN Decade on Ecosystem Restoration to foster national communities of practice and applied research.

The inter-governmental processes designed to foster ecosystem restoration are built on national level interventions. This carries the risk that transboundary ecosystems will be neglected. International agencies and donors should consider the restoration of priority ecosystems that extend beyond national frontiers.

4.2 Coordination and monitoring of restoration targets

The Decade for Ecosystem Restoration will provide a framework to enable monitoring and reporting on restoration efforts and support global, regional, and national commitments under a common umbrella. Monitoring under the UN Decade will build on data collated from existing monitoring and reporting processes.[71] The UNCCD, for example, provides an integrated framework for monitoring efforts to achieve LDN as part of the convention's national reporting and review process.

Under the CBD, countries will develop a new generation of NBSAPs after the adoption of a new global strategic framework for biodiversity, due in late 2021. In 2023, countries are due to have a first 'global stocktake' to assess progress towards the goals of the Paris Agreement. These processes offer countries an opportunity to create more coherent and ambitious land- and area-based targets across all three Rio Conventions.

The Bonn Challenge is a global voluntary initiative to restore 350 million hectares of degraded and deforested lands into 2030. ECCA30 is a parallel regional initiative to restore 30 million hectares of degraded and deforested landscapes in Europe, the Caucasus, and Central Asia by 2030. ECCA30 encourages countries to enhance restoration commitments and accelerate their implementation, furthering progress on land and forest targets, as well as the objectives of the Rio Conventions.

To measure and encourage progress on forest landscape restoration, IUCN has developed the Bonn Challenge Barometer. The Barometer dashboard


© UNCCD/Belarus GDP

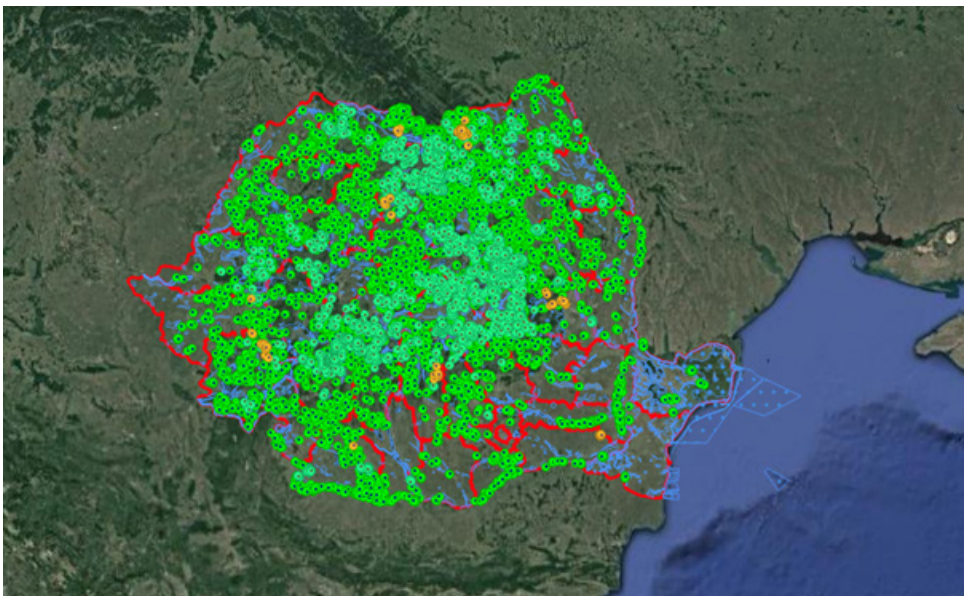
BOX 7
Reforestation in Romania[70]

In 2020, Romania started a major national afforestation campaign with the support of a multi-stakeholder partnership including the presidency, the government, local authorities, the national forests administration, NGOs, and private businesses – and over 5,000 volunteers.

The campaign, called 'A forest as big as a country', aimed to plant over 50 million trees across more than 13,000 locations to: create new forests, green belts, and windbreaks, including along highways; afforest over 200 hectares of degraded lands; and fill gaps in existing plantations.

The government aimed to create 2,500 new forests and fill gaps in 7,000 existing young forests. The plans also included the creation of green belts covering 183 hectares to augment the creation of over 80 hectares of green belts since 2018.

FIGURE 12
Locations for tree planting in 2020



Source: https://forestgis.ro/index.php/view/map/

presents country-level data including area under restoration, carbon sequestered, and jobs created. From 2021, the Barometer will expand to include other ecosystems in support of the UN Decade on Ecosystem Restoration.

Where countries have made commitments under different Rio Conventions and the Bonn Challenge, the types of restoration measures and their estimated extent often differ. These discrepancies could have a range of explanations: varying times of submission, different approaches used by different ministries, and a lack of uniform guidance from convention secretariats, are all factors.

Better alignment of commitments on restoration in national plans related to the Rio Conventions and the Bonn Challenge could enhance planning, financing, and implementation. Previous efforts to realize national commitments set up through different intergovernmental processes have remained institutionally isolated and typically competed for limited public and private resources. A failure to integrate restoration initiatives leads to missed opportunities to realize the benefits of co-operation and avoid trade-offs. Integrated objectives and joint programming could make use of blended funding to close gaps in climate action, biodiversity conservation, and the restoration of degraded and deforested landscapes, and can also help to align sectoral policies and achieve broader uptake by stakeholders. In CEE, only two countries – Belarus and Georgia – have coordinated their restoration commitments across the Rio Conventions.

BOX 8
Legislative reforms for better land monitoring in Armenia

Land cover data is critical to informed decision-making and integrated land-use planning in combating land degradation and desertification, halting habitat loss, and mitigating natural disasters. During 2014-2015, Armenia was among 14 pioneer countries that set national LDN targets. In 2015, the government approved a Strategy and a National Action Plan to Combat Desertification. This high-level process triggered amendments to the existing national Land Code by introducing a definition of land cover and introducing six land cover classes: 1) cultivated land 2) meadows 3) forests 4) shrubs 5) water 6) areas devoid of vegetation.

A 2019 government decree identified mechanisms for data collection, storage, and dissemination. Land cover data is now collected at community level, aggregated at regional and district levels, and transmitted to the Ministry of Environment which collates national statistics and presents them annually to government. In 2020, the first set of land cover data was presented to the Government of Armenia and made publicly available.[72]

The new monitoring system will enable (i) analysis of trends in land cover to identify changes due to natural and anthropogenic factors; (ii) better management, collection, and storage of data; (iii) the identification of land ecosystems in need of action.

The reforms to the land monitoring system inspired by the LDN process in Armenia will enable more informed decision-making for integrated land-use planning, and sustainable land resource use.

4.3 From Land Degradation Neutrality commitments to actions

The UN Decade on Ecosystem Restoration calls on governments and other stakeholders to massively scale up restoration efforts across diverse ecosystems. The expectations are high, and the opportunities vast. The UN Decade assesses that over USD 1 trillion is needed over the next ten years to achieve the Bonn Challenge and other restoration goals.[73] The FAO and the Global Mechanism of the UNCCD estimate that USD 36-49 billion are required annually to deliver on forest and landscape restoration targets.[74] Given its large extent, the cost of land restoration in the CEE region would be substantial. Protecting and restoring forests, croplands and wetlands would require massive investment which the public sector is unlikely to be able to fully bear. International finance, as well as private-sector investment, is essential to scale up restoration in the region. Stable, predictable, and long-term international and private financing for ecosystem restoration will be key to achieving national, regional, and global targets.

CEE countries already benefit from international green finance opportunities, mainly through the GEF and the Green Climate Fund (GCF). The GEF has been active in the region: since 2010, the number of GEF projects involving CEE countries has exceeded 200. The total funding (combining grants and co-funding) that GEF has mobilized for projects under its climate change, land degradation and biodiversity focal areas involving the region is USD 18 billion.

The GCF provides funding to developing countries to reduce their greenhouse gas emissions and enhance their ability to respond to climate change. Developing countries in the CEE region have benefited widely from GCF funding on projects on ecosystem services and land restoration. Total GCF funding to Bosnia and Herzegovina, Georgia, Montenegro, North Macedonia, Armenia, Serbia, and Moldova since 2016 amounts to over US$4 billion. The total volume of carbon avoided through these projects is more than 175 million tonnes.[75] Most of these projects are multi-sectoral, involving cities, industries, infrastructure, livelihoods, and communities. They are also closely linked to land use, agriculture, and forests. As GCF resources grow, and CEE countries gain further experience in project implementation at the intersection of climate change and land use, new and larger-scale projects are likely to be financed through GCF.

To sustain the momentum building behind LDN, the UNCCD's Global Mechanism has launched a LDN Transformative Projects and Programmes facility to help countries design and secure finance for

BOX 9
Pursuing LDN in Moldova

One GEF project that has benefits for land ecosystems in the CEE region is its support for integrated natural resource management in Moldova, with a goal of achieving LDN.

The US$6.7 million project aims to bring 92,000 hectares of farmland under improved practices and provide direct benefits to more than 140,000 people.

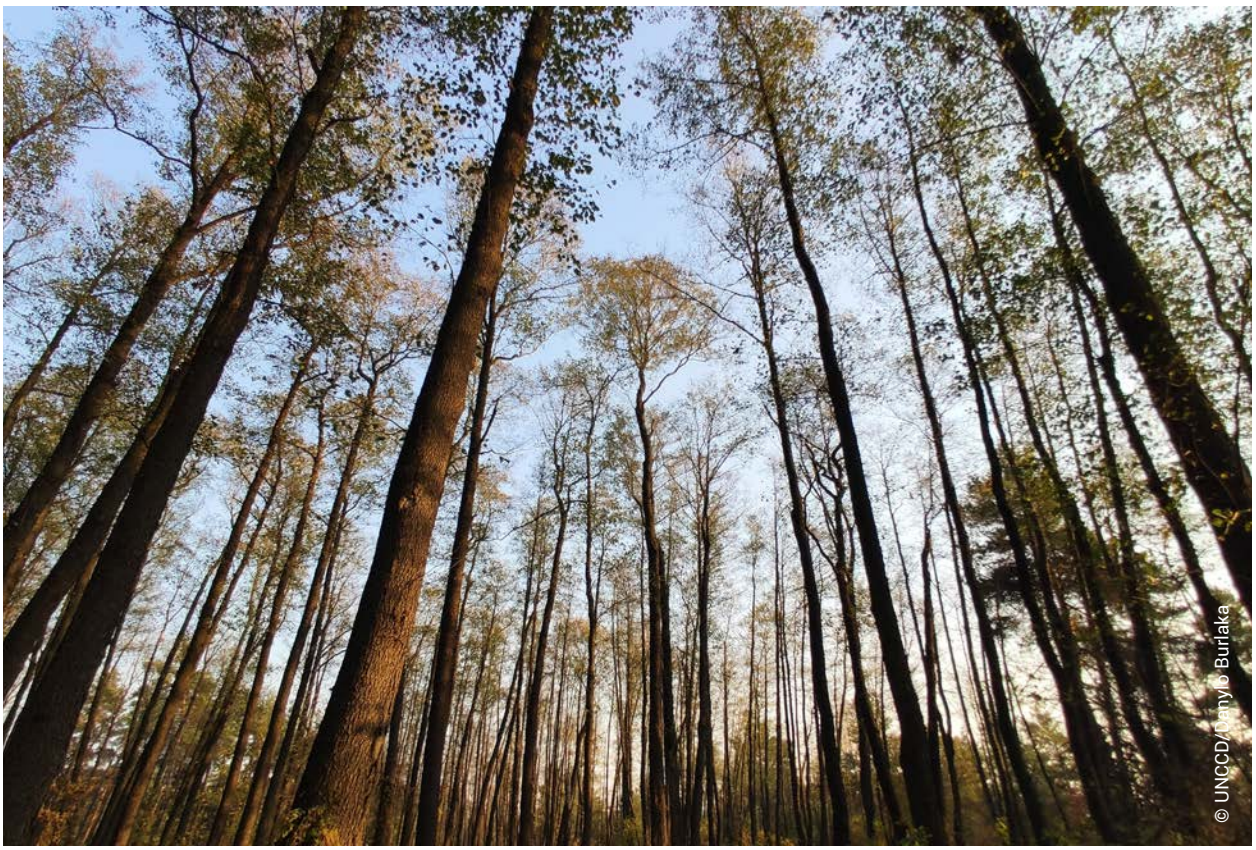
Agriculture is fundamental to the Moldovan economy, contributing about 14% of GDP and employing 28% of the workforce. The sector is highly vulnerable to land degradation and both climate change and variability, factors which all lead to serious production losses and threats to food security.

Soil fertility in areas with steep slopes has declined by up to 20–30% due to erosion caused by torrential rains, and greatly exceeds artificial replenishment by applied fertilizers. In irrigated landscapes, the chemical degradation of soils is aggravated by rising groundwater levels. Most farm households are smallholders, who tend to be poorer and have limited buffers against shocks.

The long-term solution is to ensure effective management of agricultural land and trees in these landscapes so that they continue to provide the ecosystem services essential to people's livelihoods, local and national development, and environmental sustainability.

The project supports the introduction of innovative practices like climate-smart agriculture and forestry, and sustainable land management, in two districts. The practices can be scaled up to achieve LDN in other areas facing similar issues of climate change and land degradation.

Source: https://www.thegef.org/project/enabling-policy-environment-integrated-natural-resources-management-and-implementation



BOX 10
Integrated land-use management in Georgia[81]

Georgia is implementing several projects that promote integrated and sustainable land use planning to help local communities combat land degradation and boost rural economies. Under one project, a detailed land use plan has been created covering 360 hectares around the village of Shenako, in Akhmenta municipality.

The land use plan helps to translate Georgia's national LDN targets to a local level by enabling stakeholders in Shenako to identify areas of degradation risk and areas that can be rehabilitated.

The plan was developed with local farmers, tourism service providers, landowners, and other land users, all united with a vital interest in sustainably managing the land to secure livelihoods and those of future generations. The plan maps the size and spatial distribution of different land use and land cover categories, as well as land use intensity or productivity, all of which can be linked to LDN monitoring at the village level.

The plan included recommendations for the development of community management plans and outlined three future land use scenarios. As such, it provides a baseline to guide and to monitor future developments and, more broadly, increase the local community's understanding of sustainable land and landscape management and its contribution to local livelihoods.

large-scale initiatives with multiple cross-sectoral benefits. Transformative Projects and Programmes are large-scale integrated restoration efforts that, by helping countries achieve LDN at the national level, move the world closer to achieving SDG 15. By generating multiple benefits across multiple sectors, LDN Transformative Projects and Programmes can attract wide ranging support from public, private, and blended finance providers. Sources can include the GEF, GCF, the Land Degradation Neutrality Fund (LDN Fund; see below), the Adaptation Fund (established under the UNFCCC), as well as multi-lateral banks and impact funds.[77] By 2021, four CEE countries (Armenia, Belarus, Georgia, and Montenegro) had requested support to develop a national LDN Transformative Project.

The UNCCD's Global Mechanism spearheaded the establishment of the LDN Fund and undertook its initial design, with support from the governments of France, Luxembourg, and Norway, as well as the Rockefeller Foundation. This impact investment fund supports sustainable land management and land restoration projects implemented by the private sector. Potential projects must be land-based initiatives that can avoid, reduce, or reverse land degradation and produce financial returns. By early 2021 the LDN Fund had invested in four land restoration projects in Africa, Asia, and Latin America. So far, no active or pipelined LDN Fund projects have emerged from the CEE region.

5. TOWARDS A MORE SECURE FUTURE: GREEN RECOVERY AND NATURE-POSITIVE TRANSFORMATION

As detailed in Section 5, CEE countries have made firm commitments to protect and restore land ecosystems to achieve LDN and contribute to the UN Decade on Ecosystem Restoration. Land and nature-based solutions bring multiple benefits for nature and societies including soil fertility, climate change mitigation and adaptation, biodiversity conservation and disaster risk reduction, and the creation of millions of jobs. Generating new employment on this scale will have strong multiplier effects, underlining its potential to help societies and economies to engineer a green recovery from the COVID-19 crisis. A green recovery can also be equitable and gender-neutral by creating opportunities for youth and women.

The natural capital of southern and eastern Europe alone is valued at €184 billion – €8,150 per person. The returns on taking action against land degradation are estimated at 6 USD for every dollar invested in restoring degraded land in the region.[78] It comprises an estimated quarter of the total wealth of countries like Bosnia and Herzegovina, Macedonia, Montenegro, and Serbia. It's clear that protecting and restoring ecosystems will be key to sustainable development in the future.[79]

5.1 Post-COVID-19 institutional development

How governments have responded to the COVID-19 crisis highlights the ways in which institutional development could also improve the management of land ecosystems in the post-crisis era.

Institutional governance, policy management protocols and co-ordination levels had to improve dramatically during the COVID-19 crisis, as governments faced major uncertainties and trade-offs between competing priorities for health, economic and social needs. To manage this challenge, many governments created multi-level co-ordination bodies bringing together representatives from national, regional, and local levels. National governments also needed to enhance co-operation across municipalities and regions. Given the heterogeneity of the local impacts of the crisis, many developed flexible and regionally differentiated measures. The crisis also demonstrated the importance of digitalization and e-governance in managing multi-level operations.[80]

Some of these developments could be applied to restructure the institutions responsible for land ecosystems, including in the CEE region. CEE governments could develop vertical management and operational bodies to foster cross-level co-operation across national and sub-national entities. They could establish strong co-operation channels across municipalities and regional administrative units to develop and implement land degradation risk-reduction strategies. This would require the development of administrative, legal, and operational procedures and guidelines to define roles and responsibilities. The pandemic required governments to engage in cross-border co-operation on health services and trade. Since the CEE region's natural ecosystems, including forests, wetlands, and grasslands, often extend across national frontiers, cross-border efforts on ecosystem restoration are already needed. Countries in the region already engage in multi-country projects, including those funded by the GEF and GCF. Broader and deeper cross-border collaboration is needed to protect and restore ecosystems within natural rather than national boundaries. This would increase the efficiency and effectiveness of these efforts. A CEE-wide restoration initiative could be envisaged to co-ordinate regional efforts and investment projects.

Digitalization and e-governance have played an important role in managing multi-level responses to the COVID crisis. Similar e-platforms could also improve the governance and protection of land ecosystems, for instance in the monitoring and detection of illegal activities in protected areas. CEE countries could develop and deploy e-platforms at national, regional, and local levels to enhance the management of land ecosystems.

BOX 11
Developing a digital platform for food donation to prevent food waste in Serbia

Each year, almost one-third of all food produced globally is wasted. This shocking statistic undermines efforts to help the 870m undernourished people worldwide, highlights the misuse of land and water resources, and accounts for 8% of global greenhouse gas emissions.[82]

To reduce food waste and help people in need, the UN Development Program in Serbia, alongside with the local business community, developed a digital platform to help retailers to donate their surplus food to humanitarian organizations.

The "Plate by Plate" platform was launched in 2021 amid the COVID-19 pandemic. It has played a core role in boosting donations to the Belgrade Food Bank, which has received over 5,000 tonnes of fruits and vegetables in donations since its start in 2015.

Using blockchain technology, the platform allows humanitarian organizations to trace, reserve and collect food once retailers have added their food surplus information to the platform. This user-friendly and scalable technology shows how new technology can connect businesses, donors, and the development community to address socioeconomic inequality and reduce pressure on natural resources.

Source: https://www.rs.undp.org/content/serbia/en/home/presscenter/articles/2021/food-donation-platform-launch.html

5.2 Green employment as an engine of job market recovery

Green jobs can play a central role in the response to the current economic crisis while enhancing environmental protection and social inclusion. In the short term, structural changes in employment are expected to accelerate, due to the impacts of COVID-19 and subsequent economic recovery packages, ongoing technological developments, and climate change. According to the International Labour Organization, new jobs and job families will emerge, affecting at least half the global workforce – nearly 1.5 billion people.[83] This transformation will involve the greening of employment in both the private and public sectors. While these changes may create attractive job opportunities for educated and skilled segments of the labor force, they may also have negative impacts on workers with fewer advantages. While enhancing resource efficiency and building low-carbon economies, care must be taken to ensure that the green job transformation is also equitable and gender-responsive.

Land restoration activities could be an engine of green job creation. For instance, under the Bonn Challenge, restoration interventions in the form of watershed protection, natural forest regeneration and planted forests have already created large numbers of jobs.[84]

Labor-intensive sectors such as services, agriculture and land restoration offer a range of job opportunities linked to sustainable land ecosystems.
Restoration activities provide largely localized benefits, since projects usually employ local labor.[85] Based on labor-intensity estimates and the area of land that needs restoration, tens of millions of short- or long-term, direct or indirect green jobs could be created through large-scale land restoration. Compared with jobs created in traditional economic sectors, green jobs to protect and restore nature provide a much larger set of co-benefits like social inclusion, gender equality, food security and access to education.[86] With large numbers of young people, women and returning migrants out of work in the CEE region, public and private investment will be vital for the COVID-19 recovery by creating green jobs. Some of these new jobs may be based on state or donor employment schemes and privately funded environmental restoration projects.

The services sector generates 37-64% of gross value added (GVA) in the region's countries and provides employment to a majority of the labor force.[87] Post COVID, there may be important changes in the sector. For example tourism, which has been hit hard by the crisis, may evolve towards sustainability priorities. With its rich ecosystems and natural beauty, the region offers clear potential for domestic and international ecotourism. Western Europe, where there is increasing interest in nature-based leisure travel, forms a large potential market. Expanded and strengthened protected areas and ecosystem restoration efforts could help bring

BOX 12
Ecotourism in Montenegro

Responsible ecotourism that protects the environment and local cultural values represents a promising opportunity for Montenegro. The country's national parks provide a valuable base for the development of this sector. According to a recent study, every 1 euro in public funds invested in Montenegro's protected area system would generate a staggering 29 euros of economic benefits.[88]

One example of Montenegro's promotion of eco-tourism is the establishment of five national cycling trails. In addition, eco-villages combine nature conservation with economic opportunities for local communities through, for example, organic food production, traditional cuisine and handicrafts, horse riding, walking tours, and harvesting fruits, vegetables, or herbs.

The forests that cover 60% of Montenegro are another key ecotourism asset. Due to climate change, Montenegrin forests are increasingly at risk from wildfires. The danger is exacerbated by rural depopulation, which can undermine efforts to prevent and suppress forest fires. By creating jobs and local tax revenues, the development of rural tourism can counter this trend.

The COVID-19 crisis can accelerate the trend that sees tourists seeking out and paying a premium for greener, smarter, and more personal experiences. That includes travelers looking to take an active part in protecting and restoring natural landscapes, fueling growth in ecotourism.

in greater tourism revenues and generate large numbers of green jobs, including for youth and women, especially in rural areas.

The agricultural sector contributes 2.5-12% of GDP in the CEE countries.[89] Trade within the region and with western European markets offers substantial growth and job creation potential in the sector. In particular, the region could benefit from growing European markets for 'green' and sustainable agricultural products. To realize these benefits, it will be essential to scale up investments in croplands sustainability. Currently these croplands are under considerable pressure from urbanization, soil degradation, and climate change.

The COVID-19 crisis has made it obvious that food-system linkages from production to distribution, consumption, and waste need to be restructured. Many local initiatives have emerged to overcome disruptions caused by the crisis. For example, distribution networks emphasizing local markets and shorter supply chains generate local jobs and promote responsible consumption. Policy incentives to promote integrated territorial food systems can advance economic and social development and environmental sustainability in urban areas and their rural hinterlands.[90] Countries in the CEE region could strengthen local and cross-border distribution networks to improve the sustainability of regional food systems.

BOX 13
Mind the gender gap

In the CEE region, women are generally disadvantaged in terms of access to, and control over, farm machinery, livestock, fertilizers, and water for irrigation. In addition, women's de facto ownership rights over land are limited due to:

- legal processes that favor the registration of land in the name of men;
- inheritance practices that favor sons over daughters;
- reduced access to economic resources to buy land; and
- patrilocal marriages in which women live with their husband's family once married.

In the patrilocal system – especially prevalent in Georgia and North Macedonia – women do not usually claim a share of land from their own family, yet nor do they have property rights over the land of their in-laws.[91]

Women also hold and manage smaller plots of land compared to men. In Moldova, the average size of a man's plot is 40% larger (1.21 hectares compared to 0.86 hectares).[92] In Georgia, women owned or leased 19% of land in 2013. Since 30% of landholders are female, it's clear that average female plot sizes are smaller.[93]

The gender gaps in land ownership in the CEE are relatively narrow by global standards. As in Georgia, around 30% of land holders in Armenia and Moldova are female. In part this is due to differences in the average age of the female and male populations (female land holders tend to be older). In 2013, in Georgia 66% of female land holders were over 60 years, but just 42% of men. Similarly, in Moldova, in 2011, 33% of female land holders were over 65 years, but only 15% of men.

Several CEE countries have produced national gender equality action plans or strategies. The plans focus primarily on gender-related co-ordination between public departments and organizations, monitoring and statistics, gender mainstreaming and public awareness through education and media, and equal opportunities in areas including labor markets, political decision-making, and access to healthcare.

While several countries' plans have acknowledged the vulnerability of rural women, only a few have specific objectives in relation to women and land. These include economic opportunities for women in agriculture, education for women in rural areas to overcome traditional gender-based divisions, or enabling women to contribute equally to rural development and share in its benefits.

There remains considerable scope for CEE countries to strengthen their commitments to erasing gender inequality in relation to land use and management and to tap the resulting benefits for economic and social development as well as sustainable land use.

As showcased by the FAO´s city region food systems initiatives, territorial food systems contribute to food and nutrition security while enhancing the livelihoods of small-scale farmers and creating new jobs. When integrated with waste management and recycling, regional or local food hubs can also contribute to resource recovery. Since these hubs are often developed as multi-stakeholder and participatory initiatives, they foster equitable distribution of the benefits they generate.[94] The concept of sustainable cities is now strongly associated with sustainable food network initiatives that lower food-related ecological footprints and promote urban agriculture and reduced food waste.[95] The crisis has heightened

the importance of digital technologies and e-commerce tools that shorten and optimize supply chains and avoid existing power asymmetries that stem from the dominance of large supermarket chains and distributors. The CEE region could benefit from the lessons learned during the pandemic and invest in short and smart food supply chains to help both consumers and small-scale farmers in the region.

Countries in the CEE region could assess the employment opportunities arising from land-based interventions to guide their recovery plans. The impacts of previous programmes on land degradation could be assessed to shed light on whether policy efforts do boost employment. Countries could also assess the labor-intensity of interventions that are particularly relevant to key land use types and ecosystems on their territories. Such assessments could also identify how new job opportunities could benefit youth and women.

Given the large scale of the ecosystems at risk of degradation in the CEE region, local land stewardship programmes could be developed and implemented to provide social and economic incentives to support protection and restoration efforts. Governments could design programmes to be focal points of green job generation for low-income households, youth, and women. National and local governments could also provide training and extension services for targeted social groups.

5.3 Land restoration for climate action and disaster risk reduction

The Intergovernmental Panel on Climate change (IPCC) has made clear that climate change can exacerbate land degradation.[96] For example, by contributing to vegetation loss, wildfires, and lower crop yields, climate change can accelerate desertification and soil erosion – impacts that have already been observed in the CEE region. Equally, land ecosystems can play a major role in climate change adaptation and mitigation, with significant co-benefits in combating desertification and land degradation.[97] Similarly, many actions designed to combat land degradation contribute to climate change adaptation, mitigation, and the protection of biodiversity by enhancing soil fertility and increasing its carbon content and biomass.[98]

The enormous potential of the CEE region, including its rich peatlands, to sequester and store carbon puts the objective of zero net carbon emissions by 2050 within the reach of most CEE countries. Governments can now determine an optimal land-based carbon sequestration pathway, and how it should inform their climate commitments in the wake of the COVID-19 crisis. This would require a detailed assessment of the local and national potential for carbon storage across different ecosystems. Identifying the most feasible restoration measures for carbon storage in different localities would also be important. Given the heterogeneity of land degradation at the local level, regionally differentiated measures would be required.

CEE countries could set national/regional targets for land-based carbon storage. Accordingly, they could channel government investments toward land restoration, and develop new financial tools and market-based incentive mechanisms, along with non-market network solutions building on voluntary multi-stakeholder collaboration. Providing adequate funding to local government units – while allowing them to access innovative financing opportunities – would strengthen local efforts. Creating an environment conducive to private investment in land-based carbon storage could also create significant financing opportunities, as businesses' interest in sustainable impact investments rises.

In the UNFCCC climate change negotiations, the position of countries in CEE varies, reflecting in part how the region is composed of developed countries, countries in transition, and developing countries. However, it may be possible for some countries to develop regional or sub-regional initiatives and mechanisms to leverage the vast carbon storage potential of the region's land ecosystems as a global common.

Healthy terrestrial ecosystems also represent a critical line of defense against natural disasters. The Sendai Framework for Disaster Risk Reduction 2015 – 2030 identifies unplanned and rapid urbanization, poor land management and declining ecosystems key underlying drivers of risk. The framework calls for more dedicated actions to tackle these issues, including through more sustainable use and management of ecosystems and incorporating disaster risk reduction into natural resource management approaches.[103]

Land- or ecosystem-based disaster risk reduction (also known as Eco-DRR) could find a range of applications in the CEE region. Restoring wetlands increases resilience against water-related natural disasters such as floods or storm surges.[104] Restoring upland areas in high watersheds decreases the flood risks downstream. An ecosystem-based approach in coastal zones and river basins builds resilience and reduces disaster

BOX 14

Nature-based solutions in the Western Balkans[76]

The western Balkans region is considered highly vulnerable to the impacts of climate change. However, ecosystems and nature are still insufficiently considered in climate change adaptation and disaster risk reduction measures. To help address this challenge, in early 2020, IUCN launched ADAPT: Nature-based solutions for resilient societies in the Western Balkans.[99] ADAPT is a three-year initiative funded by the Swedish International Development Cooperation Agency (Sida) and implemented by IUCN's regional office for eastern Europe and central Asia. ADAPT brings together stakeholders to explore the value of employing nature-based solutions in response to societal challenges, and the multiple benefits these solutions can bring for communities, ecosystems, and biodiversity. The project's goal is to have climate-smart, gender-responsive and inclusive planning integrated into adaptation policy across the western Balkans.

Through a regional biodiversity task force,[100] IUCN has contributed to the EU-backed Green Agenda for the western Balkans.[101] The ADAPT project team provided expert inputs on how to reflect nature-based solutions in sections related to climate change and biodiversity. A Western Balkans Leaders' Declaration on the Green Agenda was adopted at a summit in November 2020.[102]

The priorities in the conservation and biodiversity protection pillar of the Green Agenda are to enhance regional environmental governance through the development and implementation of policy instruments, as agreed by the six western Balkan nations and aligned with the Rio Conventions and the European Green Deal. The Green Agenda calls for the development of a regional biodiversity strategy with nature-based solutions as an integral component.

As part of the ADAPT initiative, pilot projects in Serbia and Albania will focus on the restoration of the flood-prone areas to build community resilience and reduce disaster risk. The projects will increase the capacities of the local community and demonstrate nature-based solutions as an option to improve ecosystem health, human wellbeing, and biodiversity.

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BOX 15
Realizing the potential of natural capital in Latvia

Under a national strategy for sustainable development, Latvia aims to become the EU leader in the preservation, increase, and sustainable use of natural capital by 2030.[107]

Due to its small population and low levels of industrial pollution, Latvia is already one of the greenest and least urbanized EU nations. Almost half of Latvia's territory is made up of natural ecosystems largely unaltered by humans. The natural wealth of Latvia is concentrated in its forests, water bodies and rivers, as well as its fauna.

Recognizing the risks facing Latvia's natural ecosystems and biodiversity, including rising pollution from household waste and the use of fossil fuels, the strategy identifies several innovative solutions based on the creation of market instruments:

- auctions of ecosystem services to encourage more efficient distribution of subsidies to the landowners who maintain and preserve natural capital
- levying taxes and fees on the use of natural capital in line with a 'polluter pays' principle
- channeling taxes on environmentally harmful activities to foundations that fund nature restoration activities
- encouraging landowners to present ecologically sensitive land parcels as gifts to a national nature restoration foundation

For a small country like Latvia with limited resources, the maintenance, expansion, and commercialization of natural capital can become a key source of economic strength and citizen well-being.

risk, including the risk of displacement. Sustainable forest management is key to preventing and mitigating wildfires. A combination of natural and engineering solutions to disaster risk reduction can reduce the cost of interventions, since ecosystem-based solutions are often more cost-effective.

5.4 Sustainable businesses and innovative finance

For countries to achieve a land degradation neutral world by 2030 (SDG target 15.3), large scale financing is required. The limited success of recent efforts to halt and reverse land degradation suggests that public and philanthropic resources alone will not suffice, as acknowledged in the UNCCD's Addis Ababa Action Agenda.[105] New financial instruments and more enabling conditions are required to catalyze the private investment needed to attain LDN.

In 2020, the G20 encouraged support for land health with the launch of the Global Initiative on Reducing Land Degradation and Enhancing Conservation of Terrestrial Habitats. The initiative backs existing efforts to prevent, halt, and reverse land degradation and habitat loss. Its activities include engaging with the private sector to encourage it to support land restoration efforts and adopt sustainable land management practices. This activity will promote investments and help link investors to relevant initiatives.

Such initiatives come against a groundswell of public support for action to counter land and forest degradation. According to a recent global poll, protection of land and forests is seen as the most important action to tackle climate change.[106]

Corporate commitments

An increasing number of multi-national businesses globally are making commitments on land ecosystem protection and restoration. For example, hundreds of companies have pledged to reduce their contribution to deforestation (though only a fraction have committed to zero deforestation).[108] Many are exposed to supply chains for agricultural commodities like soy, palm oil, beef, and wood pulp, the expansion of which has massively impacted land use and land health globally. **Given the predominance of cropland and forest in the region, multi-national businesses operating in CEE countries should make strong and measurable commitments**

BOX 16
Enabling private sector engagement in ecosystem restoration[109]

Private sector investment in ecosystem and land restoration faces a number of hurdles:

- Accessing financing is a major challenge. Commercial banks are often unable to consider assets in land restoration
- Initial investment requirements are very high while returns take longer to materialize than in conventional projects
- Potential investment returns from land restoration are difficult to assess, increasing the risk for investors
- Difficulties in estimating returns also arises from limited location-specific investment track records
- Ecosystem restoration is often perceived by the private sector as time-consuming due to the high number of stakeholders often involved

Steps can be taken to make it easier to unlock private finance:

- Develop a strong enabling environment at the policy and regulatory level to reduce investment risks
- Reduce information costs by providing spatial and historical data to investors
- Target and design financing tools to fit ecosystem restoration purposes
- Enable strong co-ordination mechanisms for stakeholders across the private and public sectors, as well as in civil society organizations and local actors

on land degradation, including the elimination of deforestation and peatland drainage from their supply chains.

Environmental, social, and governance (ESG) investing

The rapidly growing field of environmental, social and governance investing seeks to blend financial returns with environmental and social benefits. With many dedicated ESG focused funds and investors being set up, the concept offers huge potential for financing commercially feasible large-scale land restoration projects. According to the Global Impact Investing Network, the volume of global impact investment increased from USD 502 billion in 2019 to USD 715 billion in 2020.[110] The extent to which these increased volumes yield meaningfully positive and tangible environmental and social impacts is not clear. Nonetheless, the growing volume of responsible investment by the private sector is encouraging.[111, 112]

Similarly, in the post-COVID-19 era, the use of ESG criteria to assess the performance and valuation of investment portfolios is likely to increase.[113, 114] Recent reports suggest that stock investments in corporations with high ESG ratings have outperformed those in lower-rated firms.[115]

The post-COVID-19 market environment will likely further strengthen appetites for responsible and sustainable investment.

Green bonds

The issuance of green bonds and loans – investment instruments that raise money for climate and environmental projects – is also expanding. According to the International Finance Corporation (IFC), 43 emerging market economies have issued green bonds since 2012, amounting to a cumulative volume of USD 226 billion. Emerging market green bond issuance outside China increased by slightly over 20 percent in 2020, with a total volume of USD 22 billion. Debut issuances from countries in the CEE region, including Armenia, Georgia, and Romania contributed to this increase.[116]

Despite growing global volumes of sovereign and corporate green bonds, the CEE region has been largely inactive in this field. In the post-COVID-19 era, countries in the region could issue their own green bonds to finance ecosystem restoration efforts. Similarly, local governments and businesses could benefit from green finance opportunities to develop and deploy large-scale and multi-sectoral green projects.

6. LAND DEGRADATION NEUTRALITY AS AN ACCELERATOR FOR THE SUSTAINABLE DEVELOPMENT GOALS

The careful use of land and natural resources is an important component of the UN's 2030 Agenda for Sustainable Development and the 17 SDGs around which it is built. In particular, SDG 15 is devoted to the protection, restoration and sustainable use of 'Life on Land', and includes a target of achieving a land degradation neutral world by 2030. Importantly, combating land degradation and restoring terrestrial ecosystems delivers wide benefits that can also help societies deliver on most – even all – of the other SDGs,[117] including across the CEE region.

As described elsewhere in this report, several CEE countries have set voluntary targets to prevent, reduce and reverse land degradation under the UNCCD's LDN programme. Comparing these targets with the SDGs shows that measures to improve land health and productivity can advance sustainable development objectives. Table 2 shows how seven LDN targets set by CEE countries intersect with the core SDG objectives, including action to combat climate change and biodiversity, as well as to reduce hunger and strengthen economies.

Realizing the clear synergies between achieving LDN and the wider SDGs depends on the careful design of a wide variety of measures – and their effective implementation – across different ecosystems and different spatial and temporal scales.

In 2016 and 2017, nine CEE countries joined the LDN target setting process and established national working groups to identify land degradation status as well as recommend national LDN targets and associated measures. Just four countries have formally prioritized SDG Target 15.3 (on LDN) in their national SDG frameworks. However, eight countries have presented indicators for Target 15.3 on their national statistics office website, six of them using an indicator developed by the UNCCD, and two using national indicators. Meanwhile, all 15 CEE countries have submitted at least one Voluntary National Review on Sustainable Development as part of the Agenda 2030 process.

For the four CEE countries in the EU (Bulgaria, Latvia, Romania, Slovakia), monitoring SDG 15 focuses on improving the status of ecosystems, decelerating land degradation, and preserving biodiversity. The EU has introduced its own indicators for SDG 15, three of which relate to Target 15.3: the extent of the Natura 2000 protected area network, an index of soil sealing, and the area of soil affected by severe water erosion.[119]

Despite these implementation efforts, overall progress towards both LDN and SDG 15 appears limited. An assessment of regional progress towards all 17 of the SDGs was published in 2021 by the United Nations Economic Commission for Europe, the members of which include all 15 CEE countries. The assessment found the UNECE region on track to achieve only 23 of the 169 targets contained in the SDGs by 2030. Of the 12 targets under SDG 15, the region needs to accelerate progress to reach five of them, including the conservation of terrestrial and freshwater ecosystems, and reverse negative trends in forest management and biodiversity. For five more targets – including SDG 15.3 on LDN – insufficient data was available to gauge progress. CEE countries also need to advance more quickly on disaster risk reduction and resilience, waste management, and sustainable resource use.[120]

Although the UNECE assessment includes countries in western Europe, north America and central Asia, the data and implementation challenges that it reveals are shared by the CEE countries.

TABLE 2
Role of land degradation neutrality targets in achieving SDGs in the CEE region

	SDGs						
LDN targets	Reduce hunger and poverty	Gender Equality	Mitigate climate change	Adapt to climate change	Enhance biodiversity	Generate green jobs	Sustainable cities and communities
Restore/increase Forests	■	■	■	■	■	■	■
Restore/improve Cropland	■	■	■	■	■	■	■
Restore/improve grasslands/ savannas	■	■	■	■	■	■	■
Improve management of wetlands	■	■	■	■	■	■	■
Increase soil fertility and soil organic carbon stock	■	■	■	■	■	■	■
Improve management of protected areas	■	■	■	■	■	■	■
Improve management of coastal areas	■	■	■	■	■	■	■

Level of support: ■ Strong ■ Significant ■ Less significant
Source: Author's assessment based on Global Mechanism of the UNCCD and CBD (2019)[118]

To support implementation, CEE countries should consider refining national LDN commitments and integrating LDN targets and indicators into national SDGs framework, where this has not already been done. Using data generated from UNCCD reporting on LDN, countries should present more consistently their progress towards achieving Target 15.3, including in Voluntary National Reviews submitted under the Agenda 2030 process. These changes would better support the potential of LDN to act as an SDG accelerator.

The promise of LDN to realize meaningful sustainable development remains enormous. Limiting global warming to below 1.5°C in line with the Paris Agreement requires large scale CO2 removal from the atmosphere. Sustainable land management, afforestation and avoided deforestation can all play a role. The CEE region's forests and peatlands offer huge potential for carbon storage that will be key to achieving this goal.

Ecosystem restoration can also strengthen the resilience of landscapes, including their human societies and their biodiversity, in the CEE and beyond, lowering species extinction rates and reducing potential zoonoses and possible new pandemics.[122]

Land protection and restoration must be a keystone in the region's post-COVID-19 transformation. Measures to achieve LDN include pasture management, reforestation with native plants, sustainable agriculture, protection of peatlands,

BOX 17
The National Voluntary Review of progress toward the SDGs in Bulgaria

Bulgaria recognizes the importance of terrestrial ecosystems services for human well-being, climate change and biodiversity. Its 2020 National Voluntary Review,[121] submitted under the 2030 process, identifies the challenges it faces in relation to SDG 15. In particular, the review points out that nearly 85% of Bulgaria's soils are affected by erosion. Soil sealing has increased, and environmental finance has declined.

However, Bulgaria reports progress in the mapping and assessment of its ecosystems, as well as in the development of natural capital reporting systems. Bulgaria's Environmental Executive Agency reports annually on the state of land and soil, using indicators including nutrient availability, soil humidity, and land-use changes. It also monitors threats including erosion, sealing, pollution, and acidification. Bulgaria is currently updating its National Action Program for Sustainable Land Management and Combating Desertification for submission to the UNCCD.

formal protected areas, fire management and soil conservation. By improving soil fertility and agricultural productivity, these measures can bolster the resilience of ecosystems and societies, protect livelihoods, alleviate poverty, reduce food insecurity, and foster the equitable distribution of resources.

Restoring degraded land and forests on a large scale in the CEE region could create millions of jobs in sectors including tourism, agriculture, and forestry. It would have strong multiplier effects, critical for a sustainable recovery from the impacts of the COVID-19 pandemic. This is especially the case for low-income societies, women, youth, and returning migrants.

Restoring ecosystems on the scale required depends on strong political will and commitment, managed by versatile, agile, and dynamic institutions. Meeting the challenges of the 21stC – climate change, recovering from the pandemic, building back better, and meeting the SDGs – in the CEE region and beyond, will depend on it.

List of boxes, figures and tables

Boxes

Figures

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Acronyms and abbreviations

CBD	Convention on Biological Diversity
CBI	Climate Bonds Initiative
CEE	Central and Eastern Europe
COVID-19	Coronavirus Disease 2019
Eco-DRR	ecosystem-based disaster risk reduction
FAO	Food and Agriculture Organization of the United Nations
GCF	Green Climate Fund
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
ILO	International Labour Organization
IPCC	Intergovernmental Panel on Climate Change
IPCC	Intergovernmental Panel on Climate change
IUCN	International Union for Conservation of Nature
LDN	Land Degradation Neutrality
NBS	National Bureau of Statistics
NBSAPs	National Biodiversity Strategies and Action Plans
NDCs	Nationally Determined Contributions
NPP	Net Primary Productivity
OECD	Organisation for Economic Co-operation and Development
SDGs	Sustainable Development Goals
SOC	Soil Organic Carbon
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WTO	World Trade Organization
WWF	World Wildlife Fund

Endnotes

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GLOBAL LAND OUTLOOK

The United Nations Convention to Combat Desertification (UNCCD) recognizes that addressing and reversing land degradation is one of the key sustainable development priorities for many countries, particularly in the developing world. In response, the UNCCD secretariat and its partners created a strategic communications publication and platform, entitled the Global Land Outlook (GLO), to facilitate insights, debate and discourse on a transformative vision for land management policy, planning and practice at various scales.

The aim of the GLO is to communicate and raise awareness of evidence-based, policy-relevant information and trends to a variety of stakeholders, including national governments formulating their responses to commitments to better manage and restore land resources, including the SDGs and associated targets, such as Land Degradation Neutrality (LDN). The evidence presented in the Global Land Outlook thematic regional reports demonstrates that informed and responsible decision-making can if more widely adopted help to reverse the current worrying trends in the state of our land resources.

United Nations
Convention to Combat Desertification

United Nations Convention to Combat Desertification (UNCCD)

Platz der Vereinten Nationen 1
D-53113 Bonn, Germany
Tel: +49 (0) 228 815 2873

www.unccd.int