

Revision of the Economy in the Balkans: **CHANGE POLICY NOT CLIMATE!**



GREEN EUROPEAN FOUNDATION



Revision of the Economy in the Balkans: CHANGE POLICY NOT CLIMATE!

Authors: PhD Pavel P. Antonov, *Transnational editor and Author*, Dragomir Konstantinov - Bulgaria, PhD Hristina Odjaklieska, *environmental engineer* - Macedonia, Žaklina Živkovic and Miloš Stancic - Serbia

National Coordinators: Natalia Dimitrova-Popova - Bulgaria, Aleksandar Gjorgjevski - Macedonia, Violeta Jovanov Peštanac - Serbia

Coordination GEF: Carlotta Weber

Design & Layout: Lazar Kackarovski

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Green European Foundation

Rue du Fossé 3
1536 Luxembourg, Luxembourg
Brussels office: Rue d'Arlon 15
1050 Brussels, Belgium

BlueLink Foundation

257 Slivnitsa Blvd.
Sofia 1202, Bulgaria

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1. Introduction



This research report was produced as part of Revision of the Economy in the Balkans: Change Policy not Climate! – a project of the Green European Foundation, implemented by the BlueLink Foundation Bulgaria, the Association for Sustainable Social-Economic Development Sunrise, Macedonia, and Networked, Serbia, with the financial support of the European Parliament to the Green European Foundation. The research activities took place between March and October 2017. The report and other project activities respond and contribute to one of the priorities for Bulgaria's presidency of the EU in 2018: eco-innovation as a driver for economic progress.

Research goals

The purpose of the research was to accomplish the following goals set by the project:

1. To gather best practices from the three participating countries – Serbia, Macedonia and Bulgaria – for a green economy;
2. To showcase and promote the transformation of the economy towards environmental, low-carbon and energy-efficient production along with increasing prosperity and equity in society;
3. To provide useful facts and arguments for Green politicians and activists to raise awareness among stakeholders, politicians and the general public about the economic potential of the green economy, to stimulate changes in consumption and production patterns, and to promote a participatory approach to policy-making.

Defining a green economy

Our vision of a different economic model stemmed from the report *Limits to Growth* by the Club of Rome in 1972[1]. A few years later, a group of leading environmental economists coined the term “green economy” in a report entitled ‘Blueprint for a Green Economy’ (Pearce, Markandya and Barbier, 1989). The report pointed out that economics should help to create environmental policy. Sequels to the first report, ‘Greening the world economy’ (1991) and ‘Measuring Sustainable Development’ (1994), extended the message to the problems of the global economy – climate change, ozone depletion, tropical deforestation and resource loss in the developing world. In 2008, the term was closely reviewed as a possible response to the multiple global crisis. In the same year, the United Nations Environment Programme (UNEP) launched its Green Economy Initiative to provide analysis and policy support for investment in green sectors and for greening environmentally unfriendly sectors. As part of this Initiative, the ‘Global Green New Deal (GGND)’ report was released in 2009. This proposed a mix of policy actions that would stimulate economic recovery while, at the same time, improving the sustainability of the world economy. UNEP identified specific areas where large-scale public investment could kick-start a ‘green economy’ and promoted the idea of ‘green stimulus packages’ (Atkisson, 2012). The Global Economy Initiative inspired several governments to implement significant green stimulus packages as part of their economic recovery efforts. Subsequently, a number of intergovernmental green economic initiatives were developed; including: the International Labour Organization’s (ILO), the Green Jobs Initiative, and the Organisation for Economic Co-operation and Development’s (OECD) Green Growth Strategy.

Later, the Nusa Dua Declaration adopted by environment ministers and heads of delegations at the Global Ministerial Environment Forum, held in Bali, Indonesia in February 2010, acknowledged that “the advancement of the concept of a green economy in the context of sustainable development and poverty eradication can significantly address current challenges and deliver economic development opportunities and multiple benefits for all nations”. Since 2010, when the General Assembly agreed that in the context of sustainable development and poverty eradication the green economy would form one of two specific themes for the Earth Summit 2012, a great deal of international attention was given to the green economy and related concepts. In recent years, a number of non-governmental organisations have undertaken research and analysis promoting the green economy concept. Numerous reports and other literature have been published aiming to further define and demystify the concept.



The inaugural World Green Economy Summit (WGES), which was held in Dubai, UAE, in 2014, brought together over 1,100 delegates to witness the launch of the first green summit in the Middle East and North Africa region. This platform gathered governments, businesses and financiers to forge global green business partnerships and find viable solutions for the transition to a green world economy. To build on the outcomes of the Summit and to fully confirm its commitment to a green economy, it made a ground-breaking commitment to sustainable development through the Dubai Declaration which outlines a clear roadmap for achieving the sustainable ambitions of key government initiatives.

The UN climate agreement approved in Paris in December 2015 represents a huge historic step to a fossil-free future for our planet. It is nothing short of amazing that nearly 200 countries around the world – including oil-exporting nations – agreed to keep the rise in the global temperature well below 2 degrees Celsius, and went even further by agreeing to pursue efforts to limit the increase to 1.5 degrees above pre-industrial levels.

In addition, the Paris Agreement aims to strengthen the ability of countries to deal with the impacts of climate change. To reach these ambitious goals, appropriate financial flows, a new technology framework and an enhanced capacity-building framework will be put in place to support action by developing countries and the most vulnerable countries, in line with their own national objectives. By August 2017, 195 parties around the globe had signed the Paris Agreement and 158 parties had ratified it.

This Agreement proposed an end to fossil fuels by 2050, in just 35 years – well within many of our lifetimes. However, science tells us that the pledges submitted by each nation are predicted to result in a temperature rise of between 3 and 7 degrees Celsius, exceeding the 2-degree limit or “global handrail” acknowledged by the Agreement. The final accord requires countries to return every five years with new emission reduction targets. Whether this essential requirement will be sufficient to catalyse more action remains to be seen.

According to global statistics, Serbia has a 0.18% share in global greenhouse gas (GHG) emissions, Bulgaria's share is 0.15% and Macedonia has a 0.03% share. Bulgaria and Serbia have signed and ratified the Paris Agreement but the Republic of Macedonia has signed but not ratified it so far¹.

Green economy definitions

Although several separate green economy definitions have been identified in recent publications, there is no internationally agreed definition. Current definitions for the green economy, which apply for this report, include:

1. One that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. It is low carbon, resource efficient and socially inclusive. In a green economy, growth in income and employment should be driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services (UNEP 2011).
2. A system of economic activities related to the production, distribution and consumption of goods and services that result in improved human well-being over the long term, while not exposing future generations to significant environmental risks or ecological scarcities (UNEP 2009).
3. An economy that results in improved human well-being and reduced inequalities, while not exposing future generations to significant environmental risks and ecological scarcities. It seeks to bring long-term societal benefits to short-term activities aimed at mitigating environmental risks. A green economy is an enabling component of the overarching goal of sustainable development (UNCTAD 2011).
4. Green economy is “a resilient economy that provides a better quality of life for all within the ecological limits of the planet” (Green Economy Coalition 2011).
5. The green economy is described as an economy in which economic growth and environmental responsibility work together in a mutually reinforcing fashion while supporting progress on social development (International Chamber of Commerce 2011).

¹ When a country signs the Paris Agreement it is obliged to refrain from acts that would defeat its object and purpose. The next step, ratification, signifies a country's intent to be legally bound to the terms of the treaty at the international level.



6. The green economy is not a state but a process of transformation and a constant dynamic progression. It does away with the systemic distortions and dysfunctionalities of the current mainstream economy and results in human well-being and equitable access to opportunity for all people, while safeguarding environmental and economic integrity in order to remain within the planet's finite carrying capacity. The economy cannot be green without being equitable (Danish 92 Group 2012).
7. The green economy involves largely new economic activities and must provide an important entry point for broad-based black economic empowerment, addressing the needs of women and youth entrepreneurs and offering opportunities for enterprises in the social economy (Government of South Africa 2011).
8. Green economy can be seen as a lens for focusing on and seizing opportunities to advance economic and environmental goals simultaneously (UNCSD, 2011).

Natural capital as a transitional tool towards a green economy

The 'green economy' model is based on three basic processes – production, distribution and consumption of materials – like the traditional 'brown economy' model. However, they differ slightly in terms of the final output. Traditionally, the brown economy model has focused primarily on achieving growth without considering the environment, while the green economy model is more about improved human well-being and social equity by significantly reducing environmental risks and ecological scarcities.

Better environmental quality and social inclusiveness in economic growth and investment processes are key steps towards the green economy transition. The most succinct expression of the failure of the brown economy as regards nature comes from environmental economist Pavan Sukhdev: *"We use nature because it's valuable, but we lose it because it is free."* With this remark, Sukhdev puts the question of the "value of nature" at the heart of the green economy debate. According to UNEP, the fact that natural assets are not priced leads to a "misallocation of the capital". Thus, the great challenge of the green economy is to integrate natural assets into the economic calculations and price systems which economics had previously not taken into account. Furthermore, Sukhdev points out that "putting a monetary value on natural ecosystems is a key step on the road to 'green' economic growth".

Nowadays, the concept of natural capital is increasingly becoming established in economic analyses and political statements on the green economy. As a concept, it is still extremely broadly framed which leads to difficulties and misunderstandings. Ernst & Young LLP, one of the world's largest accounting corporations, has pointed out that: "The starting erosion of our natural capital base will become the defining 21st century challenge facing every business. Natural capital is the foundation that supports human society, all economic activity and every business. The decline in this capital base, if left unchecked, will wreak havoc on business and society as we know it." Transforming the economy requires policies that recognise the interdependencies between the economy, well-being and natural capital, and seeks to remove barriers to better resource efficiency while providing a fair, flexible, predictable and coherent basis for business to operate.

Measurability and the monetary valorisation of natural 'services' will lead to new forms of the appropriation of nature. This would be practised mainly by those intent upon offsetting the destruction of one ecosystem against another, or numerous others, in order to justify "business as usual", despite planetary boundaries. To achieve this, there is a wide scope for innovative developing methods, techniques and measurement procedures with which nature can be valued and accounted for in economic terms. Thus, the main indicators of economic performance, such as growth in gross domestic product (GDP), need to be adjusted to account for pollution, resource depletion, declining ecosystem services, and the distributional consequences of natural capital loss to the poor (UNEP 2011).

At the policy formulation and assessment stage, what makes the green economy approach different from other similar approaches is its strong emphasis on the role of redirecting investment at the societal level to address the issues of concern. The rationale for this approach is that misallocations of capital frequently



lead to unsustainable development – that is, too many financial resources are spent on, for example, the use of fossil fuels, unsustainable fishing and unsustainable water use, while too little is spent on public transport, renewable energy, ecosystem conservation and waste treatment (GGKP 2013). Such misallocations prevail whenever externalities are present: policy interventions will be required to redirect investment flows towards more sustainable alternatives (UNEP 2011a). Indicators are needed to define the direction and extent of possible policy responses, and for assessing and comparing the environmental, social and economic implications of different policy options (UNEP, 2012a; OECD, 2011). It is on the basis of such assessments that specific policies can be recommended to policy-makers for adoption (UNEP 2014).

Green economy sectors

To set a shared basis for regional comparison for analysing the green economy in Bulgaria, Macedonia and Serbia, we have had to define a range of social and economic sectors to be covered. Karl Burkart's definition of a green economy as based on six main economic sectors:

1. Renewable energy – with the trend in investing in renewable energy with potential for creating new green jobs, including:
 - wind;
 - solar;
 - geothermal; and
 - biomass technologies.
2. Green buildings, including:
 - energy efficiency in old buildings (we should analyse the energy efficiency in old buildings at the national level and set a goal to reduce the energy consumption of existing buildings in % - potential for creating new green jobs); and
 - energy efficiency in new buildings (existing practice in each country analysed and initiating changes in building standards or showing examples of national good practices).
3. Sustainable transport, covering:
 - transport use (railway transport compared to road transport); and
 - low-carbon vehicles.
4. Water management (resource use, water treatment, hydroelectric power).
5. Waste management (clean technologies at the national level, eco-industrial parks).
6. Land management (changes in land use, urbanisation, deforestation and others).

For the purpose of comprehensively covering areas of economy where greening can be applied, we have added the following.

7. Tourism.
8. Production of materials, including sustainable use of resources.
9. Natural capital – covering monetary valorisation of natural services.
10. Food production.

We recognise the limitations of the sectorial scope defined above. A broader set of implications, opportunities and challenges for introducing of green economy has been left out of this analysis, due to limited time and resources. These include green economy aspects such as: social justice; environmental and technological drawbacks; democratisation potential; political and ideological considerations, etc. We have indicated these areas for further research, and devoted greater attention to them during the international practice and policy research conference held at the end of the project in Sofia on 26-27 November 2017, entitled: 'Eco-innovations for Green Economic Change and Shared Prosperity'. It is the 'shared prosperity' or 'democratisation' of the green economy and its benefits that will be the subject of our next focus.



Data collection and methods

We have used the following data collection methods:

1. Desk/literature review of legislation, strategic documents, publications on the green economy, during which the researchers reviewed national and regional sources and data and structured them for analysis.
2. Country case studies, selected by each in-country researcher to demonstrate an essential part of green economy developments. Cases were selected based on the researchers' judgment, using the following criteria:
 - each case should demonstrate a clear example of green economy development in policy-making, business or community life;
 - each case should demonstrate opportunities and/or obstacles for green economy development in each of the countries; and
 - each case should be well documented to allow for substantial analysis.
3. Focus groups were held in each country covered by the research to verify data and preliminary analytical conclusions from desk/literature review and case studies' analyses. Each focus group covered and reflected upon the following issues:
 - the terrain and routes for the green economy in the country;
 - country-specific experiences – motives, incentives, obstacles, allies, enemies;
 - conclusions from the country case analysis vis-à-vis the analytical framework;
 - policy recommendations for accomplishing a green economy in the respective country; and
 - effective communication of the green economy – what are the challenges and tips for success?

Participants in focus groups deemed valuable by the research team include:

- investors (financial) in the green economy, including businesses, banks and foundations;
- promoters of pilot green economy initiatives, aiming for their dissemination and popularisation;
- chamber of commerce representatives;
- researchers and experimenters in such approaches;
- advocates of such initiatives;
- policy-makers already involved in such initiatives; and
- other professionals or activists engaged with issues related to the green economy.

Analytical framework

For the data analysis, the research team applied a method known as PESTLE. The abbreviation stands for political, economic, social, technological, legal, and environmental factors which are applied to identify and analyse the key drivers of change in the different economic sectors. This is how each analysis factor works:

- ▶ **Political factors** indicate how and to what degree a government intervenes in the transition to a green economy. They include developments in policies and regulating taxation, labour and the environment, among others, as well as an assessment of political willingness or stability. Political factors may also include government interventions to guarantee – or prevent – the provision of certain goods and services by third parties. Government influences on sectors such as health, education, justice and infrastructure are also considered.
- ▶ **Economic factors** include unemployment, growth, interest, exchange and inflation rates, among others, which influence business operations and shape market decisions.
- ▶ **Social factors** include aspects such as health consciousness, population growth rates, age distribution, consumerism, income distribution trends, and attitudes to food safety, energy security, etc.



Trends in social factors often determine the demand for certain products, services or business practices.

- ▶ **Technological factors** include research and development, automation, technology incentives and the rate of technological change. Technological shifts can affect costs and quality and demand innovation.
- ▶ **Legal factors** cover all areas of applicable law affecting the greening of the economy, including discrimination, consumer and antitrust law, employment, health and safety regulations, etc. Legal factors also affect how businesses operate and shape markets.
- ▶ **Environmental factors** include ecological and environmental aspects, such as weather and climate which, in particular, may affect industries in different fields. Environmental factors affect the way in which businesses operate as well as the services and products they offer, both by creating new markets and diminishing or destroying existing ones.
- ▶ In addition to PESTLE, the analyses in each country included at least one case study. Based on the conceptualisation of a green economy, we have established common criteria on which cases can be analysed. To be used for the analysis, a country case had to meet one or more of the following requirements:
 - it contributes to climate change mitigation or adaptation;
 - it contributes to the preservation and restoration of specific environmental components, local, regional or global (such as land, water, air, biodiversity, landscape, etc.);
 - it presents new approaches for ecosystem development and utilisation (i.e. green roofs, etc.);
 - it presents specific, environment-friendly technologies, innovations and traditional methods (green economy, etc.);
 - it is based on cooperative, networking or bottom-up approaches and initiatives;
 - assistance was achieved on behalf of specific 'strong', 'locomotive' partners, such as businesses, banks, municipalities, ministries, governments, local or international think-tanks, other international organisations, etc.;
 - good practices are demonstrated for substituting or directly reducing current consumption needs of specific groups, increasing their self-sufficiency;
 - through its outputs and products, the case provides specific added value (economic, environmental, social, etc.);
 - the case proposes smart ways for using existing local items and phenomena;
 - the case introduces environmental principles and processes to satisfy certain specific human needs.

Ethical considerations and risks

Researchers' primary priority is the quality of research input, which should serve the green movement in general. A relationship with national green parties is typical for the project partners. Green party members and leaders form a primary user group for the findings of this research. It is therefore essential that the researchers have a good functional relationship with the political parties in their country, which should enable them to address the country-specific needs of this group while, at the same time, maintaining the scientific independence of their findings. The researchers have taken particular care to avoid becoming entangled in political infighting among green parties.



2. European terrain and routes to a green economy in Bulgaria, Macedonia and Serbia



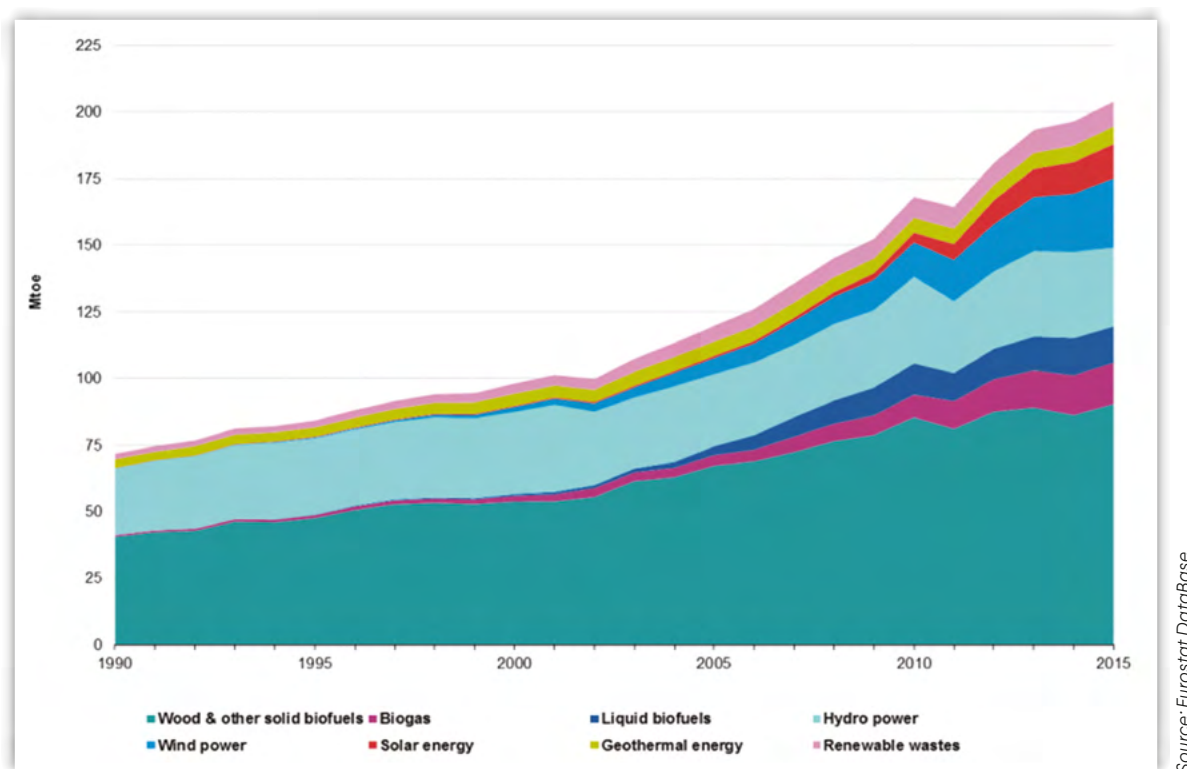
This chapter is part of a research report produced by the BlueLink Foundation and the Green European Foundation within a project entitled 'Revision of the Economy in the Balkans: Change Policy not Climate!'. It summarises the results of the review of available literature, sources and statistics, performed by the researchers from the three participating countries: Bulgaria, Macedonia and Serbia. The review sets the background for the research findings, positioning them in the broader European and global context of green economy knowledge, conceptualisation and policy development.

Trends in renewable energy sources use

Greenhouse gas emissions (GHG) (including emissions from international aviation and indirect CO₂ emissions) have decreased by 22.1% compared to 1990 levels. Thus, the EU is expected to exceed its Europe 2020 target of reducing GHG emissions by 20% by 2020².

According to the European Statistical Database, the quantity of renewable energy produced within the EU-28 increased overall by 70.2% between 2005 and 2015, which is equivalent to an average increase of 5.5% per year.

Among renewable energies, the most important source in the EU-28 was wood and other solid biofuels as well as renewable waste, accounting for 44.0% of primary renewables production in 2015. Hydropower was the second most important contributor to the renewable energy mix (14.4% of the total), followed by wind power (12.7%). Although their levels of production remained relatively low, there was a particularly rapid expansion in the output of wind and solar power, the latter accounting for a 6.4% share of the EU-28's renewable energy production in 2015, while geothermal energy accounted for 3.2% of the total.



Electricity generated from renewable energy sources, EU-28, 1990-2015.

² Since climate change may erode the foundations of modern society, the EU committed to limiting the average global temperature rise to 2°C above pre-industrial levels by reducing greenhouse gas (GHG) emissions. This commitment was reinforced and strengthened by the Paris Agreement's aspiration to limit the temperature increase to 1.5°C above pre-industrial levels. Through its climate change and energy targets, the Europe 2020 strategy aims to shift the EU towards a low-carbon economy based on renewable energy sources and energy efficiency. The Europe 2020 strategy sets three objectives for climate and energy policy: reducing GHG emissions by at least 20% compared to 1990 levels; increasing the share of renewable energy in final energy consumption to 20% and moving towards a 20% increase in energy efficiency. These targets are also known as the '20-20-20' targets. The Europe 2020 strategy's three climate and energy targets are interrelated and mutually support one another.

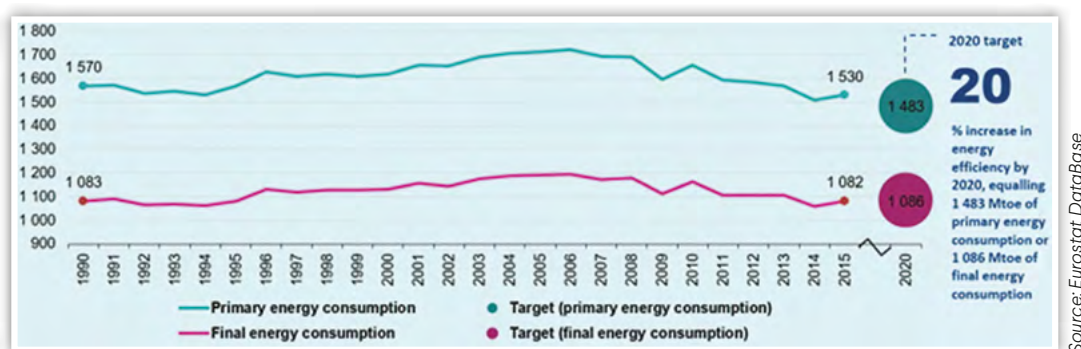
In 2015, the largest producer of renewable energy in the EU-28 was Germany, with a 19.0% share of the total; Italy (11.5%) and France (10.4%) were the only other EU Member States to record double-digit shares, followed by Sweden (9.0%) and Spain (8.2%).

There were considerable differences in the renewable energy mix across the EU Member States which, to a large degree, reflect natural endowments and climatic conditions. For example, more than four-fifths of the renewable energy produced in Malta (83.1%) and around two-thirds of that produced in Cyprus (66.8%) came from solar energy. In contrast, close to one-third of the renewable energy in the relatively mountainous countries of Sweden, Austria and Slovenia came from hydropower. Hydropower also accounted for more than one-third of renewable energy production in Turkey, Montenegro, Macedonia and Serbia, rising to above two-thirds in Albania, and peaking at almost 90% in Norway. Close to one-quarter (23.2%) of the renewable energy production in Italy came from geothermal energy sources (where active volcanic processes exist); their share rose to 30.8% in Turkey and peaked at 75.8% in Iceland. The relative share of wind power was particularly high in Ireland (57.6%) and Denmark (34.4%), while wind energy accounted for more than a quarter of renewable energy production in the United Kingdom and Spain, and for close to one-fifth in Portugal.

Energy from renewable resources can play a cost-effective role in a strategy to eliminate energy poverty. The move towards a green economy aims to increase access to services and infrastructure as a means of alleviating poverty and improving the overall quality of life, and addressing energy poverty as a very important part of this transition. Increasing energy supply from renewable sources reduces the risks from rising and volatile prices for fossil fuels as well as delivering mitigation benefits. Besides that, the use of renewable energy will reduce the *greenhouse gas* emissions. The growing trend in using renewable energy sources may also have the potential to stimulate employment, through the creation of jobs in new 'green' technologies.

Changes in energy efficiency

Energy efficiency is one of three key factors in achieving the EU's long-term energy and climate goals. The EU Directive 2012/27/EU on energy efficiency establishes a common framework of measures promoting energy efficiency within the EU. The primary goal of the Directive was to ensure the achievement of the 20% headline target on energy efficiency. In 2014, at an EU summit, EU countries agreed on a new energy-efficiency target of at least 27% or more by 2030. In 2016, the European Commission proposed a *binding energy efficiency target* of 30% for EU countries by 2030.



Primary and final energy production, 1990-2015

Energy efficiency reduces GHG emissions and enhances energy security in the most cost-effective way by delivering the same service or product by using less energy. It enhances competitiveness and makes energy consumption more affordable for all consumers. Energy losses which occur during energy transformation (particularly electricity generation), transmission and distribution are equivalent to the difference between primary energy consumption³ and final energy consumption⁴. PEC in the EU saw an intermittent but overall rising trend

³ Primary energy consumption (PEC) measures a country's total energy demand.

⁴ Final energy consumption (FEC) only comprises the energy supplied to the final consumer's door for all energy uses, excluding energy used by the energy sector.

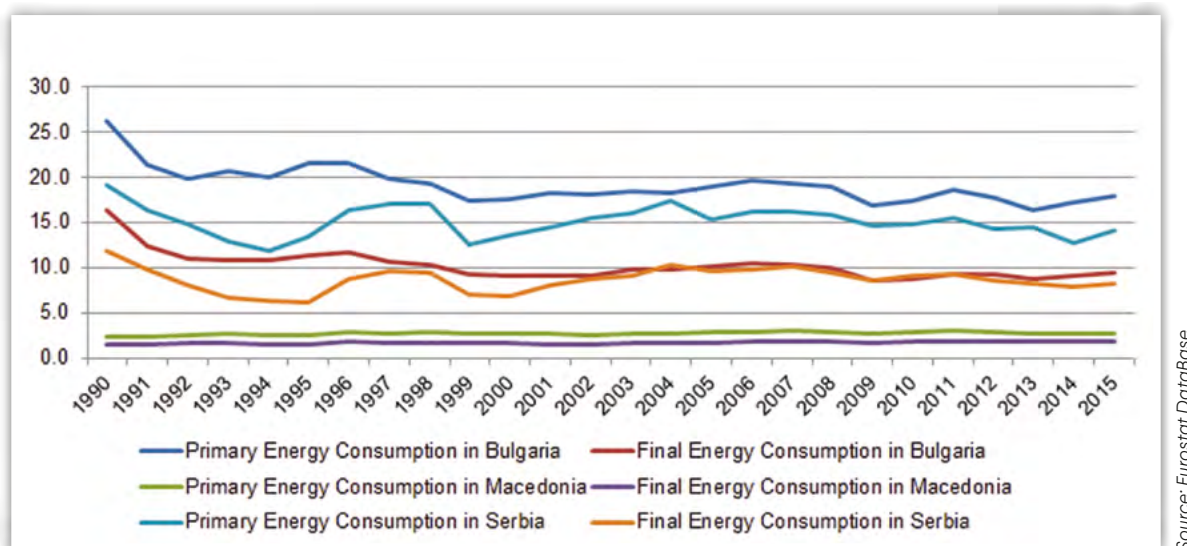


until 2006. However, by 2009, it had fallen as a result of the economic crisis. It rebounded temporarily in 2010, but continued on its downward path over the next four years. The downward trend was interrupted in 2015, when PEC increased by 1.4% compared to the previous year. In 2015, the EU consumed 2.5% less primary energy than it did in 1990 and 10.7% less than in 2005. To achieve the target for 2020, the EU needs to reduce its PEC by another 3.1% in the five years between 2015 and 2020.

Much of the decrease between 2008 and 2009 may be attributed to reduced economic activity as a result of the financial and economic crisis, rather than to a structural shift in energy consumption patterns. In 2010, an especially cold winter caused a sharp increase in heating demand. The most recent reductions from 2011 onwards can again be partly attributed to reduced economic output expressed by a 0.5% contraction of real GDP in 2012. However, PEC continued to fall thereafter, despite a real GDP growth of 1.7% in 2014. It is thought that warmer years in 2013 and 2014, and improvements in energy efficiency due to new policies, have contributed to this decrease. The slight increase in 2015 reflects a return to a more average heating demand compared to the exceptionally warm 2014.

The analysis underlines the need to further pursue energy-efficiency measures. A continual effort can ensure that PEC will continue to fall even when economic growth accelerates. However, an increase in PEC can occur despite energy-efficiency improvements. In emerging economies in particular, high economic growth and population drive up demand for energy.

The trend in the FEC has closely followed the trend in PEC which means that the energy-efficiency target for FEC has already been reached.



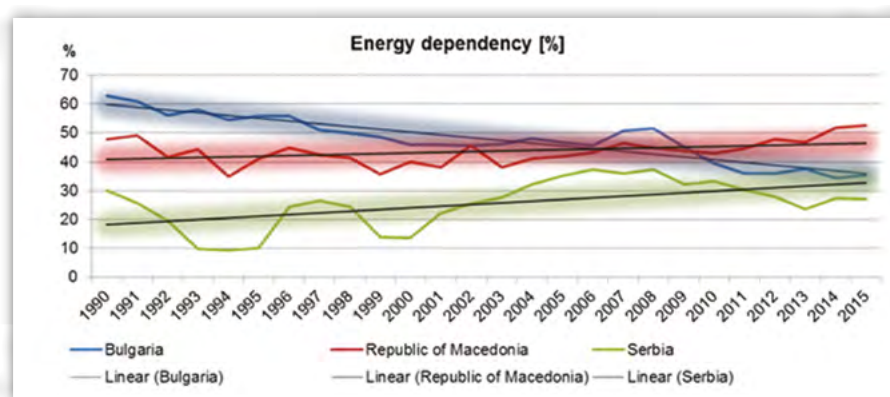
Primary energy consumption and Final energy consumption [Mtoe].

Analysis of the energy-saving data in the region shows that Macedonia has continued to have the lowest values for primary and final energy consumption over the last 25 years. Furthermore, the difference between the PEC and FEC is smaller than in the other countries.

Energy-efficiency improvements can strengthen the EU's competitiveness and lower its dependence on fossil-fuel imports. The EU's energy dependence has increased significantly over the past decade, reaching 54.1% in 2015. Dependence on imported energy exposes the European economy to significant costs and the risk of supply shortages, for example, due to geopolitical conflicts. The expansion of renewable energy sources and improvements in energy efficiency are reducing these risks and contributing to the Europe 2020 strategy's employment objective by creating jobs and value added within EU borders.

Analysis of the region's energy dependency shows a declining trend in Bulgaria, while in Macedonia and especially Serbia, the trend in energy dependency continues to grow. In 1990, Bulgaria was the leader in energy dependence in the region, with over 60%. Today, Macedonia is the most energy-dependent country at over 50%, while Serbia and Bulgaria import less than 40% of their energy. Serbia has the lowest energy dependency over the whole period, with maximal values in 2006-2008 of less than 40% imported energy.





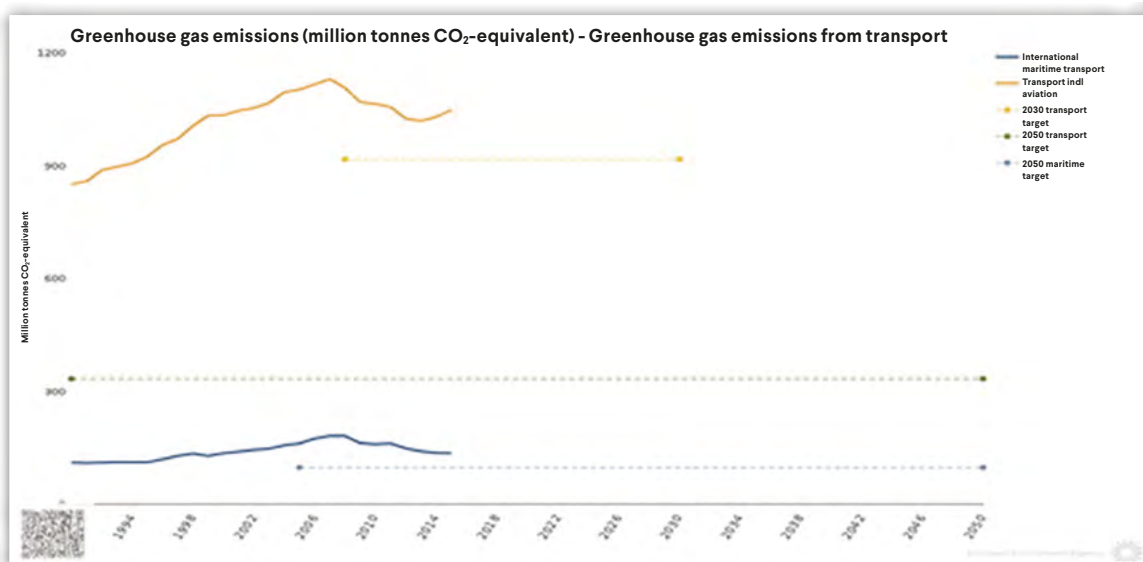
More renewables and improved energy efficiency can reduce energy dependence and save the EU between EUR 175 and 320 billion in energy import costs each year over the next 40 years. A push for *technological and policy innovation will be crucial for accomplishing the transformation towards a green economy.*

Sustainable transport initiatives

Emissions of GHG, air pollutants and noise from transport affect the climate, environment and human health. GHG emissions influence global climate change; air pollutants harm health and affect building surfaces and the biosphere; noise has negative impacts on people at the local level; and growing transport volumes can cause more congestion and fatalities or injuries. These interlinkages indicate whether or not the transport sector is developing in a sustainable way.

The sustainable transport system is expected to meet society's economic, social and environmental needs whilst minimising their undesirable impacts on the economy, society and the environment⁵.

In 2015, the transport sector contributed 25.8% of total EU-28 GHG emissions. The figure falls to 21% if international aviation and maritime emissions are excluded.



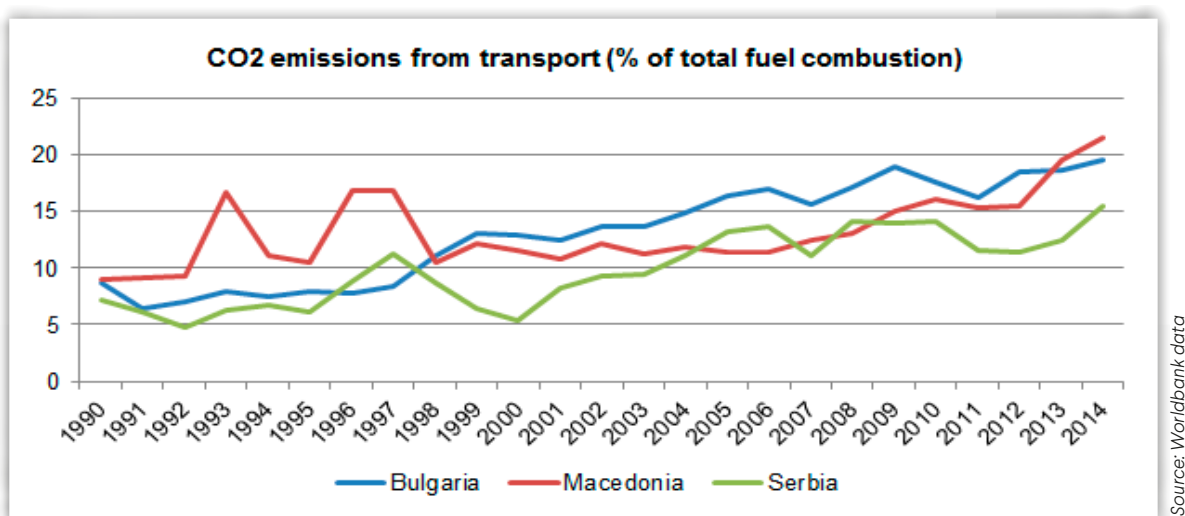
⁵ The Europe 2020 strategy (European Commission, 2010) unites two flagship initiatives under the sustainable growth priority to tackle the issue of sustainable transport:

'Resource-efficient Europe' which supports the shift towards a resource-efficient, low-carbon economy. This flagship initiative provides a framework for actions in many policy areas including transport. One of the key components is a roadmap presenting a vision for a transport system by 2050 that promotes clean technologies.

'An industrial policy for the globalisation era' highlights 10 key actions for European industrial competitiveness, including a more efficient European transport infrastructure and services.



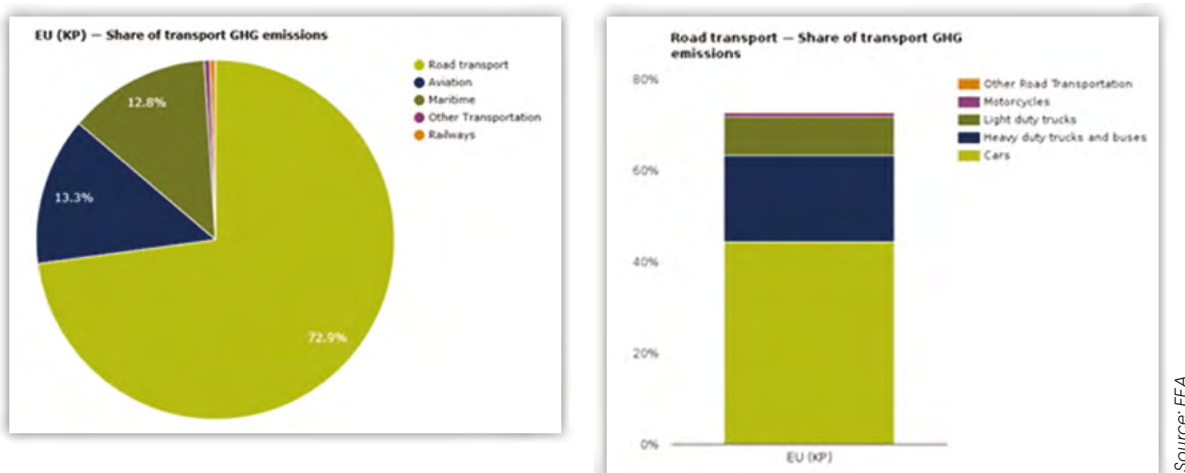
In 2015, emissions from transport (including aviation but excluding international shipping) were 23% above 1990 levels despite a decline between 2008 and 2013.



Macedonia, Serbia and Bulgaria are following the European trend, as regards their GHG emissions from the transport sector. Emissions from the transport sector in the three countries, especially after 2000, are rising, and in 2015 were almost twice the volume in 1990.

Emissions from the transport sector need to fall by around two-thirds by 2050, compared to 1990 levels, in order to meet the long-term 60% GHG emission reduction target⁶.

The main source of GHG emissions from transport come from cars or other road transport. New cars are becoming more and more efficient⁷, even though their average mass is still not decreasing steadily. In addition, Member States have managed to speed up the reduction of CO₂ emissions from new cars by demand-oriented incentives such as scrap schemes, extra taxes on cars with high CO₂ emissions, or purchase grants for low-emission vehicles such as hybrids.



European countries need to build a competitive transport system that will increase mobility, remove major barriers in key areas and fuel growth and employment. The new European sustainable transport initiatives should dramatically reduce Europe's dependence on imported oil and cut carbon emissions in transport. By 2050, key goals will include:

- No more conventionally fuelled cars in cities;
- 40% use of sustainable low-carbon fuels in aviation; at least 40% reduction in shipping emissions;

⁶ These objectives are set out in the 2011 Transport White Paper.

⁷ To increase energy efficiency in the transport sector, the EU has set mandatory emission reduction targets for new passenger cars.



- ▶ A 50% shift in medium-distance intercity passenger and freight journeys from road to rail and waterborne transport;
- ▶ All of which will contribute to a 60% cut in transport emissions by the middle of the century.

Land-use management

Vegetation and soils in terrestrial ecosystems sequester large volumes of atmospheric CO₂ and therefore act as important carbon sinks. Land-use changes driven by anthropogenic factors, such as agriculture, deforestation, land abandonment and drainage of wetlands, destroys terrestrial soils and vegetation, releasing CO₂ back into the atmosphere. These land-use activities have been referred to as “land use, land-use change and forestry (LULUCF)” by The United Nations Framework Convention on Climate Change (UNFCCC). Thus, there has been greater acknowledgement of the contribution LULUCF has made to GHG emissions. However, currently, under the EU Climate and Energy Package, LULUCF is not included in carbon accounting. A consultation is now under way with Member States as to whether, and how, these emissions should be included in the overall policy framework. Given the fundamentally different characteristics of LULUCF compared to other sectors, such as energy and industry, a separate legal framework could be advisable for tackling this sector’s emissions. A European Commission proposal will accelerate the debate on how to account for emissions from LULUCF. Reducing emissions from land-use change is an important contribution towards tackling climate change.

Recent research during preparations for the project ‘GHG Europe’ has shown that carbon and greenhouse gas emissions on the intensively managed European land surface respond to those management measures targeted as GHG emission reductions. The research findings indicate that there is a solution for resilient, climate-smart, sustainable land-use in Europe which is needed to produce food and fibre in a resource-constrained world and to maintain production in a world with an 80% GHG reduction target by 2050. The project has confirmed the magnitude of GHG fluxes from the European land biosphere and mitigation pathways, at the continental to regional level. The way that ecosystems respond could be presented as a mitigation opportunity map, as a basis for decision-making on future land-use options. However, a series of data need to be collected in order to improve the capacity to quantify GHG emissions and prove the effectiveness of mitigation measures. Although many effective options have been proposed for years, they have yet to be implemented at the large scale.

The Ecological Footprint Framework as a concept which addresses climate change in a comprehensive way beyond measuring carbon emissions. It shows how carbon emissions compare and interact with other human demands on our planet, such as food, fibres, timber, and land for dwellings and roads. The carbon footprint is currently 60% of humanity’s overall ecological footprint and its most rapidly growing component. Our carbon footprint has increased 11-fold since 1961 – reducing it essential step to end overshooting so that we can live within the means of our planet.

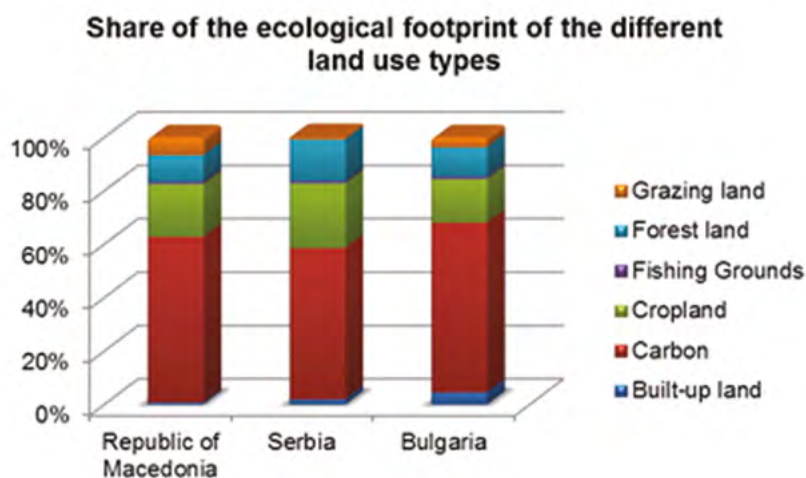
According to the last ecological footprint data (2013), Macedonia has an ecological footprint of 3.1 gha/capita, while the country’s biocapacity is 1.6 gha/capita. This means that the pressure on nature is about twice its biocapacity, or that the population is using twice as much as the country’s land-use types can offer. The same goes for Serbia, while Bulgaria is using natural resources in more sustainable manner, the ecological footprint per capita in Bulgaria is the same as the country’s biocapacity per capita. However, the values have changed over time, as shown in the diagrams below.



Source: Global Footprint Network

National's ecological footprint and biocapacity

The data on biocapacity per capita show that it remains constant over the years although the pressure on the different land-use categories has changed over time. The major shares in the total ecological footprint are Macedonia with 62%, 57% in Serbia and 64% in Bulgaria.



Source: *Global Footprint Network*

This means that our forests are not ‘wide’ enough to absorb all the carbon emitted into the atmosphere. Thus, in order to impact on the process of climate change, the focus should be on carbon emissions during the life cycle of any product the population uses in everyday life, and on protecting forests, as major carbon sequestrators.

Today, *deforestation is responsible for around 20% of global CO₂ emissions*, making it a major contributor to climate change – more than the entire global transport sector and second only to the energy sector. In 2008, *EU Member States pledged* to pursue the goal of halting forest cover loss by 2030 and halving tropical deforestation by 2020. Reaching this objective would help to mitigate climate change and provide numerous biodiversity benefits by 2020.

Reducing Emissions from Deforestation and Forest Degradation (REDD) is a mechanism for industrialised nations, including EU Member States, to help developing countries fight climate change. REDD creates financial value for the carbon stored in forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development.

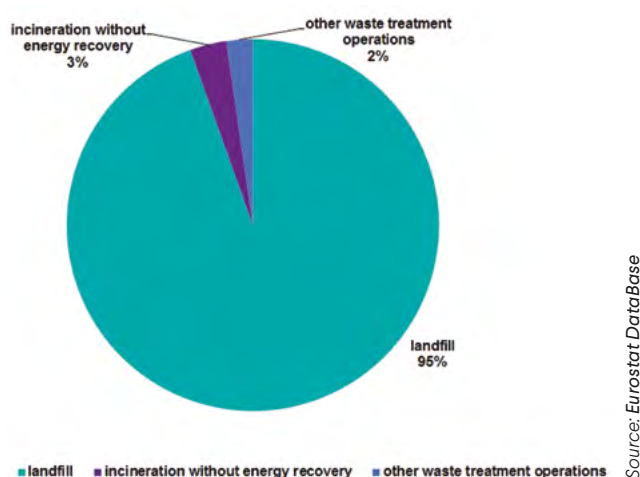
Forest landscape restoration (FLR) activities aim to regain ecological functionality and enhance human well-being across deforested or degraded forest landscapes. They focus on both current and future needs: reinstating the goods, services and ecological processes that forests provide at the broader landscape level, rather than simply promoting greater tree cover in a particular location. Restoring degraded and deforested land enhances the resilience of ecosystems, reduces erosion, soil degradation and nutrient depletion and has the potential to contribute to over one-third of the total climate change mitigation that scientists believe will be required by 2030. In 2011, ministers at a global conference in Bonn (Germany) committed to restoring 150 million hectares of lost forests and degraded lands worldwide by 2020 (and by extension, 350 million hectares by 2030).

Waste management

Waste management plays a key role by reducing the reliance on landfill for residual disposal. Landfills have the greatest share of total GHG emissions in the waste-management sector, with about 95%, while

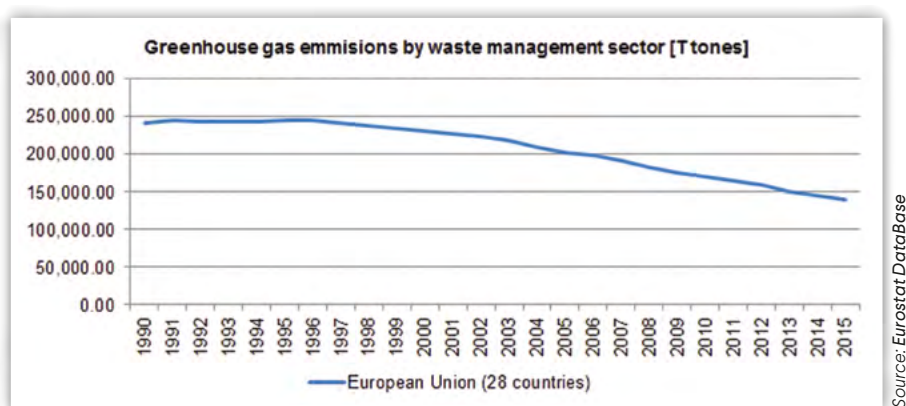


the other two types of waste-management operations (incineration without energy recovery⁸ and other waste treatments such as fermentation/composting) contribute the remaining 5%.



Estimated proportion of GHG emissions from the three waste-disposal treatment operations, 2011

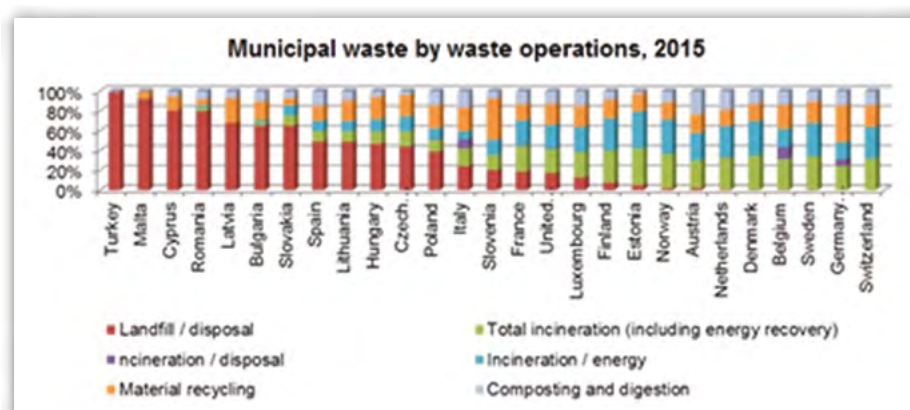
In the last 20 years, in the EU countries, GHG emissions from waste disposal have been reduced. In the early 1990s, GHG emissions from landfill declined slowly. Between 1995 and 2005, there was a high reduction rate, but since 2005 there has been slower progress in cutting emissions.



Despite a steady increase in the overall quantity of waste being generated, the European Environmental Agency forecasts that emissions will decrease further in the future, as a result of less waste being landfilled in EU countries over the years.



⁸ It should be noted that the incineration section includes only facilities without energy recovery so overall only a fraction of incineration emissions are presented in the chart.

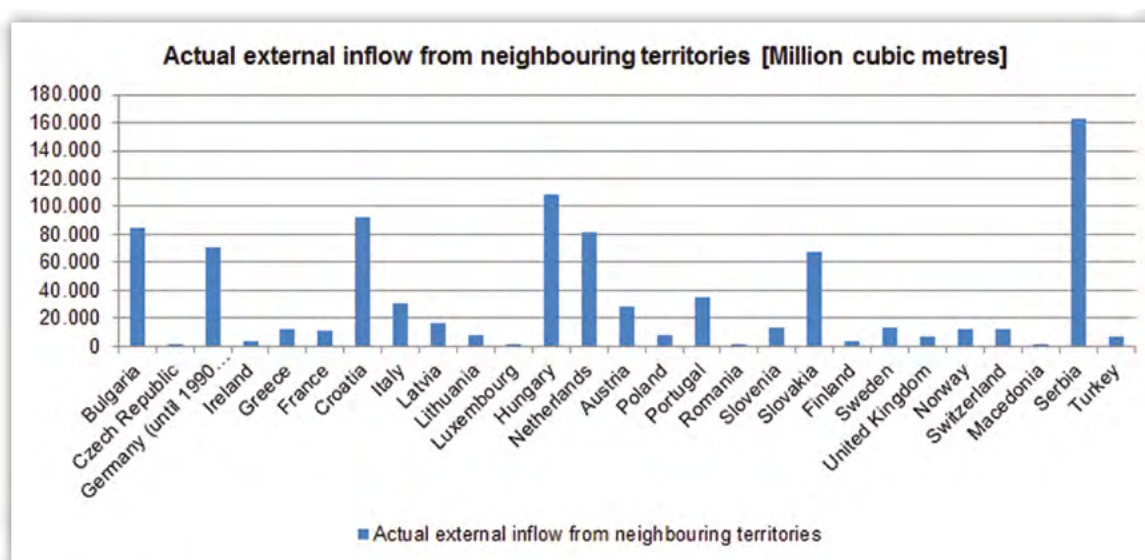


Biodegradable waste is the fraction from waste that accounts for methane emissions. By adopting the Landfill Directive 1999/31/EC, the EU gave itself a powerful tool for reducing the amount of biodegradable municipal waste going to landfill. By 2016, the volume of biodegradable municipal waste sent to landfill should have been 35% of this waste generated in 1995. The Directive requires the collection and incineration of landfill gas and the monitoring of landfill gas emissions.

Water management

The management and protection of water resources and of the water we drink and bath in, particularly in view of any potential changes in water availability and quality due to climate change, is one of the cornerstones of environmental protection. Therefore, the EU's water policy has focused on water protection for more than 30 years.

Water resources refer to the water available for use in a territory and include surface waters (in other words, coastal bays, lakes, rivers and streams) and groundwater. Freshwater availability in a country is determined by climatic conditions, geomorphology, land uses and transboundary water flows (external flows). Several countries receive a significant proportion of their freshwater resources as external inflow.



Hungary and the Netherlands had the highest dependency on transboundary water resources, as external inflow accounted for 93.5% and 88.8% of their total freshwater resources, respectively; the share in Serbia was also high, reaching 92.7%. In absolute terms (in other words, the volume of water received), Hungary, Croatia and Bulgaria had the highest external inflows among the EU Member States (108.9 billion m³, 92.0 billion m³ and 85.1 billion m³, respectively, although Serbia had an even higher volume (162.6 billion m³).



The overall use of water resources can be considered sustainable in the long term across most of Europe. However, specific regions may face problems associated with water scarcity: this is particularly true in parts of southern Europe where it is likely that efficiency gains in agricultural water use (as well as other uses) must be achieved to prevent seasonal water shortages. Regions associated with low rainfall, high population density, or intensive agricultural or industrial activity may also face sustainability issues in the coming years, which could be exacerbated by climate change impacts on water availability and water-management practices.

A higher proportion of the population is now being connected to urban waste-water treatment plants. Nowhere is this more true than in Malta, where coverage reached almost 100% in 2011 — up from 20% in 2010 — due to the construction of new waste-water treatment plants. Apart from the rapid increase in connection rates in Malta, the next highest rates of change were recorded in Belgium, Hungary, Poland, Bulgaria and Slovenia. The highest connection rates in the EU-28 were recorded in the United Kingdom (100%; 2014 data, estimated), the Netherlands (99.4%; 2015), Malta (98.6%, 2015 data), Luxembourg (98.2%, 2015 data), Spain (96.9%; 2014 data) and Germany (96.2%; 2013 data).

European green jobs potential

The role of the environmental economy in the EU's employment and growth dynamics

The growing number of people employed in the environmental economy since 2000 is mainly due to the better management of energy resources, especially those concerning the production of energy from renewable sources (such as wind and solar power) and the production of equipment and installations for heat and energy saving. Employment in this environmental sector increased from 0.5 million full-time equivalents (FTEs) in 2000 to 1.5 million FTEs in 2014 – in other words, an increase of nearly a million FTEs (or 182%).

The second most important contribution to employment growth in the environmental economy came from the waste-management sector, with employment rising from 0.8 million FTEs in 2000 to 1.1 million FTEs in 2014 (an overall increase of 36%). In contrast, employment in the waste-water management sector fell by 10% (63,000 FTEs) during the period 2000-2014, falling to 586,000 FTEs in 2014. Whereas environmental protection accounted for three-quarters (75%) of all employment in the environmental economy in 2000, due to the increase in employment in resource management, by 2014, the share of environmental protection was just three-fifths (59%).

The following figure analyses employment by environmental domain according to (groupings of) the classification of environmental protection activities (CEPA) and the classification of resource management activities (CReMA), which are specific classifications for environmental accounts (see data sources and availability for more information). The figure below presents an analysis by type of environmental action performed (environmental protection or resource management) and type of natural asset concerned.



Employment in the environmental economy, by domain, EU-28, 2000-14 (thousand FTEs)



An alternative approach to an analysis by environmental domain is by activity based on production units, using the statistical classification for economic activities (NACE). Because the units producing environmental goods and services operate in a range of activities, an analysis by activity provides a complementary picture to the analysis by environmental domain.

The table below follows this alternative approach and shows that, in 2014, most employment within the environmental economy of the EU-28 was found in: energy and water supply, sewerage, waste management and remediation activities (NACE Sections D and E) with 1.4 million FTEs; and construction (NACE Section F) with 1.1 million FTEs. In contrast, the environmental economy employed 727,000 FTEs in services activities, 577,000 FTEs in mining, quarrying and manufacturing, and 334,000 FTEs in agriculture, forestry and fishing.

	Employment (thousand full-time equivalents)	Output (EUR billion)	Gross value added (EUR billion)
Total	4,164	710	289
Agriculture, forestry and fishing	334	32	20
Mining, quarrying and manufacturing	577	117	37
Energy and water supply, sewerage and waste services	1,422	337	128
Construction	1,104	143	55
Services	727	81	49

Note: Data for EU-28 are estimated by Eurostat.

Employment, production and value added in the environmental economy, by activity, EU-28, 2014

The table also shows the value of output and gross value added produced by the environmental economy. In 2014, the activity making the highest contribution to the gross value added of the EU-28's environmental economy was energy and water supply, sewerage, waste management and remediation activities, at EUR 128 billion, or 44% of the total. By far the largest activity, this mainly includes the production of energy from renewable sources and gas from agricultural by-products and waste. Construction was the activity making the second highest contribution to the environmental economy's gross added value, at EUR 55 billion or 19% of the total. This activity includes the construction of buildings with low-energy consumption and passive buildings, as well as the refurbishment of existing buildings to improve energy consumption, noise insulation work, maintenance and repair of water networks, construction work for waste-water and waste treatment plants and sewerage systems. The third largest activity grouping was services, which generated EUR 49 billion of value added, 17% of the total for the environmental economy. The remaining activities contributed 13% of the total – in the case of mining, quarrying and manufacturing, and 7% by agriculture, forestry and fishing.

Energy and water supply, sewerage, waste management and remediation activities generated 44% of the environmental economy's value added with 34% of the labour input, whereas construction generated 19% of the value added with 27% of the labour input. Thus, these activities had the highest and lowest labour productivity, respectively (value added per FTE) in the environmental economy.

[Environmental economy – employment and growth/Eurostat – Statistics explained series, June 2017]

The EU policy framework for business-based resource efficiency

Systematic and coordinated government assistance for developing the right conditions for the green economy in Europe is a challenge facing all Member States and EU international institutions. The decision-making recognition of this situation has already been put in place. In this context, the Europe 2020 flagship initiative 'A resource-efficient Europe' established a coherent policy framework which built on long-term strategies addressing climate, energy, transport, and broader resource challenges. It encompasses

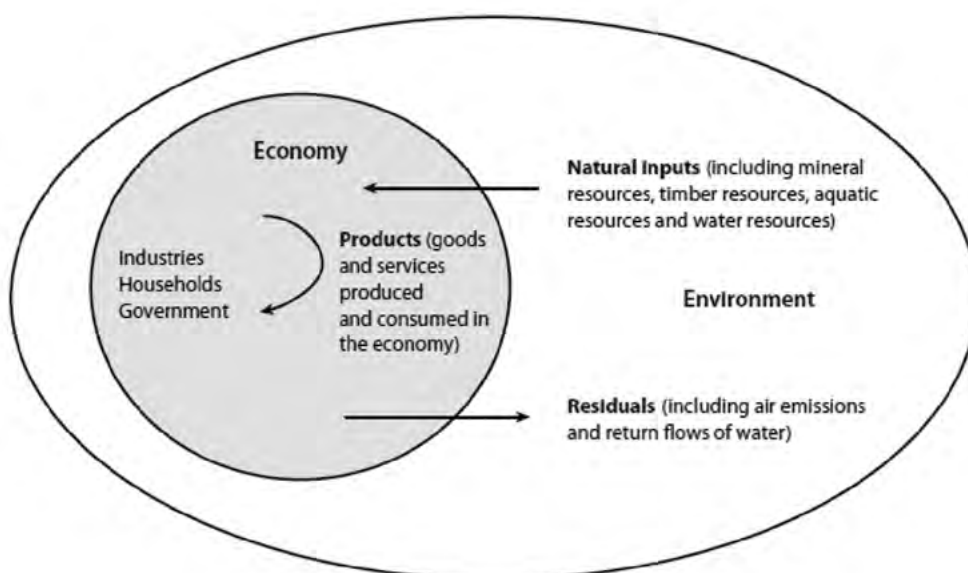




reforms in agricultural, fisheries and regional development policies, while including initiatives in the field of biodiversity, water and air policy, as well as raw materials, the bioeconomy, construction, taxation, research and innovation.

With the Communication 'Roadmap to a Resource Efficient Europe', the European Commission set out a comprehensive strategy to decouple economic growth from resource use and its environmental impacts, and proposed a long-term vision, 2020 milestones and a number of short-term actions to start

the transition, both at the EU and national level. The seventh Environment Action Programme 'Living well, within the limits of our planet', which entered into force on 17 January 2014, identified as a priority objective turning the Union into a resource-efficient, green and competitive low-carbon economy, and specified concrete areas for action at the EU and national level. The circular economy package promotes more efficient use of resources, *inter alia*, through a new legislative package on waste management, and an action plan with concrete actions, to be implemented during this Commission's mandate, that will help the transition towards a more circular economy. The measures address the full life cycle of products and materials, including design and production processes, better informed consumer choices, modern waste management and markets for secondary raw materials.



Interrelations between environmental processes and economic activities

[Environmental accounts – establishing the links between the environment and the economy/Eurostat – Statistics explained series, June 2017]

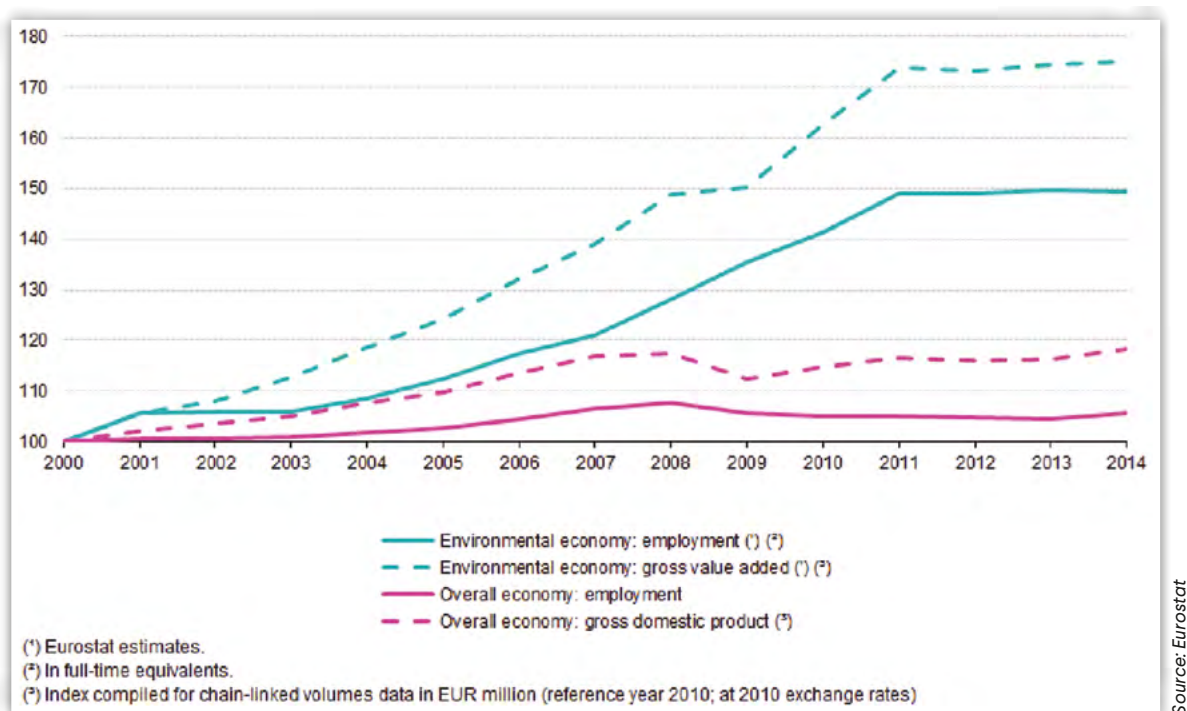
EU Member States have been stepping up their efforts in resource efficiency and have shifted to more integrated approaches. Dedicated initiatives have been developed by some countries, such as Germany, Austria, Finland and Denmark, while others have mainstreamed resource efficiency in broad economy-wide strategies or action plans, or have translated the concept into specific actions. A dedicated Member State Group on Resource Efficiency has been set up by the Commission to discuss policy and exchange best practice.

Member States use a variety of approaches to help businesses improve their resource efficiency, ranging from voluntary to regulatory measures. The variation in levels of resource efficiency among the Member States suggests there is considerable scope for improving resource productivity across the EU.

In addition to being a headline policy-making priority, such governance initiatives also have strong empirical justification. As demonstrated in the figure below, for several years, the share of the green economy already



in place compared to employment flows, and the gross value added, provides significantly better economic performance in comparison to the mainstream economic sectors. Thus, the conscious development of the green economy is a strategic opportunity for establishing a new engine for the EU's entire economic growth. This is particularly true if these developments receive the cumulative state-generated assistance, already granted to the 'business-as-usual' economic approach, since the beginning of the industrial age.



Development of key indicators for both the environmental and the overall economy, EU-28, 2000-14, 2000=100

According to Eurostat estimates, employment in the EU-28's environmental economy rose from 2.8 million FTEs in 2000 to 4.2 million FTEs in 2014. In 2014, the environmental economy in the EU-28 generated EUR 710 billion of output and EUR 289 billion of value added. Between 2000 and 2014, employment and value added in the environmental economy grew considerably faster than employment in the overall economy and gross domestic product (GDP).

During the period 2000-2013, there was a steady pattern of net job creation within the environmental economy. Figures for most years show annual employment increased by 2-6%. For two years in the early 2000s – 2002 and 2003 – employment levels remained almost unchanged. Subsequently, the annual rate quickly returned to an upward trend. The pace of growth fell substantially again in 2012 and 2013 with a very slight contraction being recorded in 2014.

For over a decade (between 2000 and 2011), the environmental economy consistently outperformed the overall economy in terms of the growth of its value added/ gross domestic product (GDP) in volume. Even in 2009, when the financial crisis led to a large contraction in GDP, gross value added (GVA_ in the environmental goods and services sector continued to grow (albeit at a very slow pace). It accelerated its growth considerably in the following two years (2010-2011). However, its annual changes have been much smaller in recent years (well below 1%), and in 2012, the GVA generated by the environmental economy fell slightly.

In this classification, environmental protection is broken down into the following domains: waste-water management, waste management and other environmental protection activities. Resource management is broken down into the following areas: management of waters and management of energy resources.

In this context, many support measures could be adopted more systematically, building on the lessons learnt from where they have proven to be successful. For instance, a recent study for the Commission identified and examined 10 key measures with the potential for wide application in the EU:



1. **Support for industrial symbiosis:** Measures that support industrial symbiosis aim to enable industries to share services, utilities and by-products/resources (including reuse of waste from one industry by another) in order to add value, reduce costs and make environmental improvements. This may include financial support for technology parks/clusters, and/or virtual support for networking and skills.
2. **Incentivising external audits to support resource efficiency:** The aim of external resource-efficiency audits is to help businesses to identify and make resource-efficiency improvements. Governments may provide incentives for such audits, e.g. by offering government payments or vouchers, providing tax rebates for companies that have been audited for resource efficiency, or including resource-efficiency audits as a beneficial criterion for green public procurement processes.
3. **Improving financing:** Financial support can be an effective way to encourage resource efficiency in businesses that might otherwise not have the capacity to make resource-efficiency improvements. In particular, this includes the following types of financing, which can offer improved support for resource efficiency: encouraging private equity funding (e.g. by setting up green bonds); encouraging public-private partnerships; low-interest loans to SMEs for investments in resource efficiency; and improving SME access to funding by pooling loan demands from groups of SMEs to create larger loan demands that may be more readily approved by banks/lending institutions.
4. **Supporting voluntary agreements and initiatives:** The aim of voluntary agreements or initiatives is to encourage resource efficiency in groups of businesses by creating shared goals. In this way, businesses may become more motivated and committed to taking steps towards greater resource efficiency. Governments might support such initiatives, e.g. by encouraging the development of codes of conduct/ covenants (between businesses, or between businesses and government), offering support for the development of voluntary product labelling, voluntary corporate disclosure or voluntary collaboration between actors along a supply chain, or by hosting meetings/ discussions between businesses.
5. **Providing targeted resource-efficiency information and advice to companies:** In some cases, the provision of targeted information/advice to companies on resource efficiency can help to encourage improvements. Online information on improving resource efficiency, support for sharing best practices between companies, virtual or 'in person' support and advice programmes, and financial support for implementing advice all have the potential to help.
6. **Building resource-efficiency-related skills and capacity within a company/business:** If a company lacks the skills to improve its resource efficiency, it will be trapped into using existing methods. Governments use various skill and capacity-building tools to remove this barrier, e.g. by encouraging the inclusion of resource-efficiency issues in curricula for vocational training or further education. Skills related to resource efficiency (sometimes called 'green skills') can be defined as any knowledge, abilities, values and attitudes that are needed to develop and support a resource-efficient society. They are useful in all sectors, not just for green jobs, since they can help to adapt products, services and processes to environmental challenges and regulations.
7. **Improving company accounting and reporting practices:** Existing accountancy and business reporting rules can fail to capture and illustrate progress on resource efficiency. Sometimes, they can reinforce practices which reject investments in resource efficiency with longer pay-back times. Changes to accountancy and reporting practices which better allow resource-efficiency measures to be seen as beneficial for business may help businesses to change. Governments can support change, either by supporting work by accountancy bodies, or through prompting change in reporting practices.
8. **Development of non-legal standards for products and services:** Standards for products and services can help producers of greener products to differentiate them from less environmentally friendly alternatives, as well as enabling consumers to make more informed purchasing choices. Thus, common voluntary (e.g. sector-wide) standards, such as minimum efficiency standards, requirements for the use of recycled materials in new products, or the application of ecolabels, can help to generate and spread resource-efficiency improvements.
9. **Measures supporting extended producer responsibility (EPR) for materials and/or products:** One of the aims of applying EPR to materials and products is to reduce the amount of waste



generated and to encourage the use of specific types of waste as a resource/raw material. Together, waste regulation, EPR and other economic instruments can help to support more circular supply chains between the production and end-of-life phases of a product. In some cases, governments may take steps to offer additional, non-regulatory support for the application of EPR.

- 10. Any other non-legislative support measures promoting a circular economy and resource efficiency:** There are undoubtedly many non-legislative measures in use that do not fit into any of the previous categories. Examples could include support for reuse and repair, measures to prevent the obsolescence of products, provision of extended warranties/guarantees, or schemes to support alternative business models such as leasing, shared ownership or exchange of services.

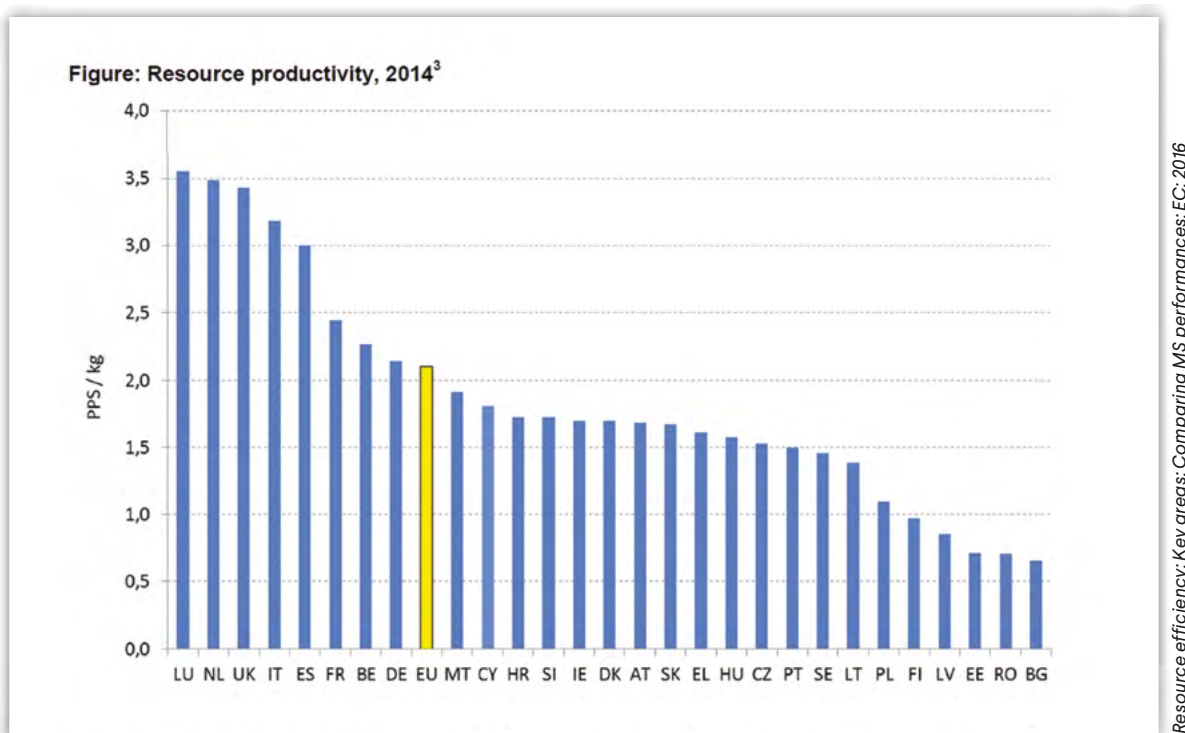
[Resource efficiency; Key areas: Comparing MS performances; EC; 2016]

4.2. The background for green jobs in Bulgaria: resource and energy efficiency, and a healthy urban environment

Two of the main indexes for a country's economic performance are concern the average national efficiency in utilisation of its resources, and its energy. On the other side of gross national productivity and competitiveness, they also indicate the space available for mass improvements in both economics and policy, in the context of green and blue economic alternatives. For Bulgaria, both indicators are the lowest among the EU Member states, thereby allowing for a huge range of dramatic improvements, transfers and innovations in this direction.

As mentioned by the European Commission services in 2016, "... the scale of the challenge in energy efficiency requires that the policy effort is intensified in all Member States, particularly in Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Romania, which remain the most energy-intensive countries in the EU." The very same situation exists in the area of national resource productivity. Reaching less than 0.7 PPS/kg, Bulgaria really needs a radical and mass improvement in the local contributions in this indicator, in all sectors of the national economy and overall development (see the figure below).

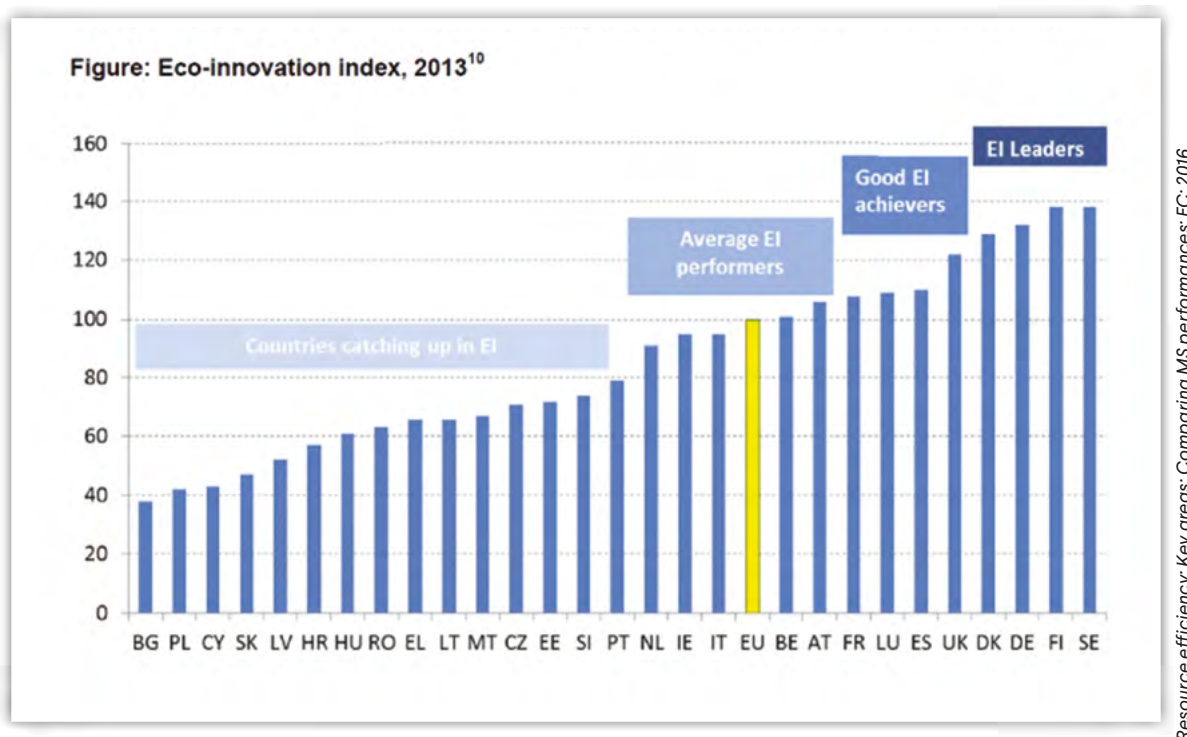
[Energy and GHG targets; Key areas: Comparing MS performances; EC; 2016]



Resource efficiency in EU countries, 2014



Another statistical indicator in support of such a conclusion is that comparing Member State performance in the area of eco-innovations. Bulgaria is the only EU country with a volume below 40% for this index (compared to the average EU performance which is defined as 100%). In addition to sending a strong signal on the urgency of the situation, this data also indicates the recommended aspects of such initiatives. Being last among the European countries, Bulgaria is not in good shape at the moment although, in the meantime, this provides an excellent opportunity for the country to study and transfer foreign approaches and practices, thereby significantly reducing the own R&D investments required.



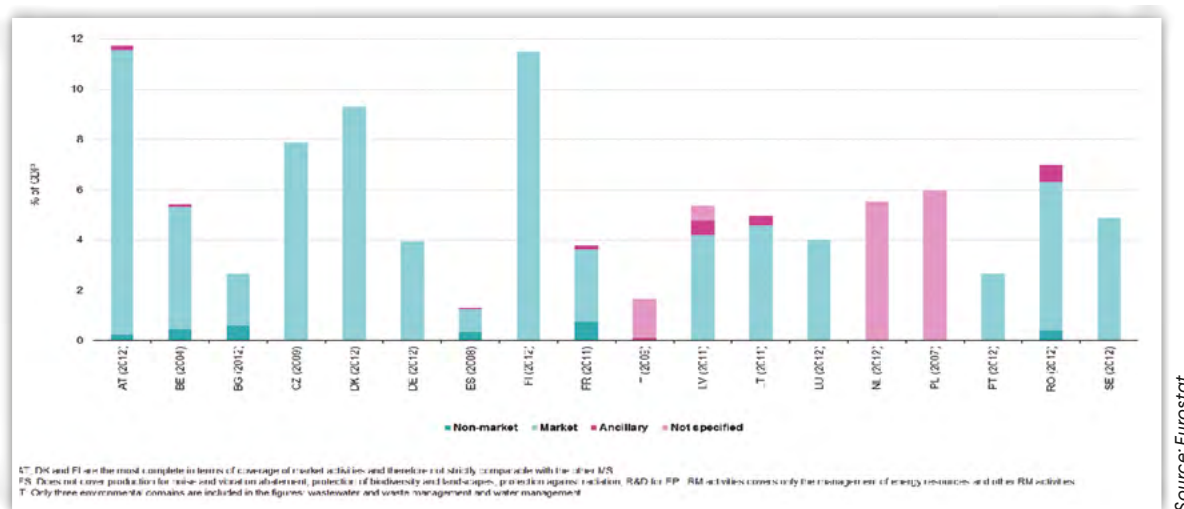
Eco-innovation index in the EU, 2013

Apart from the macroeconomic resource-efficiency indicators, another index, measuring the green economy's contribution in national development, concerns the volume and share of nationally produced environmental goods and services. These are those produced for environmental protection (i.e. preventing, reducing and eliminating pollution and any other environmental degradation) as well as resource management (i.e. preserving and maintaining the stock of natural resources and hence safeguarding against depletion). According to Eurostat's estimates for the EU (28 Member States), the output of environmental goods and services share (EGSS) per unit of GDP has grown by more than 50% over the last decade while the employment linked to this production has risen to more than 4 million FTEs. Estimates for the EU show an increasing trend in EGSS output per unit of GDP over the last decade with the output indicator growing by 50% between 2003 and 2013.

EGSS output can either be sold on the market or produced for own use (e.g. output produced by ancillary activities) and/or provided for free or at not significant economic prices (non-market output). Environmental products produced by ancillary activities are not intended for use outside the enterprise; they support other activities undertaken within the enterprise (e.g. waste-management services carried out in-house). Non-market output mainly comprises environmental services provided by general government, such as supervision and control activities for managing natural resources. For the EU, the share of market output is estimated at more than 80% of total EGSS output.

Once again, in these comparative EU inventories, Bulgaria is mentioned in last place among the EU countries. In most European countries, for which data are available, EGSS output ranged between 2.7% (Bulgaria and Portugal, 2012) and 7.9% (Czech Republic, 2009) of GDP (see the figure below).

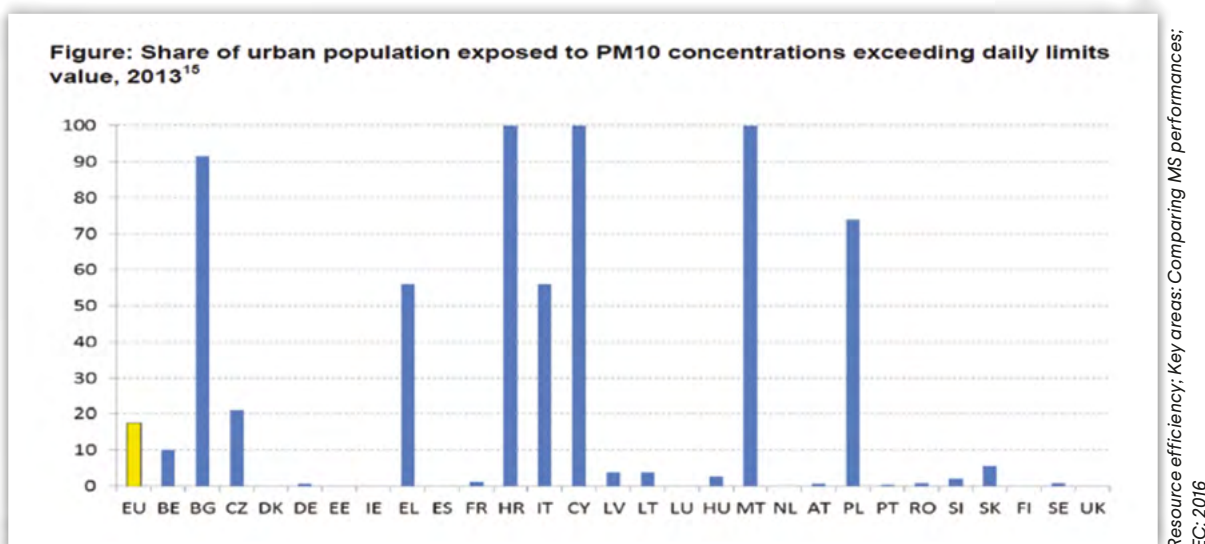




EGSS output by type of activity (market, non-market, ancillary), latest available year (% of GDP)

[Environmental goods and services sector – employment and growth/Eurostat – Statistics explained series, June 2017]

Another EC index, which indicates the significant need for policy improvements in Bulgaria, is related to a serious population problem, both environmental and health, associated with the quality of the urban atmosphere in Bulgaria's cities. Bulgaria has one of the four biggest shares of urban population in the EU exposed to harmful air emissions from dust pollution. Currently, the capital city of Sofia is the subject of an EC penalty procedure for being the dustiest city in Europe. In addition, the environmental statistics and monitoring for the smaller particulate matter 2.5 emissions (which are significantly more harmful) is still generally underdeveloped. Apart from the requirements that these findings imply for the activity of urban self-government and for central government administrations, they also hint at possible and perspective niches for future green economy sub-sectors in the country, as air and urban environment quality is a topic for such activities in other developed countries, both EU and non-EU states.



Share of urban population, exposed to PM concentration, exceeding daily limit value, 2013



3. Green Economy Overview – Bulgaria



This chapter is part of a research report produced by the BlueLink Foundation and the Green European Foundation within a project entitled *Revision of the Economy in the Balkans: Change Policy not Climate!* The purpose of the research was to accomplish the following goals set by the project:

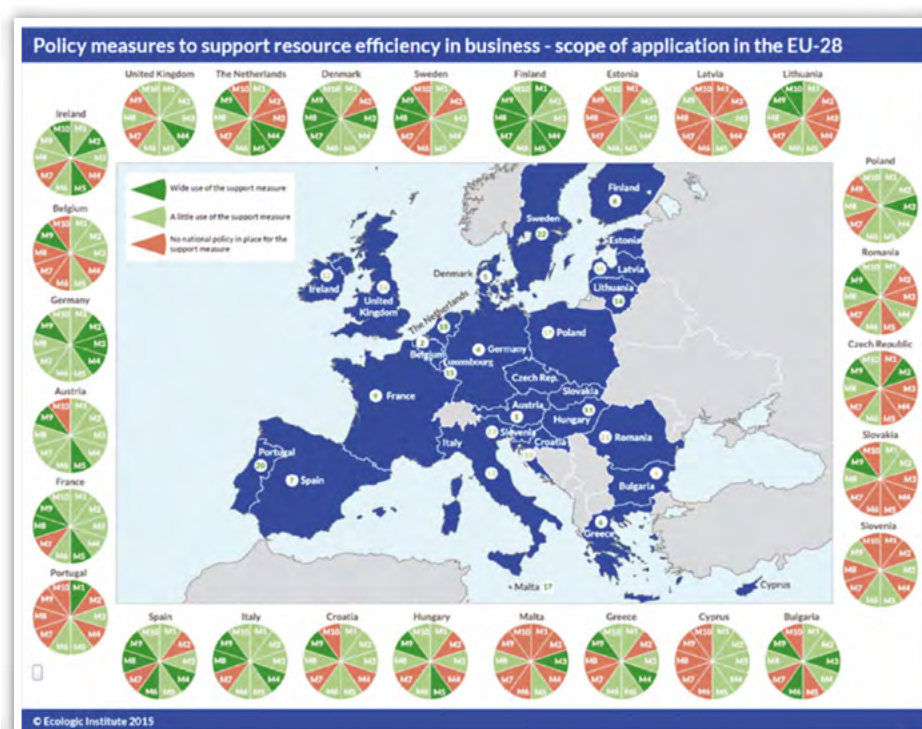
1. To gather best practices from the three participating countries of Serbia, Macedonia and Bulgaria for a green economy.
2. To showcase and promote the transformation of the economy towards environmental, low-carbon and energy-efficient production along with increasing prosperity and equity in society.
3. To provide useful facts and arguments for Green politicians and activists to raise awareness among stakeholders, politicians and the general public about the economic potential of a green economy, stimulate changes in consumption and production patterns, and promote a participatory approach to policy-making.

This chapter provides an analytical review and expert assessment of Bulgaria's situation, stage of development and national policies, addressing some of the factors concerned by the development of the green economy in Bulgaria. Its purpose is to contribute to the regional analysis of the report, concerning the state of the art in this area. The specific aspects addressed here cover the following components: main performance indexes at national level and their comparison with the EU average and other EU Member States (MS); a review and assessment of the country's existing policies in a number of related areas, and their actual intensity, volume and achieved results; overall green business performance and a focused review of some of the country's outstanding green business cases; a review of some NGO initiatives, providing pilot models for further national policies; and a follow-up analysis and conclusions. Specific national policy sectors covered in the chapter include: energy efficiency; green buildings; labour market; environmental infrastructure; sustainable transportation; business development and specific green business cases; sustainable agriculture; and the promotion and encouragement of new green business entrepreneurs. The above-mentioned criteria, policy areas and thematic directions have been chosen in line with the overall project methodology, as well as with the ongoing green economy policy initiatives at the EU and global level. Analytical review of existing scientific sources, an expert focus group and analyses of various cases were used to generate and collect data. The PESTLE analysis method was applied for the purpose of data analysis.

The Bulgarian gross performance in the green economy – current status

The following figure demonstrates current policy in the above-mentioned resource-efficiency approaches for the EU-28 MS. As it shows, policy efforts in Bulgaria are mainstreamed in only three out of the 10 directions (leaving three of the others with literally zero coverage), namely improving the general SME financing, building new labour skills, and extending producers' responsibility for materials and products. In the meantime, it should also be stressed that all these achievements are, to a very large extent, due to EU-financed national SME and employment programmes, as well as to some of the obligations Bulgaria assumed on becoming one of the EU MS in 2007.





Policy measures to support resource efficiency in business: scope of application in EU Member States – current status (source: EC, 2016i)

Another comment on this information is the impact of the national measures achieved to date which so far appear to have been very limited (on the basis of the other indicators measuring it, as demonstrated below – such as levels of energy and resource efficiency, eco-innovations, and shares in employment and gross revenues).

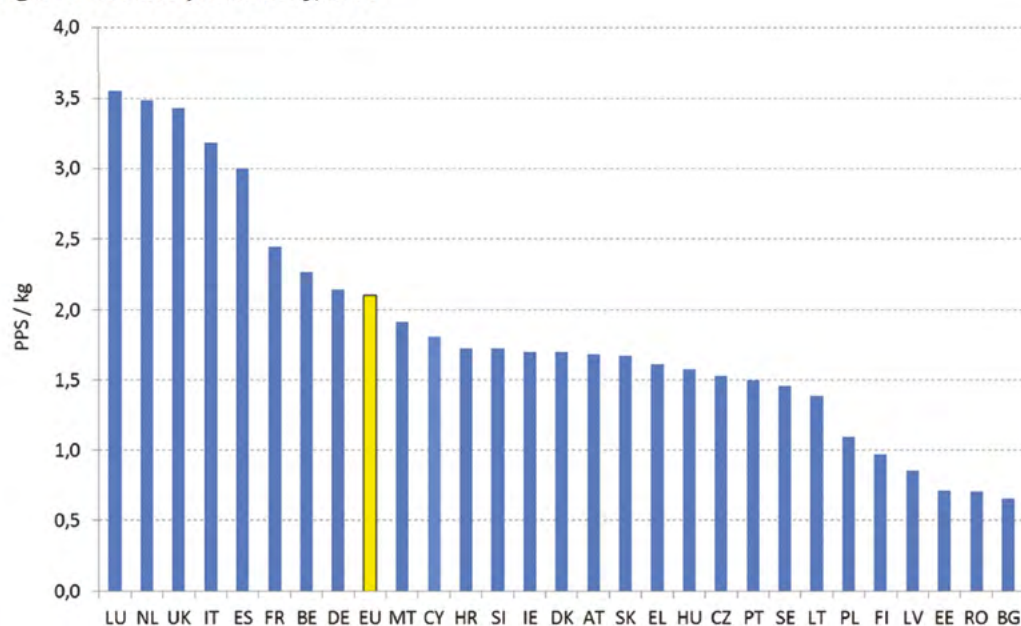
Background for green jobs in Bulgaria: resource and energy efficiency and a healthy urban environment

Two of the main indexes for a country's economic performance concern the average national efficiency in using its resources, and its energy. On the other side of gross national productivity and competitiveness, they also indicate the space available for mass improvements in both economic and policy in the direction of the green and blue economic alternatives. Both indicators in Bulgaria are the lowest among the EU MS, allowing for a huge range of dramatic improvements, transfers and innovations in this direction.

As mentioned by the EC (2016ii), the scale of the energy efficiency challenge requires that policy effort is intensified in all MS, particularly in Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Romania, which remain “the most energy-intensive countries in the EU”. The same situation applies in the area of national resource productivity. Reaching less than 0.7 PPS/kg, the country is in serious need of a radical and huge improvement in local contributions towards this indicator, in all sectors of the national economy and overall development (see figure below).



Figure: Resource productivity, 2014³

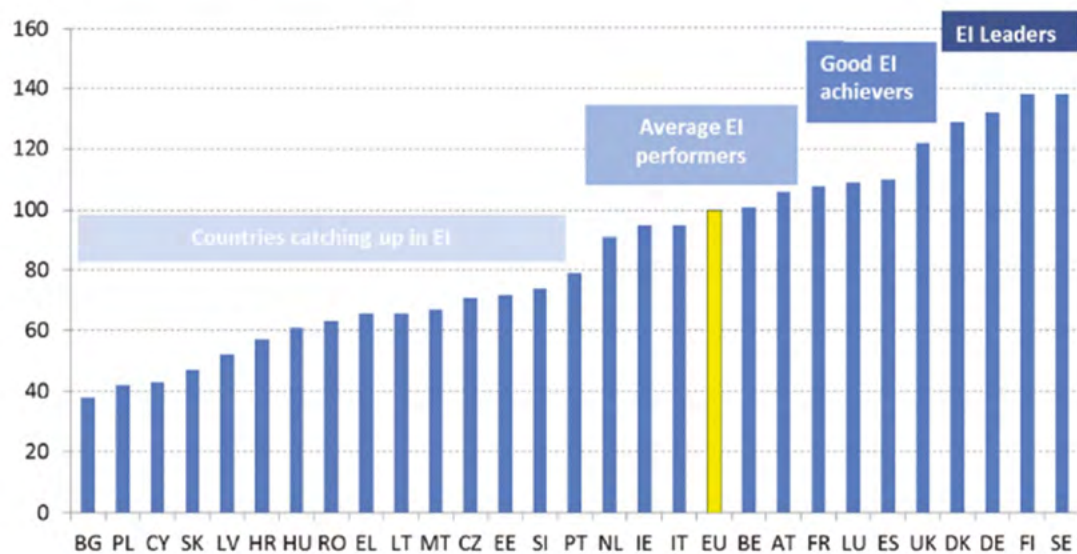


Resource efficiency in EU countries, 2014

(source: EC 2016i)

Another statistical indicator supporting this conclusion is that comparing MS performances in the area of eco-innovations. Bulgaria is the only EU country with a volume in this index below 40% (compared to the average EU performance which is defined as 100%). These data send strong signal about the urgency of the situation. Coming last among the European countries is not a good place to be at the moment although, in the meantime, it provides an excellent opportunity to study and transfer foreign approaches and practices, significantly reducing the country's own required R&D investments.

Figure: Eco-innovation index, 2013¹⁰



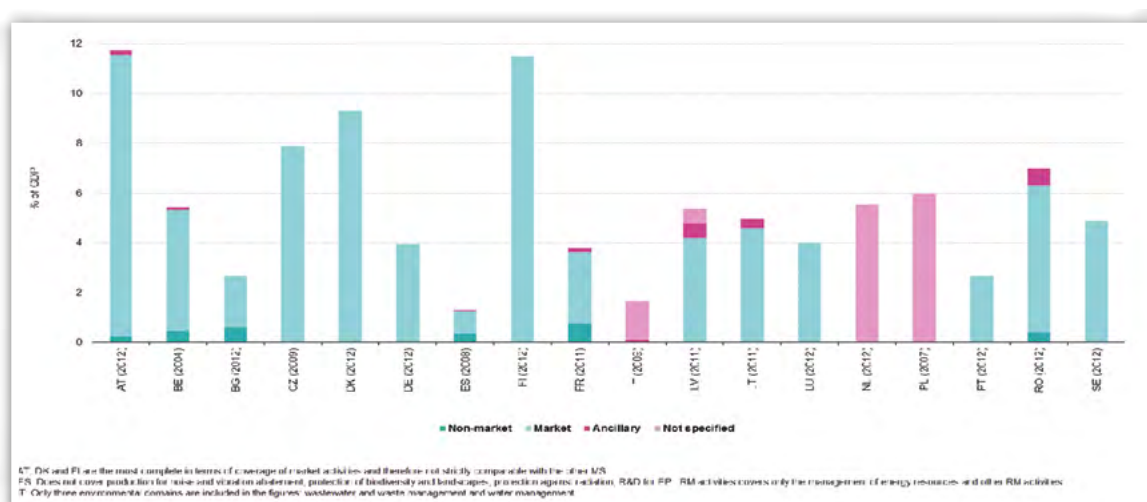
Eco-innovation index in EU, 2013 (source: EC 2016i)



Apart from the macroeconomic resource-efficiency indicators, another index, measuring the green economy's contribution to national development, concerns the volume and share of nationally produced environmental goods and services. These are those produced for the purpose of environmental protection (i.e. preventing, reducing and eliminating pollution and any other degradation of the environment) as well as resource management (i.e. preserving and maintaining the stock of natural resources and hence safeguarding against depletion). According to Eurostat's estimates for the EU (28 MS), the output of environmental goods and services per unit of gross domestic product (GDP) has grown by more than 50% over the last decade and the employment linked to this production has risen to more than 4 million full-time equivalents. Estimates for the EU show an increasing trend in environmental goods and services share (EGSS) output per unit of GDP over the last decade. This EGSS output indicator grew by 50% between 2003 and 2013.

EGSS output can be sold on the market as well as being produced for own use (e.g. output produced by ancillary activities) and/or provided for free or at not significant economic prices (non-market output). Environmental products produced by ancillary activities are not intended for use outside of an enterprise; they support other activities undertaken within the enterprise (e.g. waste-management services carried out in-house). Non-market output mainly comprises environmental services provided by general government, such as supervision and control activities for managing natural resources. For the EU, the share of market output is estimated to be more than 80% of the total EGSS output.

Once again, in these comparative EU inventories, Bulgaria is in last place among the EU MS. In most European countries, for which data are available, EGSS output ranged between 2.7% (Bulgaria and Portugal, 2012) and 7.9% (Czech Republic, 2009) of GDP (see figure below).



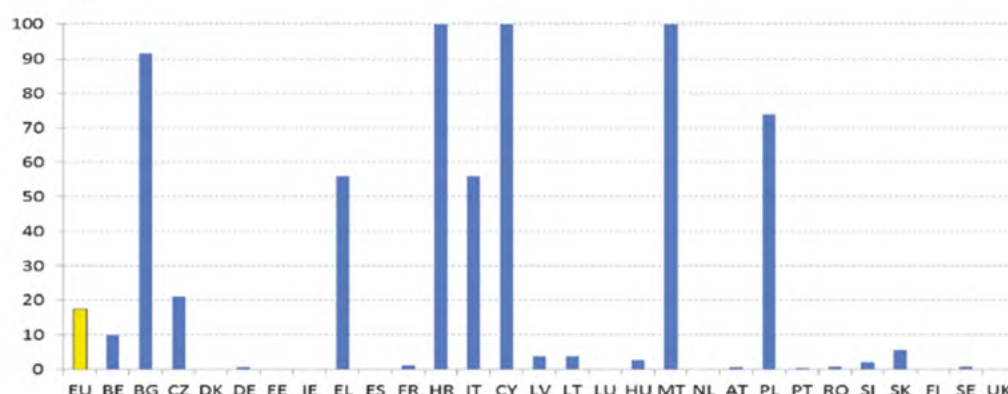
EGSS output by type of activity (market, non-market, ancillary), latest available year (% of GDP)

(source: Eurostat, 2017iii)

Another EC index indicating the significant need for policy improvements in Bulgaria is related to a major population problem, both environmental and health, associated with the quality of urban air in Bulgarian cities. In the EU, Bulgaria has one of the four biggest shares of urban population exposed to harmful air emissions due to dust pollution. A penalty procedure is currently being carried out by the EC against the capital Sofia, for being the dustiest city in Europe. In addition, the environmental statistics and monitoring for the smaller PM2.5 emissions (being significantly more harmful) is still generally underdeveloped. Apart from the requirements these findings imply for the activities of both the urban self-government and central government administrations, they also suggest possible and perspective niches for the future green economy sub-sectors.



Figure: Share of urban population exposed to PM10 concentrations exceeding daily limits value, 2013¹⁵



Share of urban population exposed to PM concentration exceeding daily limit value, 2013

(source: EC, 2016i)

State-driven subsidy assistance in creating green jobs

Within the above-mentioned context, in order to stimulate the creation of green jobs in Bulgaria, a pilot trial measure began in the period 2011-2014, with a budget of EUR 2.55 million. The aim was to assist some 3654 jobs, including 3034 new jobs (within the operational programme “Human resources”, co-financed by the EU Structural Funds, namely ESF and ERDF). The annual distribution of the financing and work placements created is demonstrated in the table below.

As can be seen, the main effort was concentrated on the first of the years addressed. In 2011, some 57.5% of all work placements were distributed, as well as 52.5% of the dedicated financing. And in the following years, a strong trend can be observed in a steady decline in the relevant indicators.

Таблица 1. Динамика на планираните зелени работни места и средствата за финансирането им по години

Показатели	Години			
	2011	2012	2013	2014
1. Общ брой зелени работни места	2100	725	549	280
Изменение по години	100	34.52	26.14	13.33
Изменение по години	100	34.52	75.72	51.00
2. Общ брой нови работни места	2100	396	436	102
Изменение по години	100	18.86	20.76	4.86
Изменение по години	100	18.86	110.10	23.39
3. Отн. дял на новата заетост	100	54.62	79.42	36.43
4. Общ размер на финансовите средства по мярката (лв.)	3024000	1222559	1068074	445010
Изменение по години	100	40.43	35.32	14.72
Изменение по години	100	40.43	87.36	41.66

Източник: Агенция по заетостта

TABLE 1 Annual distribution of the planned green working places and their financing

(source: Agency for Employment, Bulgaria)



There is also an even sharper annual imbalance in the new work placements, reaching 69% in 2011, as in 2014 they only reached 8% and 3% (for the financing distributed and the number of places created, respectively). Regional distribution of the assistance is also markedly uneven, reaching more than nine times the regional imbalance. At the district level, these volumes vary between only 37 work placements in the district of Kardjali, and 38 in Vidin, as against 312 green work placements in the district of Blagoevgrad, and 249 in the district of Kyustendil. Numbers in the majority of districts range from 51-100 work placements (in 32 % of all districts) and 101-150 (in 29% of the districts). More work placements (over 151) have been reached in the districts of Blagoevgrad, Kyustendil, Targovishte, Pazardjik, Pernik, Vratsa, Gabrovo, Montana and Sofia district, ranging from 312-164 per district.

Similar results can be seen in the territorial distribution of the assistance, at NUTS II regional level. The data available shows a high share in the south-west region, reaching almost 30% of the subsidy provided. Four out of six other regions range from 13.13% to 16.29%, while the south-east region has the lowest share at just 10.15%.

In the actual implementation of the measure, in 2011 alone some 902 work placements were created by 70 employers. The prevailing types of work were in sectors related to drinking water and sewage, waste management and restoration activities, most of them in construction companies. The largest share of implementation occurs in the third year when 78.7% was achieved.

Meanwhile, the bigger part of employers in the years 2-4 are the result of the turnover of the initial employees. Almost one-third of the work placements suffered such a turnover.

Таблица 2. Планирани и разкрити зелени работни места за периода 2011-2014 г.

Показатели	Година			
	2011 г.	2012 г.	2013 г.	2014 г.
Планирани работни места	2100	725	549	280
Разкрити работни места	902	341	432	94
Отн. дял на разкритите работни места от планираните	42.95	47.03	78.69	33.57
Постъпили на работа	786	376	464	122
Постъпили на работа в % към разкритите работни места	87.14	110.26	107.41	129.79

TABLE 2 Planned and established green working places in 2011-2014

(source: Agency for Employment, Bulgaria)

Some Bulgarian researchers explain this situation by the high requirements expected of the employees, compared to their relatively low salary levels, based on the existing minimum wage defined by the Bulgarian government, which is significantly lower than that provided by the free market in the sectors addressed. These circumstances create a small share of newly employed people from the long-term unemployed target group (reaching 23.5% for the whole period), and for unemployed young people under 29 years old (only 12.7%). Meanwhile, a high share was achieved in employing adults under 50 years (28.5%) and women (45%).

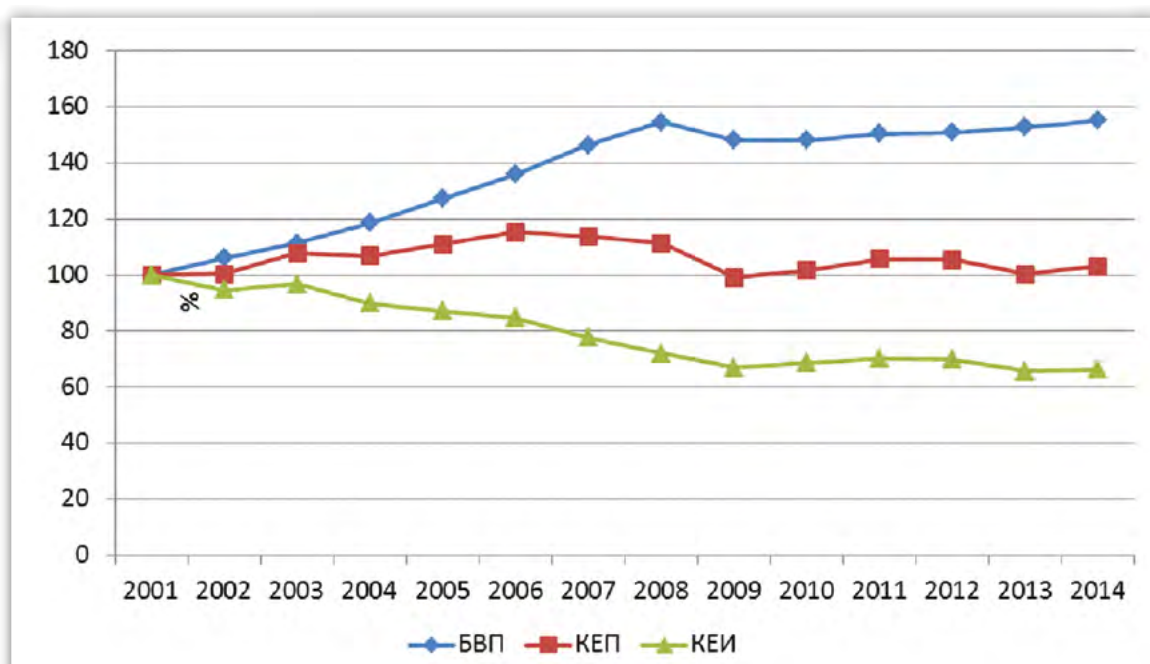
Apart from being relatively inadequate at the national level, assessing the impact of the pilot measure shows that a negative trend was achieved in the dynamic of the measure implementation, concerning the number of green jobs established by a single employer. In 2011, this average was 12.9, but by the end of 2014 it had dropped to only 2.9. In addition, following the end of this measure, to date the approach demonstrated has not been continued (Miteva 2017).



Sustainable energy policy

As one of the key ways of improving the country's performance, and recognised by the Bulgarian government as such, the state policy for energy efficiency is synthesised in the form of a national energy efficiency action plan for the period 2014-2020. It was developed in response to the specific requirement of paragraph 24(2) of Directive 2012/27/EC of the European Parliament and European Council, and is being coordinated and observed by the state agency for sustainable energy development. According to the agency, the national indicative targets for energy savings up to 2020 are 716 ktoe/y in the final energy consumption (FEC), and 1590 ktoe/y in the primary energy consumption (PEC). Of this, a specific sub-target exists for 169 ktoe/y energy savings in the energy transformation, transfer and distribution processes. Contributions of the different components here, which are estimated to reach 716 ktoe/y, are: 230 ktoe/y from optimal utilisation of the available financing, and 486 ktoe/y from implementing energy traders' individual targets.

The graph below shows the estimated dynamics of these values, in parallel with the estimated GDP growth.



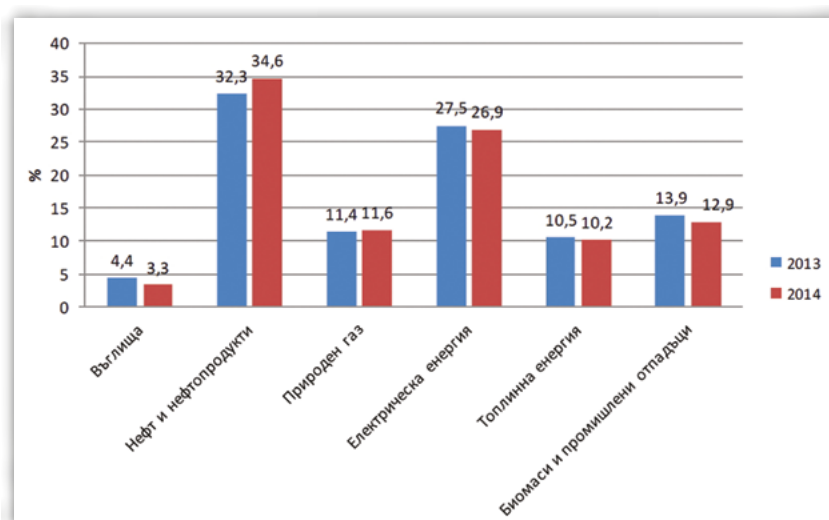
GDP, FEC and final energy intensity in 2001-2014, 2001=100%

(source: NSI)

Currently, a non-favourable trend can be observed in the final energy consumption (FEC) and the final energy intensity (FEI). In 2014, the FEC trend was growing compared to 2013. The FEI volume in 2013 was 0.113 ktoe/BGN GDP (at 2010 prices), and reached 0.114 ktoe/BGN GDP in 2014. In 2014, an FEC increase was observed at 2.9%, as well as an FEI increase at 1.0%, compared to 2013.

As regards the sectorial dynamics in energy consumption, this increased in the period 2001-2014 in all sectors, except industry and agriculture. In industry, it decreased by more than one Mtoe in just two years (2008 and 2009), and it is no longer the biggest energy consumer, handing this position to transport. In 2014, the greatest energy consumption again relied on transport, with a growth of 13% from 2013, achieving a shift from 30.3% of the whole FEC (2013) to 33.2% (2014). In the utility sector, the 2014 consumption was lower at 13%, and in services, it was also lower at 4%.





Final energy consumption - sector distribution, 2013-2014.

Source: NSI

A key factor for achieving the national indicative target for energy savings, in relation to Directive 2006/32/EO and Directive 2012/27/EC, is implementation of individual targets for energy savings. According to the Energy Efficiency Act, these individual targets are set for three groups of obliged entities: energy traders; buildings owners – state or municipal properties (with actual space no less than 1000 m²); and owners of industrial systems, with annual consumption of no less than five MWh. The total volume of the individual targets expected to be achieved in 2016 was 5984 GWh (516 ktce).

A number of public financial sources are available for the various Bulgarian entities to support their efforts in the above-mentioned directions (ASED, 2016). Apart from those, which are oriented specifically to the energy efficiency of the building stock (reviewed in the next section of this report), the following specific financial lines are currently in place:

- The Kozloduy international fund, managed by the EU in support of the Bulgarian accession negotiation obligation to close modules of the Kozloduy nuclear power plant. Apart from its specific assistance in these processes, in 2015, in its 'non-nuclear' component, it supported two projects for improving the energy efficiency of public-owned buildings, for a total of EUR 30.4 million. The projects covered 180 local buildings (such as schools, hospitals and libraries), as well as renovation of the street lighting systems in 15 municipalities. The estimated impact of these investments were energy savings of 103 560 MWh/y, and greenhouse gas emissions of 37 793 t CO₂ eq/y.
- The energy efficiency and renewable sources credit fund, www.bgeef.com. In 2015, it granted credits to six energy-efficiency projects, with a total of approximately EUR 0.76 million, with an expected impact of savings amounting to 1865 MWh/y energy, and 2.8 kt CO₂ eq/y of greenhouse gas emissions.
- The BG04 programme 'Energy efficiency and renewable energy', subsidised by the European economic space, according to a Bulgarian Memorandum of Understanding with the donor countries: Iceland, Principality of Liechtenstein, and the Kingdom of Norway. Accordingly, the whole programme budget totals EUR 15.6 million, 85% of which is granted for free, and 15% is co-financed by Bulgaria. The programme comprises four grant schemes, a fund for bilateral relations, and preliminary adopted set of projects.



Individual energy savings targets, 2016

(source: Agency for sustainable energy development)



Green buildings

Target financing sources

In addition to the general energy efficiency (EE) and renewable energy sources (RES) assistance sources, mentioned above, a set of financial tools is also available in Bulgaria, their specific target being the improvement of energy efficiency in the national building stock, including:

- EBRD credit line for EE in communal facilities. In 2015, it supported 3052 projects for energy-saving measures of homes, with a total budget of approximately EUR 5.003 million, and with expected impact of 14 145 MWh el/y energy savings, and 9661 t CO₂ eq/y savings of greenhouse gas emissions. Beneficiaries may be households and associations of owners, receiving consumer credits plus free technical and financial assistance.
- The operational programme “Regional development 2007-2013”. Financed by the ERDF, in 2015, a total of 155 building reconstructions reached the closure phase for a total of 2172 homes. The estimated impact of these interventions is 16 121.49 MWh/y.
- Rural development programme 2007-2013. Financed by CAP, through its measure 321 ‘Basic services for the population and the economy in the rural areas’, it enables energy-efficiency interventions. These include, among others, activities for EE investments or for construction or rehabilitation of RES facilities for generating heat or electricity to municipal or public buildings; and the development of a distribution network for biofuels. In 2015, this measure provided total financing of approximately EUR 132.308 million (but no estimations are available for the share of EE and RES measures in these projects, or for their expected impact).

National programme for energy efficiency in multi-family-residence buildings

The programme was established by the Bulgarian government by CoM Decree N18/02.02.2015, and provides for the renovation of multi-family-residence buildings, through assistance on behalf of the Ministry of Regional Development and Public Works (MRDPW) for their energy efficiency. It covers the entire country with a budget of approximately EUR 512.821 million. Eligible facilities are those that are constructed in an industrial manner and have at least 36 apartments. During the contracting phase of programme implementation, 1731 contracts were signed in 2015, and 1582 in 2016. To date, 2019 buildings have received practical assistance and reconstruction is ongoing in 401 buildings. Preparatory activities have been implemented in 1899 buildings, and reconstruction has already been completed in 91 buildings. Continuation of the programme is very perspective as during the initial campaign alone, 4749 owner associations were established – which is significantly more than the number of contracts supported (this being obligatory as a prerequisite for such assistance).

At the same time, although this is a good initiative, the impact of the programme to date is minimal. According to MRDPW estimates, there is a gross building stock of more than 16 000 buildings from the Socialists’ times in the country, which meet the same criteria (so-called “panelki”) but remained untouched during the first edition of the programme, and by the parallel efforts of the ERDF-financed “Regions in growth 2014-2020” operational programme. Even for the small number of buildings already restored the results are modest, as the improvement achieved in their energy efficiency (and required by the programme) only reached class ‘C’, but nothing more ambitious. The restoration technology may also be criticised as it uses traditional approaches and materials, not energy-efficient or biodegradable ones (such as various plastic foams). Furthermore, the administrative decision to assist only multi-family buildings, during their owner associations (reaching the support of at least 95% of their members), also may have been significantly optimised, as in practice negotiations with 36 or more neighbours appeared to be a significant constraint on such improvements, and an even larger number of such local initiatives all over the country have been thwarted by such unsuccessful negotiations (MRDPW, 2016).



РЕЗУЛТАТИ ОТ НАЦИОНАЛНАТА ПРОГРАМА ЗА ЕНЕРГИЙНА ЕФЕКТИВНОСТ



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Implementation of the national energy efficiency programme – some examples

(MRDPW, 2016)

Сгради недвижими културни ценности / паметници на културата съгласно стария закон /



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Implementation of the national energy efficiency programme – immovable cultural monuments

(source: MRDPW, 2016)

A pilot public passive building: the 'Sun' kindergarten in Gabrovo

Luckily, an opposing example is already in place, showing what public energy-efficiency projects should look for. In 2012, the first Bulgarian administrative passive building was completed as a municipal kindergarten in the city of Gabrovo. Support for its development came from the project 'PassReg - Regions of the passive buildings and the renewable energy', under the 'Intelligent energy in Europe' programme.

Ultimate energy efficiency was the main criteria in the complex planning and construction of the two-storey building. This was reflected in a number of features, including: the planning of the facility orientation and



its internal spaces, the provision of maximal sunshine opportunities, and the wall, roof and window energy-efficient materials and covers, while, at the same time, providing a constant flow of fresh air. In addition, all the existing administrative requirements for such types of building were met, in terms of existing spaces, their organisation and complementarity (including classrooms, toilets, internal and external play spaces, a medical centre and organising alternative entrances). Some extra facilities were also provided, such as floor heating and an integrated thermo-pump installation, while the overall design reflected its specific functions and target groups to the maximum.

Following its completion, the new public facility received a formal passive-building certificate, issued by the 'Passive House Institute' in Darmstadt, becoming the first such building in Bulgaria. The project received the national 'Building of the year' prize in 2015 (Municipality of Gabrovo 2016). It would be very satisfying if more Bulgarian public administrations and investment programmes followed this example.



The first public passive building in Bulgaria – the 'Sun' kindergarten in Gabrovo

(source: Municipality of Gabrovo, 2016)

Water management

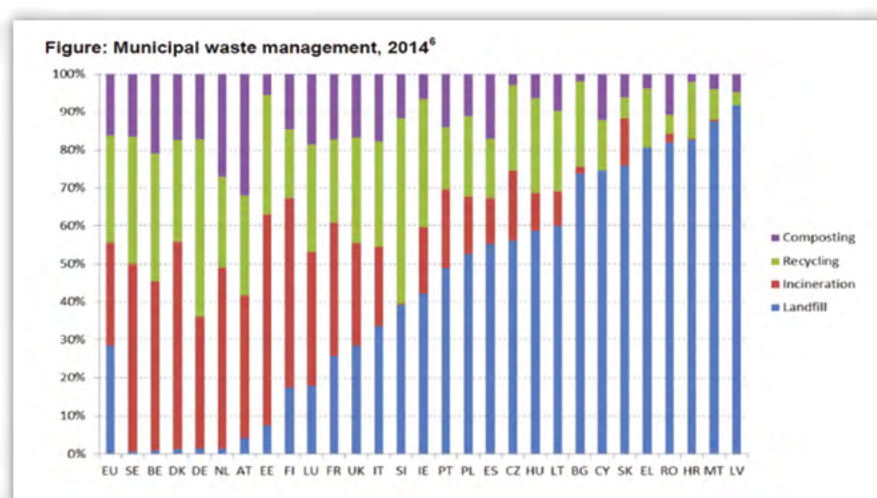
The existing water-management systems form one component of Bulgaria's basic infrastructure requiring substantial renovation but with significant potential as an engine for developing the green economy. According to EU requirements in relation to Directive 91/27 on the settlement waste-water treatment plants, there are 364 agglomerations in Bulgaria with more than 2000 eq. inhabitants who have to be covered by the services of such plants, including 256 of them in the range of 2000-10 000 inhabitants, and 108 in the range above 10 000 inhabitants. To date, the requirements in relation to waste-water collection have been fulfilled in 14 small agglomerations and 13 agglomerations with more than 10 000 inhabitants. The requirements for waste-water treatment have been fulfilled in 24 smaller and 17 bigger agglomerations. Only two agglomerations with more than 10 000 inhabitants have already met the Directive's complex requirements, while projects are ongoing for such complex implementation in 38 more agglomerations.

In Bulgaria, the drinking-water supply service has good coverage and quality across more than 5000 settlements (both urban and rural), with more than 75 000 km of centralised pipelines. Some municipalities, situated in only two districts – Kardjali and Smolyan – are not yet included in this full coverage. The water quality also meets the health standards in 95% of the urban municipalities, and 90% of the rural, although seasonal or incidental variations are also observed in some of them, especially in rural areas. Conversely, in the larger areas (servicing more than 5000 eq. inhabitants), Bulgaria is one of ten EU countries meeting the quality standards (in chemical, microbiological and organoleptic terms) in 95% of cases. Meanwhile, the monitoring of these systems has been criticised on behalf of the European Commission services (for its insufficient scope, volume and frequency): it states that in 55.5% of the bigger water supply zones monitoring does not meet the EU requirements. Meanwhile water supply losses are high (up to 60%), and maintenance of their facilities is insufficient. According to a recent World Bank inventory, the estimated funding required for their renovation varies from EUR 325-400 million per year, some EUR 200 million of which have to be treated urgently (MOEW, 2017).



Waste management

The national waste-management systems also require significant further investment in order to provide better public services for the Bulgarian population. For instance, the graph below shows the country's recent performance in municipal waste management, compared to the EU-28 MS. According to the data, Bulgaria remains one of 10 EU countries with the highest levels of landfilled municipal waste – with more than 70%. At the same time, the share of recycled waste is also relatively high – at more than 20%. Seen as an opportunity, this is a very perspective business, as well as a policy niche for further developing the green economy in Bulgaria, combined with a significant improvement in the quality of life for a notable share of Bulgarian households, and in line with improvements for local environmental protection. Meanwhile, in so doing, the opportunities for incineration (with their current small share) should continue to be ignored as they represent a lower level in the EU's '3R' (reduce, reuse, recycle) waste policy and hold significant threats for both the health of local inhabitants and the international policy for climate change mitigation via a drastic decrease of global greenhouse gas emissions.



EU-28 MS performances in the treatment of their municipal waste flows, 2014
(source: Eurostat, 2017) (EC: 2016iii)

Over the years, since 2004, a trend has been observed in the steady fall in the municipal waste gross volume, of around 4%/y, as well as in landfilled waste flows, at 3%/y. Currently, 72% of municipal waste is landfilled, half of which is biodegradable. According to the national targets for the share of landfilled waste, before 2020, landfilled biodegradable waste should fall to 35% while the volumes for recycling should rise to 50%. The current national waste-management plan 2014-2020 provides relevant regional targets for the separate collection of no less than 50% of their volumes in 2014. Currently, there are only three facilities for treating biodegradable municipal waste (in Varna, Plovdiv and Sofia), so significant further investments should be made in such facilities.

It is envisaged that the operational programme "Environment" 2014-2020 will provide assistance for fulfilling the national targets, as stipulated by the EU and national legislative acts. A specific topic here will be the ongoing penalty procedure against Bulgaria for defaulting on Directive 1999/31, concerning the landfilling of waste (MOEW 2017).



Land management

Bulgaria is in third place in the EU regarding the share of its national territory covered by Natura 2000 (34.4%). Currently, 199 protected areas have been established in line with Directive 2009/147 for the protection of wild birds, as well as 234 protected areas according to Directive 92/43 for the protection of natural habitats and their wild flora and fauna (13 of them overlapping).

In contradiction to this relatively large share of protected natural areas, and according to a report on paragraph 19 of Directive 92/43, approximately 88% of the status assessments for the established protected habitats are “Unfavourable-Unsatisfactory”, along with 36% of assessments for certain species, and 2.5% of the species are in an “Unsatisfactory-Poor” condition (MOEW, 2017).

At the end of the previous planning period, a national priority action framework for Natura 2000 was assigned by the MOEW to help not only with integrated and sustainable local territorial development but also with the development of small-scale green jobs. The document identified the necessary measures for all species and territories covered in the protected areas, including the detailed mapping of their borders and internal areas. It also produced a set of relevant specific recommendations for the other national operational programmes in the period 2014-2020. A specific component of these recommendations addressed the opportunities and requirements for integrated assistance in developing local green jobs in neighbouring territories, mainly in relation to the implementation of the territorial management plans. Unfortunately, the managing authorities of the relevant operational programmes (for human resource development, competitiveness of SMEs, and rural development) accepted these recommendations for information only. Additional advocacy efforts are necessary for their practical implementation, including on behalf of the experts, active citizens, and politicians in Bulgaria (MOEW, 2015).

Sustainable transportation

The complex topic of developing sustainable transport in Bulgaria remained unaddressed prior to Bulgaria's EU accession in 2007, alongside the respective access to the ERDF and CF assistance. Even after that, its achievements remain very modest, having an insignificant impact on national and local, transportation schemes for passengers and freight. It has focused mainly on the rehabilitation and minor innovations on some minor routes which already exist rather than complex restoration and restructuring of their interconnections and quality indicators. According to the available NSI data, railways in Bulgaria currently cover 5658 km, with uneven territorial distribution and a very limited number of available cross-border connections. Multimodal transportation (so-called Ro-Ro) schemes also remain somewhat ‘exotic’, as only the two largest Bulgarian seaports, Varna and Bourgas, have installed such facilities on behalf of their private operators, 70.3% of which have been electrified. A significant part of existing routes (more than 90%) were constructed more than 50 years ago, and adapted for speeds not exceeding 100 km/h, or even less, as well as having bridge constructions and tunnels which are highly amortised (including some main passenger routes, such as Sofia-Plovdiv, Vidin-Sofia, Plovdiv-Bourgas, Rousse-Varna, etc.).





Scheme of the main national transport corridors

(source: MRDPW, ARI, NCTD Pls)

Even in this unsatisfactory situation, in 2013, the railways had a share of 26 million passengers (11.9%), and 13 617 million freight journeys (9.3%). In addition, none of the main country transit railway transport routes have been completed, from its input, to its output points, most of them with long stretches still not even started (i.e. Vidin-Kulata, Vidin-Svilengrad, Kulata-Rousse, Kyustendil-Varna/Bourgas, etc.). The EU assistance available since 2007 did not bring about any general changes to this picture. To date, the country's accession obligations have remained completely unchanged regarding better EU incorporation of the Bulgarian transport network, land connections for Bulgarian and EU producers and the intercontinental markets, achieving significant transport mode shifting (from automotive to railway transportation), and higher distribution of multimodal freight facilities and restoration complexes (MT, 2017).

The situation concerning sustainable urban transport is very similar, the only significant expression of which concerns the intense construction of the Sofia metro (with its third metro-line currently under construction), accompanied by a small number of municipal projects installing electric mass-transit lines. Furthermore, the serial Sofia metro projects, although very impressive individually, and having a significant impact on passenger flows in the city squares where the stations are positioned, meet very few of the national demands for complex integrated and sustainable transport services for passengers and freight, at the local, national and international levels (EC 2011, 2013).





The Sofia metropolitan station Serdika

In terms of the green economy, there is still a need for massive sustainable transportation facilities to open their very limited direct entrepreneurial opportunities, due to the high-input capital requirements associated with them, and the very heavy public procurement procedures, dominated for years by a small number of well-known national construction companies (covering more than 90% of all work in this sphere). In the meantime, these sustainable transport opportunities have to be continuously presented and advocated to the municipal and territorial authorities in order to push urban green developments in Bulgaria's urban agglomerations even further.

Sustainable food production

National and international legislation defines the requirements and procedures for developing bio-farming initiatives in Bulgaria. These include, among others, the following specific acts:

- ▶ Order 1/07.02.2013 for application of rules for organic production of agricultural plants, animals and aquacultures, and their by-products, their labelling, and control (SG 49/28.06.2016) (MAF, 2016);
- ▶ Commission Regulation EC 889/2008 (05.09.2008) laying down detailed rules for the implementation of Council Regulation 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control. (EC, 2008);
- ▶ Council Regulation 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control, and repealing Regulation (EEC) 2092/91. (EEC 834/2007);
- ▶ Commission Regulation 1235/98 (08.12.2008) laying down detailed rules for implementation of Council Regulation 834/2007 as regards the arrangements for imports of organic products from third countries (1235/98/EC.).

In this context, relatively small number of farms operate as bio-producers in Bulgaria, although their numbers have been increasing in recent years, partly because of a combined advocacy campaign, involving farmer organisations and NGOs. For instance, according to the data of the Association of bio-producers, in 2016 the number of bio-livestock breeding farms in Bulgaria reached 60, up from 18 in 2014. Also, according to monitoring carried out in the NGO project 'For the Balkan and the people', there are significantly increasing volumes of registered farms, incorporated in different forms of "short distribution networks", such as in-farm production treatment and direct sales in two categories: milk, honey, eggs, fish, birds and rabbits; and products from the treatment of milk and meat (BALKAN-BG 2015).

Significant diversity is observed among the products from the above-mentioned bio-farmers, including, among others:

- ▶ 35 producers of milk products;



- ▶ 6 producers of honey and bee products;
- ▶ 3 producers of hen and quail eggs;
- ▶ 1 producer of chilled rabbit meat;
- ▶ 2 livestock farms;
- ▶ 8 rural tourist operators;
- ▶ 3 other product lines, such as bee bases, sweets and peppercorns.

A further impact of this project is developments in the regulation of ecosystem services, with their incorporation into the Forests Act, as well as the adoption of Order 18/07.10.2015 for the inventorying and planning of forest territories, and a draft Regulation on the public exo-system benefits from the forests, a pilot legislative effort in Bulgaria. As soon as it receives the recognition and policy support of the Bulgarian government, and the large national branch organisations, this legislation may become the basis for further waves of small-scale green businesses in Bulgaria's rural and mountain municipalities.

Non-government green jobs – added-value business initiatives

Apart from bio-farming, and outside the public-procurement-driven environmental service market, a number of other small-scale green business approaches are also provided in Bulgaria. Unfortunately, no structured econometric observations cover this component of economic activity in Bulgaria. Meanwhile, their orientation towards a number of classical productive lines, adding value to certain local natural products, and the relatively low start-up financing required, allow for their wider multiplication in Bulgaria, as well as in other countries.

'Lydia' - the apple-goji berry bio-vinaigrette

One such activity concerns the production of bio-apple vinaigrette, developed in Dolno Belotincy village, situated in Montana district, in north-western Bulgaria. Initially developed in 2010 by the entrepreneurial family of Anna and Ivaylo Zdravkovi (partially as the result of pressures resulting from unsuccessful marketing of their current apple production), over the years it emerged as regards its marketing network and variety. Currently, six different types of bio-vinaigrette are available, using the original apples, and with various added ingredients (such as herbs, fruit and their unique trademark – the famous goji berries). The basic treatment technology was also developed, following valuable advice from two national bio-treatment specialists, Professors Elena and Stoycho Karovi.

Thanks to its good flavour and healthy ingredients (including vitamins, minerals, antioxidants, potassium, fibre, etc.), as well as to its excellent culinary and healing properties, the entrepreneurial family's production is already well recognised under the 'Lydia' label, on the national market as a bio-food component, and is available in a number of different target stores as well as in Bulgaria's larger distribution networks (Budna era, 2017).

The probiotic bio-crackers 'CultuRAW'

A similar initiative, with an even greater market impact, is that of the family company 'Biostyle', which specialises in the production of bio-food and probiotic crackers and snacks, which was started in 2010 by Evgenya and Dimitar Stoimenovi. Their activity is so successful now that they are exporting regularly not only in Europe, but also in Australia and New Zealand, and covering 15 different countries already. Their product range includes various types of whole-grain sweets and wafers, handmade according to traditional local recipes, and certified as bio-products with proven natural origin, including their uncooked 'CultuRAW' snacks, with probiotic 'Goody'. Their marketing partners include more than 500 shops, among them small



bio-health stores, as well supermarkets such as Kaufland and Billa. And their annual financial target for 2017 is EUR 180 000 (Capital, 2017).

‘Detelina’ nuts and dried fruits

Somewhat similar to the previous case, but with a longer history and making a larger economic impact, the family company Detelina started in 1989, in the city of Sevlievo, with roasted sunflower seeds, peanuts and almonds as its first products. Currently, Detelina is one of the larger natural food companies with a wide range of roasted and raw nuts, dried fruits and vegetables, and with large, modern production and storage facilities. It is the first business entity to respond to the global trend in the distribution of natural and healthy foods. Their international market destinations include a number of countries in the EU, as well as the USA and other American and Asian countries. It is the first Bulgarian company to be certified (back in 2004) under the HACCP and ISO 9001:2000 standards. Subsequently, in 2008, the company also received the ISO 22000 certificate, and in 2016 the IFS Food certificate. Its marketing partners are the largest marketing networks in Bulgaria, including Billa, METRO, Lidl, Fantastico, 345, Dar, etc. (Detelina, 2017).

Roobar - bio-organic-superfood bars

Another similar story about a natural-food, added-value bio-company is also one of the most impressive. ‘Roobar’ started in 2012, with family enthusiasm and creativity for natural foods. Currently, its products reach 46 countries on four continents, and it sells almost 1 million bio-bars every month. The production, implemented at their own productive base, meets the highest quality standards in this area, including the European bio-food regulation, and proven with Balkan Biosert, Kosher-London, and KLBD certificates. It should also be noted that having such a large international scope for their import-export activities, it seems likely that the company’s activities have a significant greenhouse gas emissions impact which could diminish their overall bio-natural orientation (Roobar, 2017).

The best green business in Bulgaria: innovative multi-purpose thermal insulation from textile waste

Apart from the bio-food component among green economic products, there is another company in Bulgaria which is making an innovative contribution to the multi-purpose “business with a cause”. The ‘Habitat Social Business Solutions Ltd’ company, established at the end of 2001, is a Bulgarian daughter business entity of the international network ‘Habitat for Humanity International’, which focuses on the needs of homeless and vulnerable groups in more than 70 countries around the world. It got off to a quick start by developing ‘TIPROT’ – an innovative thermal-insulation material produced as a non-woven fabric from textile waste. For this the company was awarded an EU-supported project from the operational programme “Competitiveness of the Bulgarian economy”, supporting the SME sector. Through this project, the team, comprising a number of professionals (in the spheres of waste management, non-woven fabric, building materials and insulation, and energy efficiency) succeeded in designing, producing and developing their idea up to production and marketing promotion. In addition to promoting a new, cheaper and non-toxic alternative to standard building insulations (mainly various synthetic foams), the products have one more very innovative role in the context of waste management (exactly in line with the ‘blue economy’ recommendations: “Take two problems and transform them to a single decision”). Namely, it promotes the direct reuse of significant quantities of waste from textile products and materials in Bulgaria. According to NSI data, only around 5% of national textile waste is recycled, and up to 20% of this is exported to third countries (and this is the case even excluding textile waste, covered in the general waste-collection system, for which no specific measurement is available). Hence, the analysis provided identifies a large volume of available free raw material, as well as the capacity for a significant contribution to the objectives stipulated within the EU Framework Directive on waste management 2008/98/EC, and in Regulation (EC) 305/2011 (09.03.2011) and indicated in the ‘Roadmap to a resource-efficient Europe’, published by the European Commission on 20.09.2011 (2008/98/EC) (EC, 2011i) (EC, 2011ii). Additional TIPROT treatment may give a product extra properties, such as its anti-microbial impact and non-flammability. The best forms of product application cover its use as an interior insulation, or as a stuffing for ‘sandwich-type’ thermal-panels.



It is also very suitable for montage by non-qualified people, thereby providing social job opportunities for certain vulnerable groups. Currently, both the marketing and production capacity of the innovative product is under further development which may lead to more significant impacts in the future (HSBS, 2015).

With its content and approach, this business initiative meets a significant part of the set assessment criteria, listed in the analytical framework of the project. Namely, the marketing product meets the following specific criteria:

- ▶ It directly contributes to the climate change mitigation, via provision of an environmentally friendly and cheaper alternative in the important range of energy-insulation materials.
- ▶ The TIPROT product is also contributing in the problematic sphere of textile waste management, transforming it into a valuable raw material.
- ▶ The concept and the whole production process is based on a unique, globally-wide innovation, in line with the natural principles “Food, not waste” and “Take two problems, and combine them in a single solution”, highlighted in the blue economy concept, developed by Gunter Pauli (Pauli, G., 2010).
- ▶ The application field of TIPROT also has a two-way socially related contribution, taking into account the needs of low-income vulnerable groups, for both improvements in their housing and their employment opportunities as workers in the teams involved in its application.

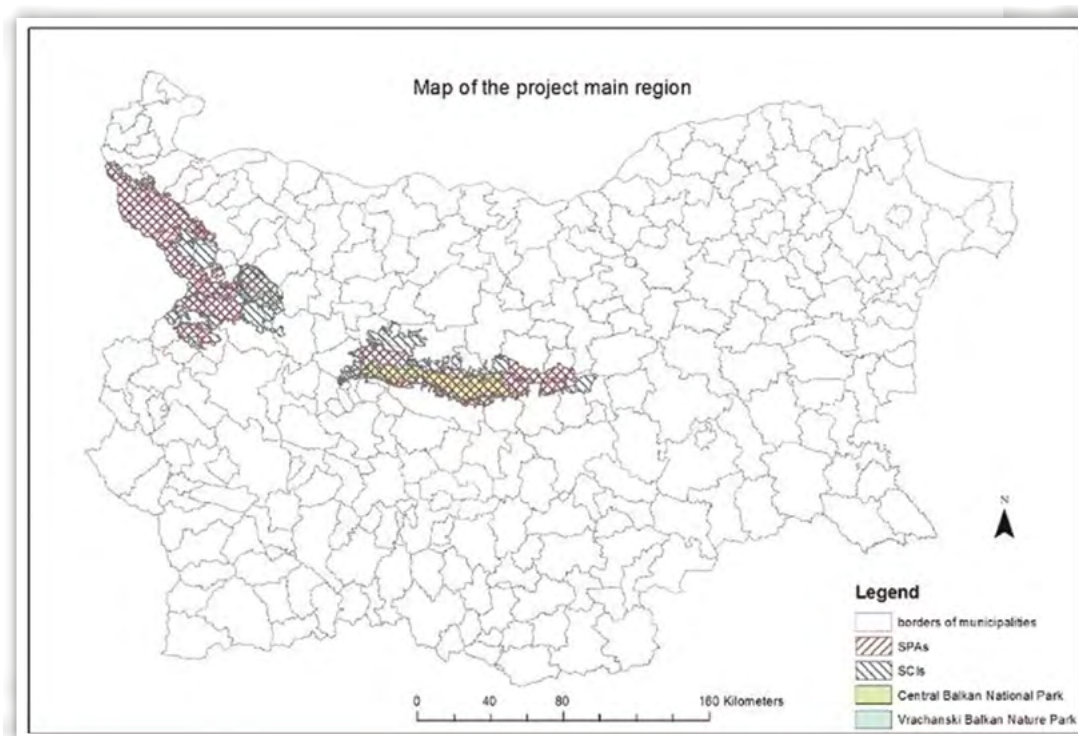
Pilot mechanisms for promotion and assistance of small-scale sustainable business initiatives: the Bulgarian NGO model

A significant factor for a more systematic promotion of green businesses in Bulgaria is the development of their promotional and capacity-building models. It is necessary that the institutions in charge recognise and introduce such approaches in their policy-making activities. These may include various components, such as business-incubators, capacity-building training, various forms of business assistance, promotion of risk financing, etc. Currently, no such approaches are being implemented on behalf of the national authorities, which is definitely a restrictive situation for these developments. It seems that the Bulgarian national institutions themselves need a significant pilot push in this direction, and/or examples for building up their own capacities.

NGO replacing the government: complex approach for promoting green businesses

To provide such an example, in 2013, a coalition of national NGO organisations initiated a pilot demonstration project called “For the Balkan and the people”. In addition to its dissemination, advocacy and legislative activities, one of the project’s components was dedicated to the assistance and financing of small-scale green projects. Some of them represented traditional green start-ups while others took the form of public private partnerships, where the selected private partners provide for the future their fixed financial assistance for the management and development of some neighbouring natural territories, such as the Vrachanski Balkan and Centralen Balkan natural parks.





Territorial scope of the assistance

(source: Association of parks in Bulgaria, 2017)

The project really achieved its objectives, providing start-up green enterprises with a gross sum of EUR 116 000, while attracting more than 30% leverage effect, with up to EUR 152 220 in general project funding on behalf of the selected project operators, and various additional environmental and social benefits. A number of such prospective multi-purpose projects were selected in the process, including:

- Establishment of professional photography hunting shelters in the Ponor Mountain region, with the aim of protecting vulnerable local populations and change the local community's attitudes. Project budget: EUR 20 250, assistance provided: EUR 12 500.
- Sheep farm and beehives in the Uzana area in the Central Balkan, which contributed to protecting the local landscape, and pollinating the wild flora. Project budget: EUR 42 626, assistance provided: EUR 10 000.
- Homemade traditional sweets using local natural products, and development of a local traditional visitor centre in the Western Balkan: value added to local sustainable livelihoods and promotion of local biodiversity and traditions. Project budget: EUR 39 000, assistance provided: EUR 29 100.
- Development of supporting facilities for cycle-path corridors in the Western Balkan, providing prerequisites to sustainable local tourism. Project budget: EUR 20 858, assistance provided: EUR 18 772.
- Establishment of a rural tourism visitor centre 'A day on the farm'. Development of sustainable local tourism, via demonstration and popularisation of local livelihoods. Project budget: EUR 17 730, assistance provided: EUR 15 360.
- 'The wood in the Bulgarian livelihood over the centuries' visitor centre. Development of sustainable local tourism, highlighting the folklore and aesthetic aspects of traditional wooden products. Project budget: EUR 15 227, assistance provided: EUR 13 704.
- Multi-purpose folklore visitor centre for sustainable local tourism in the 'Drashkova meadow' area. Project budget: EUR 21 140, assistance provided: EUR 16 555.

As a result of the above-mentioned activities and achievements, the "For the Balkan and the people" project was awarded the 2016 EC Natura 2000 prize in the category "Social-economic benefits" (BALKAN-BG 2015).



NGO provision of small-scale green business alternatives

Another Bulgarian NGO exercise “how it has to be done” aimed at the passive national administrations is the initiative “Do it yourself: The EU funds in your hands”, initially launched back in 2012 by Za Zemyata (Friends of the Earth - Bulgaria). Its aim is to collect various grass-root ideas for sustainable local development that subsequently may be multiplied by the ‘big’ EU programmes in Bulgaria. Along with a vast variety of different alternative ideas (such as green education for children and adults, building houses using traditional techniques and materials, mountain biking facilities, local charging devices and self-made RES, etc.) some of the winning ideas comprised completely alternative and innovative green business concepts that truly deserve further implementation, dissemination and multiplication. Two of these supported sample cases are:

City roof bee-keeping

This practice has been widely popular abroad for decades, when as far back as the Weimar republic times (1919-1933) beehives have been housed on the roof of the municipality of Berlin, and nowadays large urban apiaries for both commercial and exploration purposes are widely situated, even in cities like Paris, New York, Tokyo, etc. Nevertheless, today it remains unknown and severely under-appreciated in Bulgaria. To mitigate this disappointing situation, in 2012, two young entrepreneurs, Teodor Georgiev and Elena Zheglova, proposed in their pilot demonstration project to accommodate a couple of beehives on the roof of the Sofia puppet theatre. Proving in practice that both the bees and their neighbours may not only survive together, but can also make progress in good, healthy and profitable symbiosis, the project still serves the development of the young Bulgarian urban beekeeping initiative, which has grown in recent years in close cooperation with the association of bio-producers in Bulgaria. This new context, launched among others by the two enterprising students, seemed to achieve a wider follow-up impact in April 2017, when the Sofia municipality launched its bee museum for citizens, both children and adults (see photo below), providing a significantly more favourable basis for the further development of this profitable and healthy green business in Bulgaria.



Bee museum, Sofia, Bulgaria
(source: Sofia municipality 2017)

Pilot food forest to provide re-cultivation and local livelihoods

This ancient, yet innovative permaculture method, re-promoted after 1980 by pioneers like Robert Hart in Europe, Toyohiko Kagawa in Asia and Jeff Lawton in Australia, was also promoted in Bulgaria (and supported by Za Zemyata) in 2015 by the grass-roots NGO ‘Ura-Gora’, set up by two young settler families in their



‘manor house’ in the deforested mountain village of Malomirovo, near Elhovo. Their multitude of purposes comprise, among other tasks: providing a sustainable local means of a livelihood; helping to improve their surrounding nature; and establishing a learning and practice base for disseminating food forestry to wider supporter groups and individuals. Since trees grow much slower than the traditional vegetables, the project is still at a very early phase. However, its further realisation needs more attention and even policy incorporation due to the widely proven international and multi-millennial results of the approach being applied.



Ura-Gora permaculture 2017 workshop brochure and photo
(source: Za Zemyata, 2017)

PESTLE analysis

The state of green economy in Bulgaria is analysed below according to political, social, technological, legal and environmental criteria. The analysis reveals the following:

Political

- ▶ A political focus on the green economy exists, but the pace of developing environmental facilities is slow (including management of waste and waste-water).
- ▶ There is a political focus, although at a slow pace, of the energy-efficiency public investments (administrative buildings and residential homes).
- ▶ Political focus exists, but there is limited public financing for the development of sustainable transport services (urban electric transit, national and international railway and inland water transport services).
- ▶ Political focus is demonstrated by plenary funding earmarked for the development of the Sofia metro.
- ▶ Significant financial restrictions in place for green initiatives in local self-government administrations.
- ▶ Low political understanding and focus regarding the need for and opportunities provided by the green economy.
- ▶ Lack of government-driven dissemination and incubation of green economy business initiatives.

Economic

- ▶ Remaining extremely low in resources and the national economy's energy efficiency in comparison with the EU average and other Member States.
- ▶ Satisfactory share of RES in the national energy mix.
- ▶ Not well identified, and a low share of the general green economy in national GDP and employment.



- ▶ Insignificant share of non-public green business initiatives.
- ▶ Complicated, restricted, and non-transparent banking procedures for the provision of start-up and risk business financing, and an underdeveloped national capital market.

Social

- ▶ Low mass recognition and awareness of the environmental economy, its patterns and opportunities.
- ▶ Groups of young urban population interested in both the demand and supply parts of green economy business methods.
- ▶ Past and current mass campaigns, NGO initiatives and demonstration projects for the dissemination and incubation of green economy business initiatives.

Technology-related

- ▶ Accessibility of rich global information for various international technologies and business approaches for green economy development.
- ▶ Prevailing mainstream decisions for the development of existing local green businesses, a low level of eco-innovation development, and low entrepreneurship for their introduction.

Legal / Policies

- ▶ Relatively well-covered legal definition of the existing components of the environmental economy (due to harmonisation with EU regulations and other legislation).
- ▶ Complicated permission-oriented administrative procedures, and poor accessibility to e-government administrative services.

Environmental

- ▶ Rich national biodiversity and favourable environmental conditions for various local green business initiatives.
- ▶ Existence of past negative cases for business-driven environmental and health influences.
- ▶ Lack of existing cases for positive business-driven environmental and health influences.

Conclusions and recommendations

On the basis of the above-mentioned findings, as well as the personal opinions of some of the entities involved, the following set of aggregated conclusions for the status of green economy development in Bulgaria should be highlighted:

1. Bulgarian performance in the areas of resource and energy efficiency and eco-innovations remains significantly lower than the EU average and almost all the other EU Member States.
2. No specific understanding or recognition of the green economy has been observed by the Bulgarian government either as an urgent policy-making issue, or as a prospective tool for change, in some of the problematic areas in Bulgaria.
3. As far as ongoing green business initiatives or promotional campaigns are concerned, they are driven by a small number of private SME businesses, NGOs or R&D entities.
4. Intensive development of infrastructure facilities has been observed in waste management and waste-water management.
5. The government started to provide pilot rather than consistent and large-scale assistance for 'greening' large national building stock.



6. No significant investments are in place to address the issue of the sustainable inter-city and international transportation of passengers and freight.
7. Some public investments have already been made in sustainable urban transport, especially in relation to the Sofia metro.
8. Non-specific assistance for business development and 'greening' is in place, especially for start-ups and innovative enterprises.
9. The innovative benefits available and naturally derived solutions have been underestimated among all groups of stakeholders.
10. There are a number of risks and barriers present in the business environment for Bulgaria's green economy.
11. A leading role but limited leadership has been observed in government subsidies and state public procurement procedures for developing green businesses in Bulgaria.

In this context, the following key recommendations for a more intensive green economy regional development need to be taken into consideration by those involved:

1. There is a significant need for follow-up initiatives for the wider dissemination and more effective advocacy of the existing green economy approaches and R&D.
2. For that purpose, wider acceptance and initiative are required on behalf of the initiative entities for forming wider win-win coalitions based on professional or specific interest criteria (including business groups and organisations, local authorities, local and national educational institutions, research and experimental entities, etc.).
3. To achieve such developments, wider recognition and publicity are required for various external-ity and cumulative factors, currently remaining apart from the public debates (such as the real price of various grey and green investments and initiatives, including their complex impacts not only in financial terms, but also their contributions to the local micro-economies, human health, responses to certain specific community needs, incorrigible natural damage, direct or hidden environmental costs, etc.).
4. Efforts are also required to achieve more green business R&D activities (individually or in cooperation with other, inter-regional entities), since they are expected to bring the highest added value in these spheres.
5. Wider civic and political pressure is required on governmental institutions for their further recognition, mobilisation and involvement in their roles towards the green economy, namely formulation and establishment of common and EU-consistent standards and capacity-building tools for such individual businesses and framework initiatives which, *inter alia*, will result in the groups and communities involved becoming less dependent of state-budget subsidies and donations, thereby reducing the pressure on the public debt and governmental finances.



4. Green Economy Overview – Macedonia

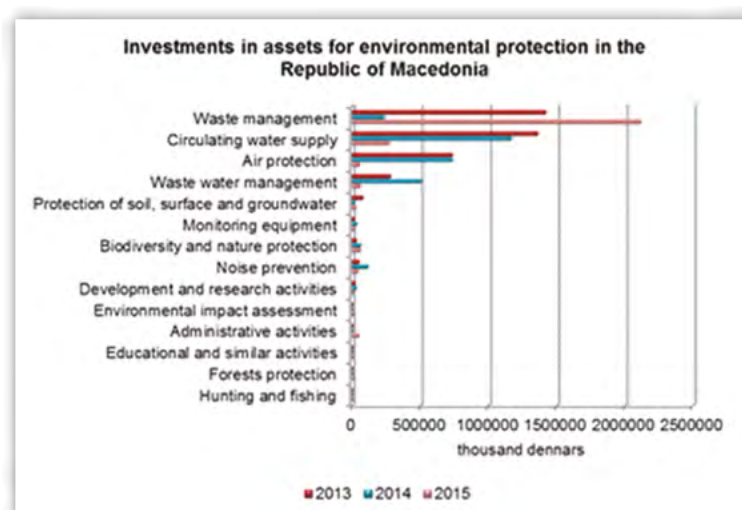


As part of the *Revision of the Economy in the Balkans: Change Policy not Climate!* project, this chapter provides an analytical review and expert assessment of the green development potential of several economic sectors in the Republic of Macedonia. The economic sectors analysed have been chosen for their influence on climate-changing conditions through greenhouse gas (GHG) emissions as well as their potential for sustainable green development. The research results are presented in a PESTLE table below, pointing out the most significant outcomes from the research. The assessment then goes into an analysis of the national potential for green jobs in order to trace the global trends which should result in poverty reduction and environmental protection. The chapter ends with several case studies providing positive examples towards green economy transition on a national level.

Macedonia faces significant environmental issues, mostly as a result of human activities. Trying to reach a higher economic growth and better standards for its citizens, for a long period of time now, all the elected governments have emphasised economical rather than environmental issues. These unacceptable practices combined with changes in the climate, extreme weather conditions, water scarcity and natural disasters have only made the consequences for the environment and its natural values worse over the last few years. In addition, there are 16 industrial 'hot spots' in the country, inherited from the previous system, that have been working on the principles of a brown economy, none of which has been remediated to date. Thus, there is an urgent need to lessen the environmental pressure from existing economic practices and map out a path for green economic development to adapt to the forthcoming climate change.

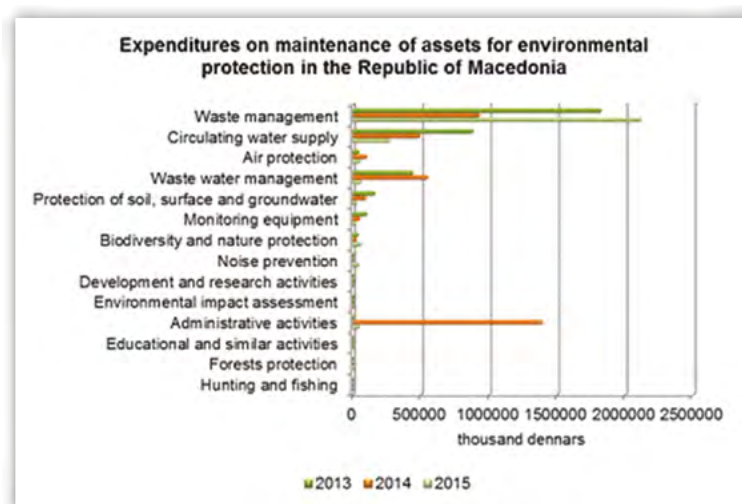
Current environmental protection investments and expenditure in Macedonia

The response to environmental concerns in the Republic of Macedonia, through the demand and supply for environmental protection services, is poor. The available data on environmental protection investments and expenditure in the period from 2013 to 2015 show a declining trend. In 2014, total investments and expenditure on environmental protection was reduced by 12% compared to the previous year, and the trend continued in 2015 by another 29%. In 2013, overall investment in environmental protection was 12% higher than the environmental protection expenditure; in 2014, this expenditure was 25% higher than the investments, and the values for investments and expenditure in environmental protection in 2015 are very similar. Although this time period is too short for an accurate conclusion, the analysed data show inconsistencies in environmental policy on a national level, creating a serious threat that we may in future invest more money in environmental remediation after the damage has been done than investing in environmental protection before the damage actually happens. This trend is not common among most EU countries where at least the investment data show almost continuous progress.



Source: Macedonian Statistical Database





Source: Macedonian Statistical Database

In 2015, major investments in assets for environmental protection and expenditure on the maintenance of such assets in the Republic of Macedonia were made in waste management (77%) and circulating water supply (10%). In the same year, all other investments and expenditure in environmental protection assets on a national level had a total share of about 13%.

Air pollution in big urban areas of Skopje, Bitola and Tetovo and the surrounding regions has worsened over the years. The fact that investments in assets preventing air pollution have been declining over the analysed period is unacceptable. Furthermore, investments and expenditure in sectors which have significant green economic potential remain low.

Investments in assets for environmental development and research activities showed an increase of only 1.14% in total environmental protection investments in 2014. Knowing that the transition from the current 'brown' economy sectors towards 'green' ones requires vast investments in new technologies and innovation, there are so many things to be done.

Environmental protection innovations and technologies

A 'Strategy for innovations in the Republic of Macedonia (2012-2000)' has initiated a national transformation into a knowledge-based economy, to enable the country to become a competitive partner on international markets, through its trained workforce and innovative companies. In the environmental domain, the strategy initiated financial support for companies that use clean technologies, make environmentally friendly products, protect the environment and raise awareness of the economical benefits for enterprises. Therefore, in 2013, a 'Fund for innovations and technology development' was created. Although several projects were set up initially, the results of implementing the above-mentioned strategic goals are still not visible.

According to the data on the Global Innovation Index, in 2017, the Republic of Macedonia ranked 61st out of 127 countries, which is its lowest place over the last five years. Based on the data on ecological sustainability for 2017, the country ranked 43rd, its best position over the last five years. Despite this data, we are lacking behind some other countries in the region with regard to ecological sustainability innovation issues. The fact that at the end of 2017, the capital city of Skopje has been ranked among the most polluted city in the world, the interest for the public call for projects in the field of environment organised by the Fund for innovations and technology development, was remarkable.



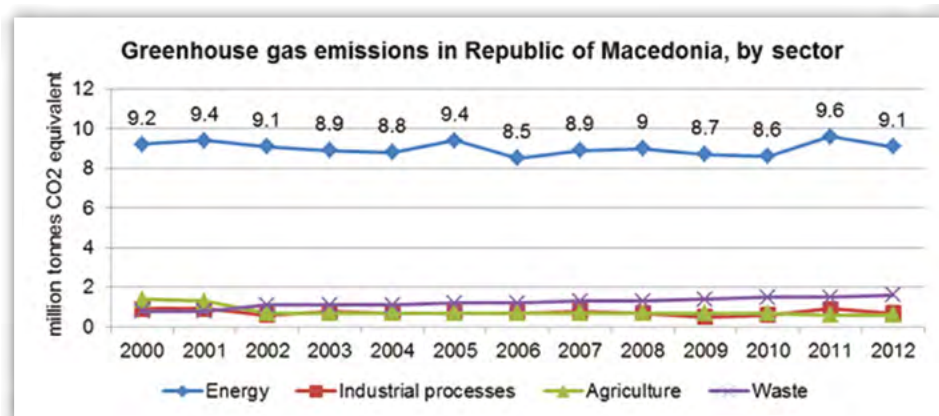
Economic sectors analysis

In this chapter, the research outcomes for the potential for a green economy transition in the Republic of Macedonia are presented by economic sector. The analysis is focused on those economic sectors that have a major impact on climate change through GHG emissions at the national level, as well as great potential for a green economy transition. The data presented were collected from the available literature in the area, and have been used to provide an appropriate PESTLE analysis of the national green economy transition potential.

Renewable energy sources

The current pattern of energy production and consumption in the Republic of Macedonia is the result of a specific combination of natural and historical circumstances. Development of the country's energy sector took place under the auspices of communist central planning and was largely influenced by the political ideologies and economic policies advanced by this system. Therefore, the country had a highly inefficient and centralised network, with an organisational structure that was dominated by state-owned and government-controlled utilities. Prices for energy were kept artificially low, and tariffs for households were, in effect, indirectly subsidised by those charged to industry. In the last 20 years, there has been a dramatic restructuring of the country's energy sector. This has been marked by the liberalisation and unbundling of the former state-run electricity utility, accompanied by increasing energy prices. Today, the price of electricity in Macedonia is not an economic category, but still a social one, regulated by the government. There is unsustainable fossil-fuel electricity generation and as the price of fossil fuels and transport costs are rising every day, the social price of electricity is no longer sustainable as a governmental policy.

Energy is undoubtedly one of the sectors that has put the largest pressure on the environment. The total annual amount of GHG emissions is constantly above 8 Mt CO₂ equivalent per year. The energy sector contributes with approximately 75-80% of the total GHG emissions in the country.



Source: Macedonian Statistical Database

Up to 2015, the total installed capacity of the power plants for electricity production in the Republic of Macedonia was 2,053.25 MW (ERCRM, 2015). The installed capacity of each different type of power plant up to 2015 was:

- Thermoelectric power plants 1,010 MW or 49.19%
- Hydropower plants (> 10 MW) 603.2 MW or 29.38%
- Combined (electric and thermal plants) 287 MW or 13.98%
- Hydropower plants (small hydro plants) 95.6 MW or 4.66%
- Wind plants 36.8 MW or 1.79%
- Photovoltaic plants 16.6 MW or 0.81%
- Biogas plants 3.99 MW or 0.19%



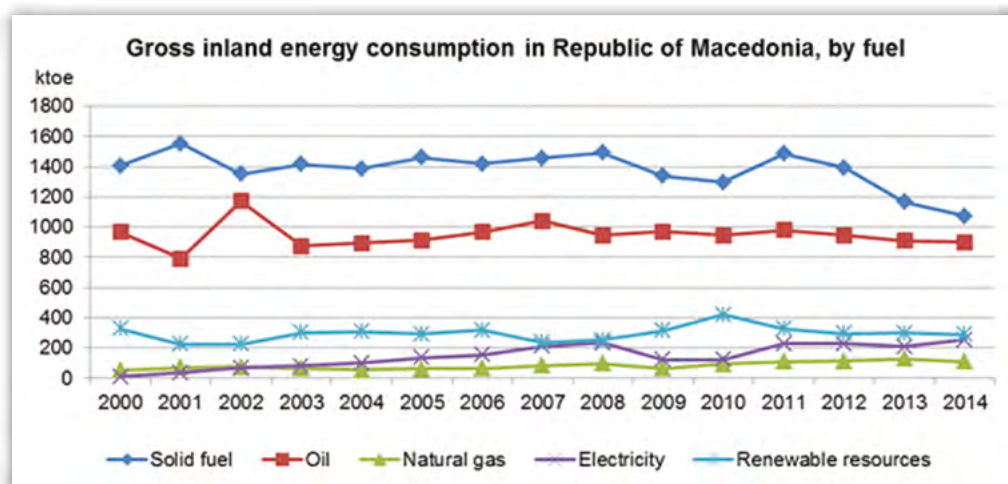
Analysis of the data indicates low electricity production from renewable sources. Although Macedonia has great potential for wind and sun energy use, the country is still way behind the commitments made towards the Energy Community Treaty. It is projected that Macedonia will miss the renewable energy share target for 2020 by more than 5 percentage points, despite currently hosting the largest wind project in the region, located in Bogdanci (36,1MW).



Wind park Bogdanci

Source: www.build.mk

The country's major energy consumers are households at 45% and industry at almost 55% (of which 1.5% is public lighting). Energy consumption is based mainly on the use of non-renewable natural resources, mostly from solid fuel and oil. Over the past few years, renewable energy has had an average share of 10%.



Source: Macedonian Statistical Database

Up to 2010, the only renewable source for electricity production in the country was hydro energy, when, for the first time, an insignificant quantity of solar electricity was produced in photovoltaic plants. In 2014, electricity generation also started in wind power plants. In the same year, the share of renewable electricity in gross national electricity consumption fell to 15.5%, mainly due to unfavourable hydrological conditions.

In practice, the renewable energy market in Macedonia is only functional in the legislation, while the implementation of renewable energy projects is lagging behind, hampered by many obstacles of a legal, financial and technical character.

A national strategy for energy sector development is required, in particular developing a Strategy for the Renewable Energy Market. The latter was already anticipated in the Energy Efficiency Strategy in 2004, and also in the provisions of the Treaty of the Energy Community in SEE and in the National Strategy for EU accession. The renewable energy market is still waiting for an umbrella document for its development.



Furthermore, there are many administrative barriers to the implementation of renewable energy projects, due to inefficiency and politicisation of the public administration, and to the low level of education and lack of systemised training in the specific area of renewable energy.

The exploitation of renewable energy is an expensive technology requiring a stable and constant source of financing. The state is the main supporter of these projects through governmental subventions (such as the quota system, feed-in regulation and quota system, tax incentives/investment grants, 'green loans', 'green taxes'). However, there is lack of domestic financing through the banking sector, and most of the RES projects are financed internationally by international donors like the World Bank (GEF facility), the Austrian Development Agency (ADA) and European Bank for Reconstruction and Development (EBRD).

Green buildings

The basic human need for living in a 'protected environment', sheltered from harsh climate conditions existed long before any concept or demand for energy conservation or energy efficiency. So, building objects for sustainable living is linked not to the sphere of human existence but rather to that of human development and growth. Although this concept has evolved over time, never has it risked jeopardising the primary need for an ambient living home environment.

The rapid and harsh climate changes combined with the need to lower energy consumption in today's buildings has urged many societies to focus more on the process of building green. The pace at which different countries address this urgent issue depends on the social awareness as well as political and professional commitment to the issue of creating a 'green building'.

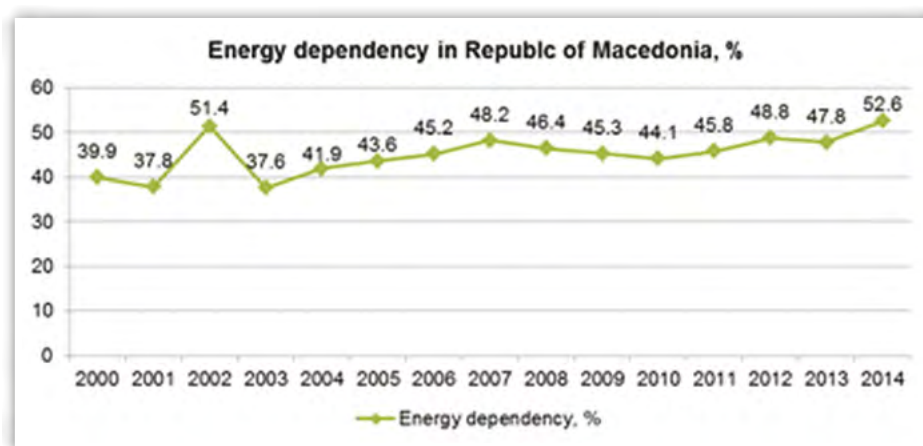
In that sense, the Republic of Macedonia emerged in the early 1990s as an independent state and economically one of the poorest in the Balkan region. The second important aspect was that, due to the specifics of the Socialist system, in which creating homes at any cost for the working class was considered the most important policy, the state itself (SFR Yugoslavia) paid little attention to the quality cost of living conditions in that environment.

In the meantime, due to citizens' impoverishment and low economic standards, most households continued to use fossil fuels such as coal, heating oil and wood, as their primary source of heating in the winter. Large enterprises, like factories, companies, big school complexes and kindergartens, continued to use fuel oil (mazut). All of this combined with citizens' lack of material needs to invest in the renewal of their living environments and buildings, resulted in higher spending on polluting energy fuels which contributed to increasing emissions of CO₂ and polluting PM₁₀ and PM_{2.5} particles in the air, in most big urban environments across the country. Eventually, the topic slowly began to attract attention with the formation of non-governmental organisations.

Over the last decade, energy consumption in the Republic of Macedonia has doubled. The reason for this is greater industrial activity as well as using outdated technological resources and old infrastructure which has dramatically accelerated the inefficient use of energy. According to a published study, residential buildings in the Republic of Macedonia are large consumers of energy, with residential buildings accounting for more than 30% of total energy consumed in this sector and other types of Public Buildings more than 8%. The division in housing consumption is: hot water 17%, electrical appliances 12%, and heating a huge 71% (Petrusevska, 2011).

Energy dependency shows the extent to which the Republic of Macedonia's economy relies on imports to meet its energy needs. According to the National Statistics Office data, energy dependency reached its maximum in 2014.





Source: Sustainable development, 2016 available at <http://www.stat.gov.mk/Publikacii/OdrzivRazvoj2016.pdf>

According to the National Energy Agency⁹, in the Republic of Macedonia all activities regarding these issues are framed in the adopted Energy Law, Strategy for Energy Development and Strategy for Energy Efficiency. Furthermore, in the construction sector a vital piece of legislation on energy consumption in buildings was adopted in which it is stated that every new building should meet basic energy consumption criteria on savings and more eco-aware construction building.

The construction sector is of strategic importance for the country since it provides buildings and infrastructure for the benefit of society. According to data from the State Statistical Office (SSO), it has held an important place in the national economy by generating nearly 6% of national GDP in recent years (5.5% in 2010, and 6% in 2011), and ensuring 5.7% of the total employment (2011). With this rate of increase, the construction sector has become one of the biggest industrial employers in the country. In 2011, the sector comprised 4,400 enterprises, split into legal employment categories as follows: 3,552 micro, 422 small, 57 medium and six big companies. The trend in construction's participation in the gross value added to the national economy remained above 6% (between 6.0-6.8%) for the period 2000 to 2006. Even more important, the construction sector's share in the gross fixed capital formation of Macedonia's economy was around 30% for the period between 2000 and 2006 (Nedanovski, 2013).

A crucial change in applying energy-efficiency measures in buildings occurred in 2010, with the start of pilot project that aimed to assess the savings in energy consumption in collective housing. It was promoted by the non-governmental organisation, Habitat for Humanity Macedonia, as a local partner of the Agency for International Development of the United States (USAID). Three residential buildings were chosen for intervention, providing access to energy measurements. The selected buildings in low-income households used different heating methods (central heating, electricity and heating combined electricity and firewood). Two of the buildings were in the city of Skopje and one in the city of Kumanovo¹⁰.



⁹ http://www.ea.gov.mk/index.php?option=com_content&view=article&id=52&Itemid=&lang=en

¹⁰ http://www.habitat.org.mk/mkd/n_usaid.html





Collective building - Skopje 2010

Collective building - Kumanovo 2010

The aim of the project was to show that energy savings can easily justify the investment in energy-efficiency measures in buildings – for example, changing the windows and external doors, improving the thermal insulation of external walls by reconstructing the facade and roof, and replacing inefficient lighting with more efficient models. Another component of this project was the support and development of a young labour force, illustrating other benefits of improving energy efficiency in collective housing. Twelve graduates were trained and participated in the installation of energy-efficiency equipment in three buildings. In 2014, this feature was used in an independent venture called ‘The Build Up Skills’ project in Macedonia, financed by the EU, which defines the path to be followed over a period of seven years to upgrade the skills and qualifications of the construction workers in the practical application of EE(Energy Efficiency) and RES(renewable Energy Sources) measures in order to meet the national energy targets for 2020¹¹.

Since then, in accordance with the adopted legislation on energy efficiency, numerous projects have been finished on upgrading energy efficiency in the public sector as well as in collective high-rise housing. Local municipalities across the country, especially in Skopje, either individually or by cooperating at the national or international level¹², have undertaken visible measurements to reconstruct the facades and roofs of old buildings as well as changing the heating and climatic systems from traditional polluting energy resources, such as crude oil, to eco-friendly ones like sun collectors, geothermal pumps, natural gas or chipped wooden pallets. Such examples can be seen in different schools in Skopje, such as in the first energy-efficient public high school ‘Josip Broz Tito’ completed in 2014, as part of the project ‘Skopje an energy efficient city’ – where savings were estimated at around 30% – or the rebuilt kindergarten in the municipality of Vevcani which was declared to be completely energy efficient in 2016.

¹¹ <http://buildupskills.mk/>

¹² <http://www.ipa-cbc-007.eu/projects-funded>





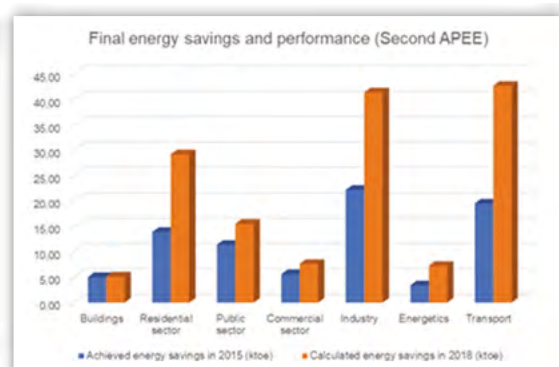
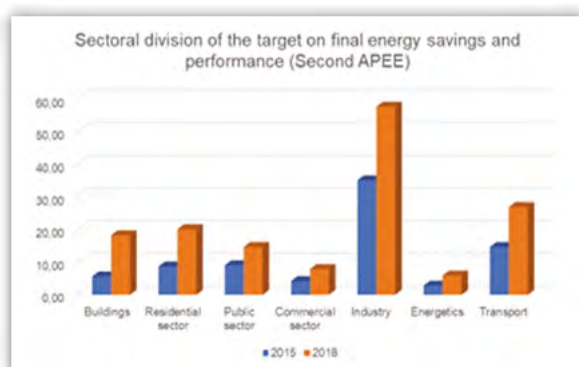
Public high school Josip Broz Tito - Skopje 2014



Kindergarten - municipality of Vevcani 2016

According to the Statistical Yearbook of the Republic of Macedonia from 2016, the construction cost index for new residential buildings has risen by over 30% since 2010. In part, this is mainly due to significant spendings, the higher cost of labour and building materials, as well as the specific regulations on energy efficiency in buildings. Some of these conclusions could not be treated since we do not have precise data as to the number of qualified skilled energy efficiency workers who have been included in the construction of the energy-efficient measurements in new constructions.

Despite these positive trends, the results published in the Republic of Macedonia's 3rd Action Plan on Energy Efficiency for 2015-2018 shows a moderate trend towards achieving the set goals. This document, which is a vital link to the EU goals on energy efficiency, shows a positive trend mainly in the residential buildings sector, which is understandable considering the economical aspects of these investments. Trends are slower and show no signs of improvement for the industry, energetics and transport sector, even for the deadline for 2018.



The overall impression is that Republic of Macedonia, is a long way behind some countries in the region and much more behind the developed EU countries in regards to energy-efficient building.

Sustainable transport

The challenges traditional models of transport impose on today's society with regard to the transition to a completely eco-friendly solutions, demand different and creative thinking to avoid a growing and inevitable structural collapse. In that sense, since the beginning of its independence, the Republic of Macedonia has increased its transport communications. However, having inherited a poor road network, the newly independent state had various issues to tackle, such as migration from rural to urban areas, especially to the capital city of Skopje, which resulted in fewer or no investments in the rural road infrastructure. The state also had difficulties in attracting foreign investments, as investors are unwilling to invest in an area not connected to the major transport routes.



Bus transport and the railway sector are restricted by the small market size and the limited demand, and therefore have few possibilities for reconstruction and investment. The only sector that has seen a significant increase are the automobiles for personal transport. That number rose drastically with the passing of the law on the import of used vehicles by the national parliament, rising from 34,000 used vehicles in 2011 to over 160,000 imported used vehicles in 2016¹³. The average age of these vehicles was more than 10 years. Eventually, a change was made in the law to prevent older cars from being imported in favour of more eco-friendly motorised vehicles with a minimum emission standard Euro 4, from 1 July 2015.



Used car market in Skopje

According to the statistics, 75% of the cars in the country are more than 10 years old, while the proportion of vehicles older than two years fell by 5.5 times compared to 2008. This unforeseen effect resulted in bigger traffic jams, a higher percentage of air pollution and a decline in the use of public transport. To motivate citizens to use public transport, the government became involved in financing the city of Skopje's own bus transport company 'JSP'-Skopje' to buy a new fleet of buses. Although it had the opportunity to choose completely eco-friendly solutions by opting for natural gas or electric buses, the

government decided to buy fuel-motorised vehicles with new generation eco-friendly engines.



New buses parked in Skopje

According to the State Audit Office Report of 2015, the new buses have not resolved the problem of public transport. On the contrary, according to information from the auditors, the public transport problems have worsened, further complicating the city's transport by creating even worse traffic jams¹⁴.

The next change in transport came in 2014 with the government's decision to renew and upgrade the rail transport by buying new trains, locomotives, and passenger and freight wagons¹⁵. The number of rail passengers remains low, mostly because of old and outdated infrastructure. The major part of the current railway lines in operation were constructed more than half a century ago. The current network has no capacity for speeds greater than 100 km/h and, due to the ageing infrastructure, this limit tends to be even lower. The accompanying infrastructure of bridges and tunnels is also outdated having had no significant investment in recent years. According to the available data, the current length of the existing railways in the Republic of Macedonia covers 699 kilometres, with uneven territorial distribution and a limited number of available connections.

¹³ <http://www.customs.gov.mk/index.php/en/patnici-2>

¹⁴ <http://www.slobodenpecat.mk/naslovna/novite-avtobusi-ne-go-podobrija-javniot-prevoz/>

¹⁵ <http://mzt.mk/statistichki-podatotsi/?lang=en>





Railway corridors - Republic of Macedonia

The country's airports in Skopje and Ohrid¹⁶ were also renewed, along with a large infrastructural road project for corridor 10: Demir Kapija-Smokvica [iv] Stip-Sv.Nikole-Skopje and Kicevo-Ohrid. This road infrastructure will be finished during 2017-2019.



New railway station - Veles Station, 2014



**New roads: Corridor 10 –
Demir Kapija –Smokvica, 2015**



New airport terminal building – Petrovec, Skopje

¹⁶ <http://vlada.mk/node/307?language=en-gb>

However, all these investment do not take into consideration the trends towards protecting the wildlife or new innovative materials and solutions that could motivate drivers to use more eco-friendly vehicles, electric, in the best case scenario.

Environmental issues continued to grow in the cities. The current infrastructure was too small for the large influx of cars and with the huge increase in the number of vehicles, most of the local municipalities have either renewed or extended the current road network. That in turn, has pushed aside alternative means of transport, such as pedestrian and bicycles.

This was eventually noticed as new projects were promoted to motivate citizens to use alternative transport. The most significant project in regards to it's size and frequency of potential usage was in the capital city, in 2014: 'Skopje velograd 2017'¹⁷ envisioned a network of bicycle lanes connecting all the major routes in the city of Skopje. This project has now finished.



Map of 'Skopje velograd 2017'



Bicycle lanes are part of the 'Skopje velograd 2017' project

Besides this, the Skopje city authorities have also promoted a project subsidising the purchase of new bicycles for its citizens to encourage them to use this means of alternative transport more often.

According to the results published in the 3rd Action plan on Energy Efficiency of the Republic of Macedonia for 2015-2018, the transport sector is among the slowest trends and those showing no signs of improvement,

¹⁷ <http://skopje.gov.mk/ShowAnnouncements.aspx?ItemID=8326&mid=482&tabId>



even with a 2018 deadline. This is why much more still needs to be done in raising awareness and taking eco-friendly solutions into consideration.

Water management

Society's response to environmental concerns in the Republic of Macedonia, through the demand and supply of environmental protection services to prevent environmental degradation, is still at a low level, and has been declining in recent years.

The allocation of environmental protection assets is mainly inadequate. As regards waste-water management, the share of total investment and expenditure is only 9% of the country's total environmental investment and expenditure. In 2015, the share of investment in waste-water management expenditure amounted to 83.1%, and the share of expenditure on maintenance of assets for waste-water management was 16.9%. Since the latter is only 2% of total environmental expenditure, it should be a challenge for future improvement towards resolving water-management issues.

The water-pricing policy, based on the principle of user pays/cost recovery system, is providing a sound incentive for consumers to use water resources efficiently and thereby to contribute to achieving the environmental objectives, in a way that different water users will pay an adequate contribution. However, the lack of control over groundwater has led to its unsustainable usage, free of charge, by agriculture, mining and industry. To date, there is no policy on pricing for groundwater use.

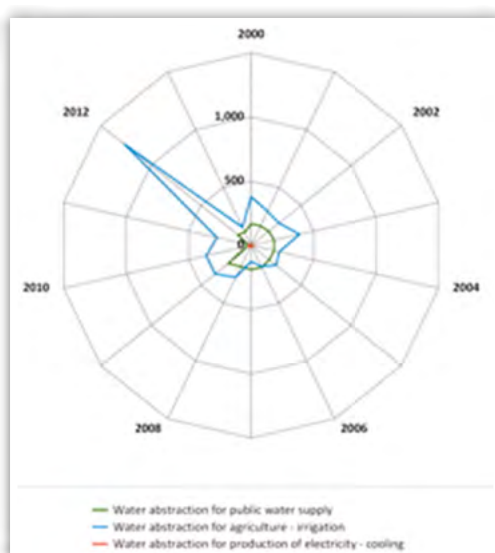
As regards water pollution prevention policies at the national level, there is need for coherence, especially in the industry and agriculture sectors. Unmanaged industry waste-water should be prioritised in future, ensuring the sustainability of the water resources which are used for irrigation purposes in agriculture.

Climate change is likely to exert a major impact on the national economy via the water supply, via changes in rainfall amounts as well as temporal and spatial patterns. All water consumers – irrigation, municipal and industrial users, and the power sector, are already facing seasonal water shortages. The consequences of this include agricultural yields below those in similar countries; poor water quality for municipal and industrial users, as well as insufficient quantities for thermal generation plants for cooling; and low capacity in hydropower generation. A hotter, drier climate will damage infrastructure, including transport, imposing costs on users and on the public budget. Climate-driven constraints on hydropower, in turn, limit options for a cleaner energy sector, with more supply – and a more dependable supply – but fewer GHG emissions. Competition for water between agriculture, especially as the climate warms and dries, the power sector (for hydropower, as a critical element for lower emissions electricity), and industrial and municipal uses will pose difficult tradeoffs for national policy-makers unless water efficiency is bolstered in both demand and supply.

Current water withdrawal levels in the country are creating moderate water stress, and a relatively low level of national water resources is increasing the need for adaptation measures in the water sector. Annual freshwater withdrawals as a percentage of total internal water resources –16.1% – places the Republic of Macedonia in the category of countries with moderate water stress, indicating that improvements in water supply and demand management, as well as investments in sectoral assets, might be required. The annual water resources per capita in Macedonia are about 3,150 m³/year, which puts the country in the middle category of European countries according to available resources per capita. Yet, there is serious threat that projected climate changes in the country will make the water scarcity issue even worse in the future.

In the Republic of Macedonia, according to the last Eurostat data in 2009, the total annual gross abstraction from fresh surface and groundwater is 1047.1 million m³. About 85% of the total annual gross abstracted water in the country comes from fresh surface water bodies, most of which is used in the agriculture sector.





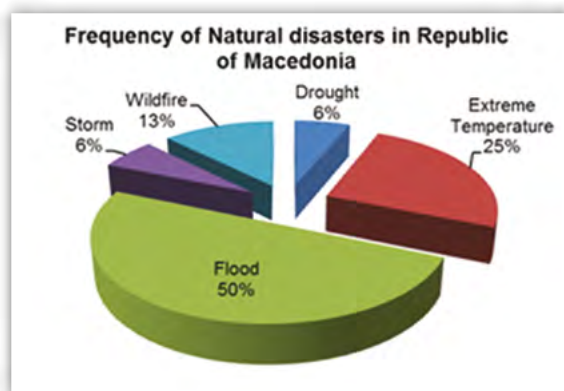
Fresh surface water use by sector
[million cubic metres]



Fresh groundwater use by sector
[million cubic metres]

Source: https://knoema.com/env_watabs_r2-20151105/water-abstraction-by-nuts-2-regions

Most damaging for the economy is the condition of irrigation assets since irrigation is key to today's agricultural production as well as to the expanded production of high-value crops, considered to be Macedonia's comparative advantage. Inefficient water use creates economic losses, affecting the productivity of all water-consuming sectors including households. The cumulative required maintenance and rehabilitation of water sector infrastructure is almost 4% of GDP.



Source: The knowledge platform for disaster risk reduction;
Disaster & Risk Profile. Macedonia
<http://www.preventionweb.net/countries/mkd/data/>

Redirecting investments to protection against flood risks, as one of the biggest threats among other natural disasters at the national level, could prevent unnecessary expenditure in other economical sectors which are usually affected by floods, such as healthcare, infrastructure and agriculture, as well as human loss.

The most devastating flood in the former Yugoslav Republic of Macedonia since it gained its independence in 1991 occurred in 1995 and caused nearly US\$ 400 million in damage. More recently, flooding in 2004 affected over 100,000 people and caused almost US\$ 5 million in damage.

The last flood, which happened in 2016, in Skopje and the surrounding area, resulted in at least 22

deaths, injured more than 100 people, and displaced over 1,000 individuals. In Skopje's most-affected municipality, Gazi Baba, local authorities estimated that the storms and associated flooding affected more than 35,000 people across 10 villages and damaged or destroyed up to 9,000 houses. Floods damaged public buildings, roads and other infrastructure, and agricultural land and crops. The Government of the Republic of Macedonia estimated that flooding affected up to 40,000 people.

Most of country's river basins are facing increased spatial and temporal variability in water resources which is among the key natural factors increasing the risk of flooding, besides topographic and land characteristics, and a relatively dense hydrographic network in the most affected regions. Changes in the land-use categories are further modifying hydrological regimes, increasing the risk of extreme hydrological events. The Republic of Macedonia has raised the level of awareness of flood risk and has taken several steps through policy measures for flood prevention, such as integration of a system for early flood warning, yet no reconstructions has been done on the hot-spot locations across the country.



The deterioration of local service delivery, including the water supply, has pushed several less-populated areas further away from the green economy path. Around 99.4% (AQASTAT, 2013-2017) of the total population has access to safe drinking water in the country. The percentage of rural population (98.9%) is smaller than the urban population with access to safe drinking water (99.8%). Nevertheless, the mere fact that in the 21st century, more than 20,000 of the country's inhabitants have no access to drinking water, which is neither biologically nor chemically tested, is a worrying sign. The fact that the majority of the population is concentrated mainly in sparsely populated rural settlements cannot be an excuse for the insufficient care the country is taking to bring quality drinking water into every dwelling and every household. In the Republic of Macedonia, only 48% of the population is connected to waste-water treatment plants. Although we have legislation covering correct waste-water treatment, it has still not been fully implemented in practice. However, there are several water-treatment plant projects which are still in the development phase.

Much of the existing irrigation infrastructure in Macedonia consists of pipes and canals that are often not operational, located too far from current agricultural fields, and use outdated equipment, such as standpipes designed for mid-20th century agriculture. Since the 1980s, the irrigated area in the country has shrunk, and the majority of irrigation infrastructure has been abandoned. Thus, vast financial resources have been consumed instead of using them to enhance technological innovation and green jobs, which could better position the country for 'riding the green wave'. Investing in water network rehabilitation and metering would help reduce losses and increase cost recovery. Municipal water supply in the country also suffers from high technical losses and low revenue collection.

Water quality condition in the Republic of Macedonia indicates that the natural balance of the rivers is already largely disturbed due to pollution which is extremely high downstream of towns, where the industries are located, and where their waste-water discharge has made a significant contribution. Pollution is somewhat lower in those sections of the rivers passing through areas that are not so densely populated, but even there the pollution is higher than the permitted levels.

Annually, some 550 million m³ of water are repeatedly recycled in the receiving water body, thereby increasing the concentration of pollutants it carries substantially. In relation to the location, the quality of water resources varies widely between satisfactory and poor, and in many locations the water is highly polluted. According to the current water balance, there is sufficient water in all regions, except in the Strumica catchment area (south-east part), where there is around a 40% shortage of water in the average dry year.

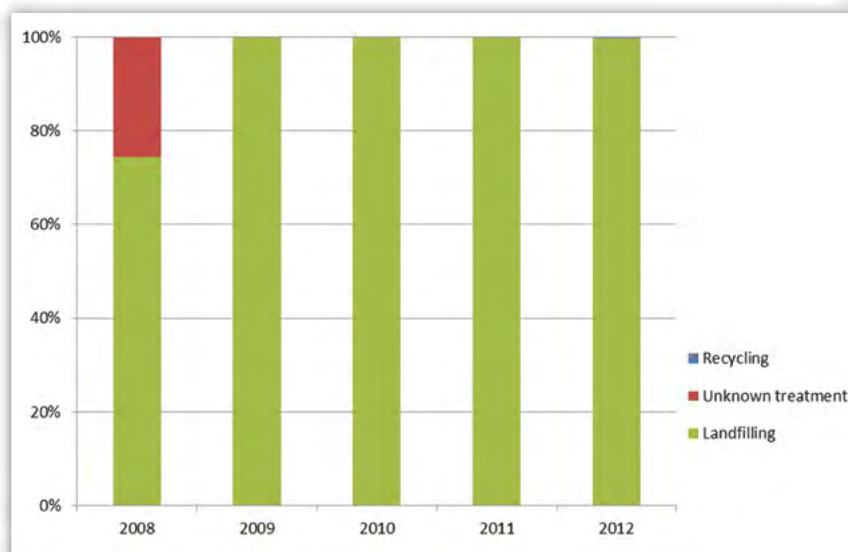
The legal basis for water protection and management in the country is provided by the Law on Waters. This regulates the manner in which water resources are used and exploited, protection against the harmful effects of water, protection against exhaustive water extraction and pollution, water resources management, financing water management activities and other relevant issues regarding the provision of a unique water-use regime. The law is based on the model of Western European laws, in order to establish a general legal framework to regulate the field of water management in an integrated and comprehensive manner. The main objectives of the national legislation on water issues, such as providing sufficient quantities of quality water, ensuring the protection, preservation and continuous improvement of the water regime, improving the status of aquatic ecosystems and water dependent ecosystems, and the protection and improvement of the aquatic environment through the rational use of water, the progressive reduction of harmful discharges and gradual elimination of emissions and hazardous substances, as well as the mitigation of harmful effects of water and water scarcity, follow the basic green economy path. Yet, there is a lack of adequate law enforcement in practice in most of the above-mentioned issues. National legislation predicts financial penalties for anyone who does not respect the provisions of the environmental law, such as by discharging pollutants above the maximum permissible limits. However, recent research by NGOs has shown that only 3% of industrial capacities have been legally prosecuted.

Waste management

The landfilling of municipal solid waste (MSW) is the most typical option with a share of 99.74% in 2012, while the processing which includes recycling and composting accounts for 0.26%, according to data pro-



vided by the mayors of municipalities to the Ministry of Environment and Physical Planning in the Republic of Macedonia. The situation has changed drastically since 2008 when 74% of the collected MSW was land-filled, and there was no treatment method known for the remaining 26% or 186,000 tonnes of MSW, which is presumed dumped in various locations across the country.



Municipal solid waste treatment in the Republic of Macedonia

Source: Eurostat (2013a) and Ministry of Environment and Physical Planning (2012)

Waste management is among the major environmental problems at the national level. One of its main goals is the recovery of valuable ingredients from the waste to be organised by the producers, importers, distributors and retail traders, as well as specialised service companies. Fractions of waste that can be recycled in a cost-effective manner in Macedonia include, in particular, plastics, secondary and tertiary packaging, used tyres, waste oils

and lubricants, scrap metal, waste electric and electronic equipment. Currently, nearly all biodegradable municipal waste collected by the municipal enterprises in Macedonia is disposed of in landfills. There are several legal entities which have permission to treat packaging waste (collective handlers).

Due to a lack of data, it is not possible at the moment to include a detailed modelling of GHG emissions and waste management sinks. However, it is possible to give an indication of the direct emissions of GHG reported to the IPCC for the waste sector. GHG emissions from the waste sector accounted for 7% of the country's total GHG, according to the Third National Report of the FYR Macedonia to the Framework Convention on Climate Change of the United Nations (currently under preparation), which covers the period 2003-2009. It appears that 90% of waste sector emissions comes from landfills, while the remaining 10% is produced from the combustion of waste and waste-water sludge.

Land management

The Republic of Macedonia's land categories are managed through spatial plans which outline a national strategy for land use, settlement patterns, public infrastructure and environmental guidelines. However, the country's current policy does not pay much attention to the quality of the land which has been urbanised. Often, high-quality arable land is sealed, which is the opposite of the spatial planning recommendations. Thus, the bioproductive capacity of this land-use category is lost forever. According to some estimates, about 0.5% of agricultural land is lost annually as a result of construction patterns.

Unsustainable land policies and practices in the country take place for many different reasons, and may produce irreversible losses in fragile and especially natural ecosystems which have high national and international value. Furthermore, the value of the land resources to national development and poverty reduction is often not properly understood on a political level. In many places, these resources are degraded by a series of pressures, and climate change will only make things worse. Political focus on land-management issues regarding climate change is expected to increase under pressure from social factors.



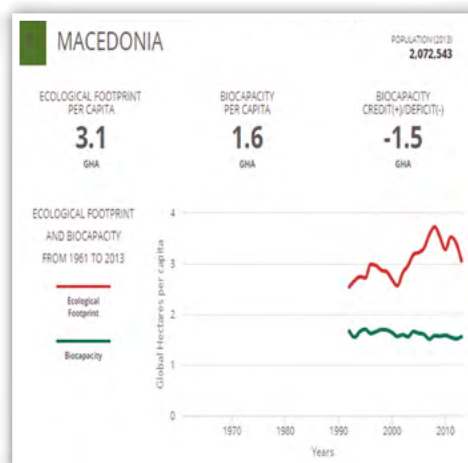
A recent analysis on land use in the Republic of Macedonia showed that pressure on the country's land-use categories is about twice that of their biocapacity – or, that the country is using twice as many natural resources than the land-use categories can provide.

The pressure on land-use categories has changed over the years, as is shown by the ecological footprint values in the diagram. The data on land bioproductivity per capita for the Republic of Macedonia shows that it has remained fairly constant over the years.

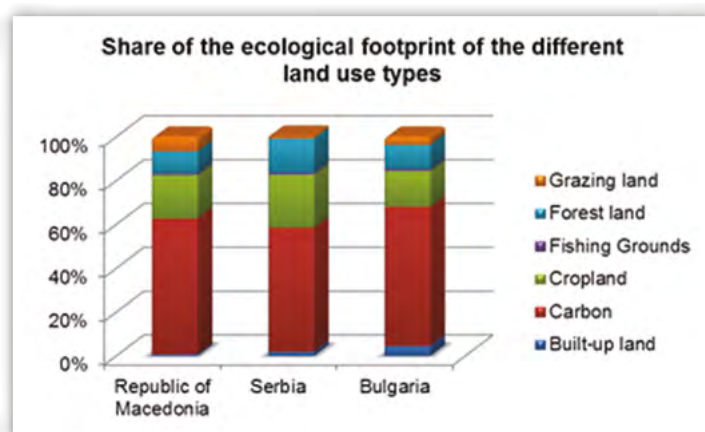
The Republic of Macedonia has an ecological footprint of 3.1 gha/capita, while the biocapacity of its land-use categories is 1.6 gha/capita, which indicates we are not moving forward on a sustainable path when it comes to land-use issues.

A major share of the country's total ecological footprint is the carbon footprint, with 62% of its total ecological footprint value.

That means that our forests are not extensive enough to absorb all the carbon emitted into the atmosphere. Thus, in order to impact on the climate change process, we need to focus our attention on the carbon emissions during the life cycle of any product that the population is using in everyday life, and on forest protection, as a major sequestrator for carbon.



Source: Global Footprint Network,
http://www.footprintnetwork.org/content/documents/ecological_footprint_nations/ecological.html



Around 9.6% of the country is covered by high-value protected areas. So far, there has been a lot of deforestation especially in protected areas.



Illegal felling in Vodno, 2016



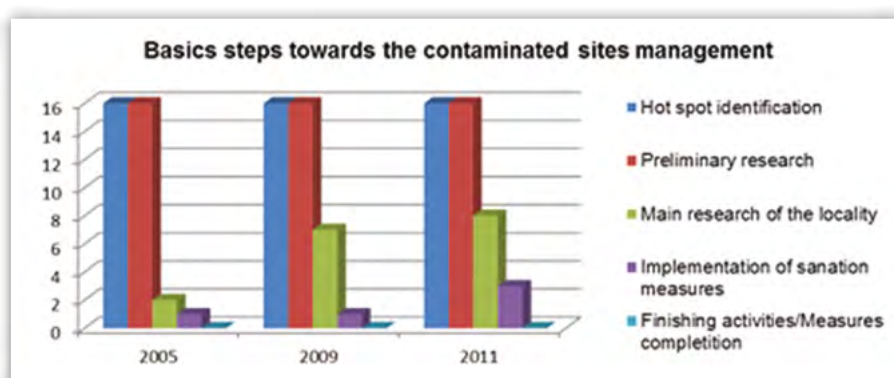
Illegal felling in the Pelister National Park, 2016

Also, another unsustainable trend can be seen mainly in the capital city Skopje, which was affected by tree felling in the last decade due to the rapid urbanisation of the city centre. Very often, huge areas of trees in the city centre were converted into artificial land, which resulted in high-density urbanised areas.

In the past, investments in sectors or technologies driven by short-term gains showed that they can generate huge negative externalities, leading to the serious depreciation of natural capital and a deterioration in



human health. In the Republic of Macedonia, there are 16 historically polluted sites which provide examples of serious land degradation.



Source: Ministry of Environment and Physical Planning

Progress on their rehabilitation is quite slow. Namely, since 2005, they have all been identified, preliminary research has been carried out on every site, and progress has been made in the main research of the locality. Up until 2011, eight historically polluted sites had been researched in detail, and remediation measures had been implemented on three sites. To date, none of the country's hot spots has been completely remediated. These sites had made major pollution problems, such as soil and surface-water pollution, which had led to pollution in large agricultural areas, thereby minimising the possibilities for any agricultural production on these land categories. In addition, some of these sites are located near areas which are proposed for protection, so the effect of the polluted soils and water on the proposed sites creates initiatives for further research.

Analysis of the type of hot spots in the country which made land degradation of historical dimensions shows that five of these sites are mines. Nevertheless, although we do not have one successful example in remediation of degraded land around mines, there are still initiatives to open up several more mining sites, located in the east and south-east region. First, a huge part of the arable and forest land would be affected because of construction processes at the mining sites, and secondly, as the result of mine exploitation later. Yet, the population's awareness of the risks of environmental pollution, by means of a local referendum, may have stopped further research into several mining operations in Gevgelija, Bogdanci and Dojran, signalling a big step towards the green economy against the proposed brown economy development in this part of the country. Furthermore, preventing the reopening of the metallurgy complex in Veles in 2008 is another example of the population's environmental awareness, after several researches showed that pollution in the town is affecting the area's birth rate. There is need for clean technologies to protect the bioproductive potential of the existing land-use categories.

On a national level, there are initiatives for implementing the European legal framework for land-use management, although it will take time to see the effects of its implementation in practice.

Other green economic sectors

Apart from the main green economy sectors, there is great potential for green development in the *tourism sector*, since Macedonia has abundant natural and cultural heritage and *agriculture sector*, since for the majority of people living in rural areas agriculture is the main source of income.

Tourism

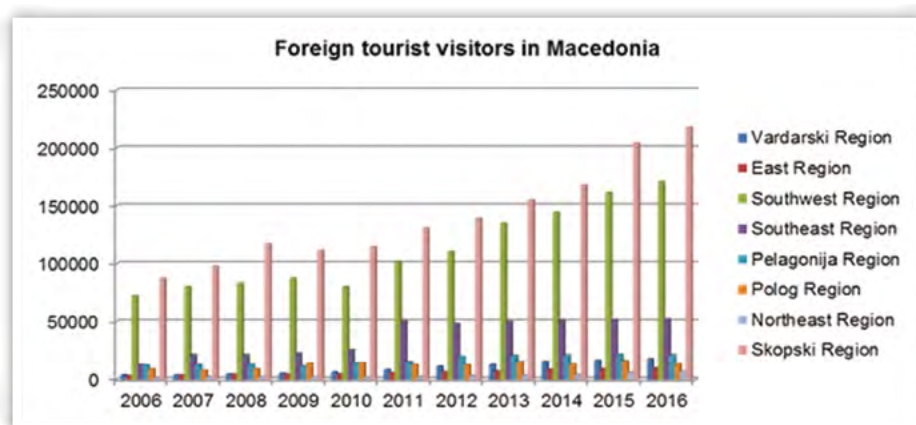
The share of tourism in the national GDP is relatively low and there is no continuity in growth. The largest share was recorded in 2005 with a share of 1.8%, and the lowest of 1.0% in 2011. Since greening tourism can lead to broad economic, social and environmental benefits for host countries and their communities, tourism as an economy sector has significant potential as a driver for growth in the national economy.



In 1995, there were more than 500,000 tourists (domestic and foreign) in the Republic of Macedonia, of whom 71% were domestic tourists. In the last 20 years, the number of tourists in the country has continued to rise, although the number of domestic tourists has fallen compared to the number of foreign tourists. Since 1995, the number of tourists in the country, both domestic and foreign, has risen by around 60 %. During this period, the number of domestic tourists continued to fall from 71% in 1995 to 41% in 2015, while the number of foreign tourists has risen constantly from 29% in 1995 to 59% in 2015. Although the number of nights spent by domestic tourists fell during this period, the number of nights spent by foreign tourists in the Republic of Macedonia rose from 15% in 1995 to 43% in 2015.

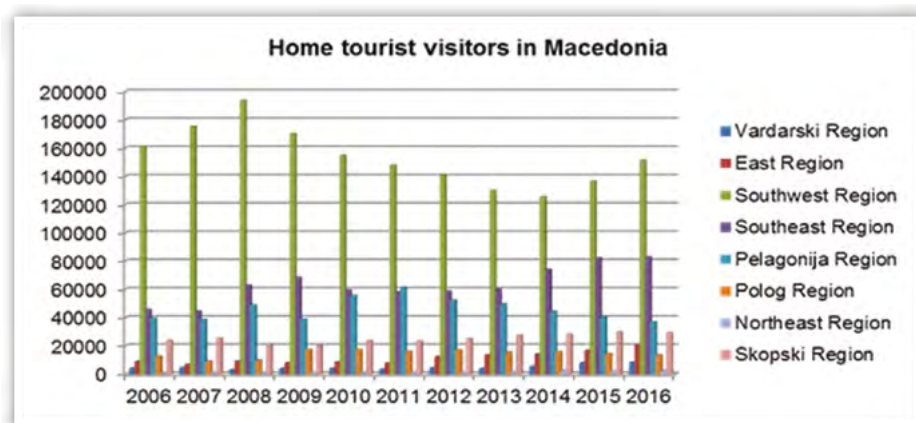
The most visited regions in the Republic of Macedonia are the south-west and Skopje. In 2010, around 40% of the tourists visited the south-west region, about 24% visited the Skopje region, 14% visited the south-east region and 12% visited the Pelagonia region. In 2010, other regions (Polog region, east region, north-east region and the Vardar region) were visited by 5% or less of the total tourists in the country. Up to 2015, the number of tourists in the south-west and Pelagonia regions had fallen by about 4% per region, and around 1% in the Polog region. However, there was a positive trend in the number of tourists that visited the Skopje region, at about 5%, about 2% in the south-east region, and an insignificant 1% for the Vardar and east regions. The north-east region also had only 1% of the total number of tourists during the period analysed.

The analysis showed that in the last five years the Skopje region has been the country's most interesting tourism destination for foreign visitors. The second most popular destination for foreign tourists was the south-west region, where the number of tourists was double that of the reference year. Around 75% of total foreign visits are concentrated in these two regions.



Source: Macedonian Statistical Database

The south-west region is the most popular tourist destination for domestic visitors. Unlike foreign visitors, the domestic visitors are aware of the beauty of the east, south-east, Pelagonia and Polog regions, and appreciate them as attractive tourist destinations. Vardar region and the north-east region are not as popular among domestic tourists as they are for foreign visitors.



Source: Macedonian Statistical Database



Transport is the most energy-intensive component of the tourism industry. With the rising global trend for travel and the growing energy intensity of most trips, future emissions from the tourism sector are expected to increase substantially, even considering current trends in technological energy-efficiency gains in transport (air and ground) and accommodation. In the Republic of Macedonia, the trend in GHG emission from the sector's transport is expected to rise to around 41% until 2025. Thus, the sustainability of tourism will depend mainly on reductions in overall energy use and a more intensive use of renewable resources.

Tourism is estimated to create about 5% of total GHG emissions (1,302 Mt CO₂), primarily from tourist transport (75%) and accommodation (21%, mainly from air-conditioning and heating systems).

Investing in the greening of tourism can reduce the cost of energy, water and waste and enhance the value of biodiversity, ecosystems and cultural heritage. Significant environmental benefits include reductions in water consumption (18%), energy use (44%) and CO₂ emissions (52%). Investments in water-saving systems, grey water reuse and rainwater collection and management systems can help reduce water consumption by about 27% per guest per night. Clear requirements are needed in such areas as zoning, protected areas, environmental rules and regulations, labour rules, agricultural standards and health requirements, particularly related to energy, emissions, water, waste and sanitation.

Traditional mass tourism such as 'sun-and-sand' resorts is at the steady growth stage. In contrast, ecotourism, nature, heritage, cultural and soft adventure tourism, as well as sub-sectors such as rural and community tourism are now taking the lead in tourism markets and are predicted to grow most rapidly over the next two decades. In the Republic of Macedonia, foreign tourists are generally interested in visiting Skopje as an attractive destination. In the period 2010-2015, around 87-90% visited Skopje. On the other hand, spa tourism (86-89%), mountain tourism (81-71%) and lake tourism (69-53%) rely mainly on domestic tourists.

Food production

Current agricultural policies are not taking into account future climate change predictions and are thus undermining the agricultural sector's competitiveness rather than reducing vulnerability and seizing opportunities. Some of the crops/products being prioritised today in terms of subsidies and investments will experience lower yields with climate change. While there are adaptation measures that could mitigate these reductions, or alternative crops which are more suitable for future agro-climatic conditions, the current public expenditure programme is leading the sector in an even more vulnerable direction rather than encouraging adaptive practices.

Projected climate change will affect Macedonia's economy mainly through a direct shock to agriculture and associated spillovers into other sectors. Movement towards larger, more competitive, export-oriented farms will raise overall sector incomes, while heightening resilience to a changing climate. Investment in basin-scale irrigation and drainage infrastructure will be critical to help water supply meet water demand. At the same time, land consolidation, switching to high-value crops and farmer education campaigns, along with other efficiency improvements, will raise agricultural incomes and compensate for scarcer water.

Contributing to 10% of GDP and around 20% of employment, the agricultural sector continues to play an important role in Macedonia's economy. In addition to primary agriculture, the agro-processing industry contributes another 6% to GDP. The sector's share of the economy has remained fairly stable since the mid-1990s, but an important transformation is currently taking place, with increasing fruit and vegetable production replacing more traditional products such as cereals. However, the structure of the sector is impeding growth.

In future, a more competitive, export-oriented agriculture sector will only be possible if adequate policies and investments are implemented and adaptation measures are taken. As regards irrigation, adaptation investments in drainage infrastructure for irrigated areas will improve crop yields. Improved wheat varieties are another key although modest adaptation measure. Under a stronger adaptation effort, a package of expanded irrigation measures in some basins plus improved drainage infrastructure would provide major investment gains. In addition to investment in irrigation, other measures could bring important benefits, including: improved farm practices, greenhouse production, better soil management, improved pasture management, improvements in land consolidation and land markets, and organic agriculture.

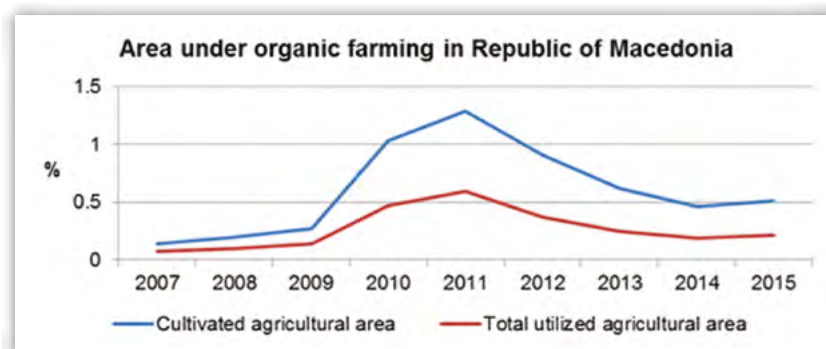


Projected climate change impacts include significant changes in yields and precipitation. Many of Macedonia's most important crops will experience a significant decline in yields under the projected climate change. However, climate change could also provide certain opportunities for the agricultural sector. Longer growing periods, especially in the mountainous regions, have the potential to increase yields and provide opportunities for the introduction of new crops.

The organic agriculture sector in the Republic of Macedonia was initially introduced in 1997. The first certified organic products were several types of tea from indigenous herbs, prepared and produced by Alkaloid, the largest pharmaceutical factory in the country. The following year, organic agriculture activities were initiated by four or five farmers in the regions of Ohrid, Kumanovo and Strumica, who started producing agricultural products according to organic farming principles. The initial expertise for drafting the legal basis for organic production, which was later supervised by European Union experts, was provided in 1999.

Few years later, in 2004 it was adopted as the Organic Production Law by the Republic of Macedonia's parliament. Since then, the number of certified organic operators has risen and the latest data shows that 481 registered in 2015, although the maximum was reached in 2011 when there were 780 registered organic operators in the country.

According to the last national statistical data, the agricultural land used for organic plant production in the Republic of Macedonia amounted to 2,632 hectares in 2015. Even though the negative trend from 2011 to 2014 stopped, the development in this sector is still a long way off the target set by the National Strategy for Organic Farming – i.e. to have 4% of the total utilised agricultural area under organic production by 2020.



Source: Macedonian Statistical DataBase

The production of organic cereals was the dominant activity, followed by organic fodder crops and fruit production.

In 2014, organic livestock production numbered 57,896 heads. The predominant activity was sheep breeding which totalled 92% of total livestock production. In the same year, the number of organic beehives was 6,285.

Agriculture also has a tremendous potential to alleviate poverty. A large proportion of the country's rural population and labour force is employed in agriculture, with some estimates suggesting almost one-third of the labour force. However, it is also the economic sector most directly harmed by a changing climate. Both water scarcity and water demand for irrigation are predicted to rise. Irrigation is already insufficient and poorly designed for today's small farms. Many farms depend on local wells and unsustainable extracted groundwater, which is neither regulated nor priced. Soil fertility problems will worsen with a changing climate, especially erosion. Small and fragmented farms and inadequate land markets limit agricultural productivity, while government subsidy programmes are poorly designed to achieve their stated objectives.

The agriculture sector in the Republic of Macedonia contributes about 7% to GHG emissions. In order to achieve specific reductions in these emissions and mitigate the agriculture sector's possible negative impact on climate change, the country has proposed several mitigation options for agricultural practices and techniques: organic farming, etheric fermentation, manure management, crop-residue management, production of biogas from farming, sprinkler and drip irrigation, and conservation of tillage and fertilisers (Mukaetov, 2013).



PESTLE analysis of the green economy

Although the concept of a green economy has not been introduced into the national legislation, an analysis of the country's green economic sectors, which is the subject of this research, indicates an initial transition and huge potential for progress towards the green economy.

Policy factors

The green economy is still viewed by most politicians as a luxury rather than an essential tool for climate change mitigation and adaptation.

Environmental issues are still seen as an unnecessary expenditure, although there are visible indicators of environmental degradation and related health issues resulting from the existing economic practices.

There is no environmental protection agency in the country, which could help to promote green economy policies and develop green economy initiatives.

The potential of the green economy as a tool to reduce poverty by creating new green jobs is well recognised among the experts in the field, although not by the policy-making elite.

Economy factors

Most environmental projects, especially green economy projects, are financed internationally by international donors. The Republic of Macedonia does not have a fund for the environment which could help the domestic financing of green economy projects.

Allocation of the existing environmental protection assets is mostly inadequate.

Natural values are still not regarded as capital, which means that environmental degradation is not taken into consideration when calculating the national economic growth.

A significant share of environmental issues at the local level have remained unresolved for decades, since only a small part of the national finances are provided for the municipalities.

Social factors

There is a depopulation trend in the rural areas on a national level, which has resulted in the loss of many rural traditional businesses that used to be environmentally friendly.

Recently, several analyses have been made of the potential for creating green jobs on a national level, although there is no national classification of green jobs by economic sector. Despite the pollution companies cause, they are not obliged to provide green jobs or to fulfill them. In recent years, the construction sector has generated nearly 6% of the national, and ensured employment for 5.7% of all employed people (2011). Thus, this sector is turning into one of the biggest industrial employers in the country.

There are several local individuals who are pioneering the green economy transition.

Until recently, people affected by environmental problems, frightened of facing financial problems were afraid to raise their voices against the brown economy initiatives. Fortunately, there have been several successful examples that have shown raising awareness among the population.

More than 20,000 inhabitants in the country have no access to drinking water which has been either biologically or chemically tested.

Technical factors

An increase in industrial activity, while in the same time using outdated technological resources and old infrastructure, has dramatically accelerated the inefficient use of energy.



The irrigation infrastructure in Macedonia comprises pipes and canals that are often not operational, are located too far from current agricultural fields, and use outdated equipment.

There is need for specialised environmental protection secondary schools, in order to create skilled workforce.

In industry, the move towards new clean technologies is going quite slowly.

Legal factors

The country is on its way to becoming a member of the EU and in the progress of developing the country's legal framework in line with EU environmental legislation. Although noticeable progress has been achieved towards harmonisation with the EU *acquis*, there are still a considerable number of implementation issues that need to be carried out properly. Strengthening the human and institutional capacity in order to successfully implement the legislation will undoubtedly reduce the environmental pressure from existing economic practices and future climate change.

There are administrative barriers to the potential implementation of green economy initiatives, due to the inefficiency and politicization of the public administration.

Environmental factors

In the past, investments in sectors or technologies driven by short-term gains showed that they can generate huge negative externalities, leading to a serious depreciation of natural capital and the deterioration of human health.

The energy sector contributes approximately 75-80% of the total GHG emissions in the country. Together, shifts in output towards less energy- and emission-intensive sectors and rising efficiency within sectors will drive energy and GHG emission intensities in Macedonia closer to EU levels.

Poor and irresponsible building solutions in the past have had a negative impact on the overall building fund creating greater energy consumption, increasing air pollution and leading to a deterioration in the ambient living conditions in the large urban areas.

There are several hot-spot sites in the country where the surrounding land has been seriously degraded, illustrating the consequences of previous brown economy models. To date, no visible rehabilitation processes have been put in practice.

The natural balance of the rivers has already been significantly disturbed due to the pollution which is extremely high downstream of towns, where the industries are located, and where the discharge of their waste-water has a notable impact.

Potential for national green economy jobs

The labour market in Macedonia appeared to be quite unbalanced for a long period of time. During the transition period, labour supply was significantly higher than labour demand, which resulted in high rates of unemployment over a long period: at the end of the 1980s, the country's unemployment rate was 22.6%. This rate continued to rise during the transition period, reaching the highest level of 37.3% in 2005.

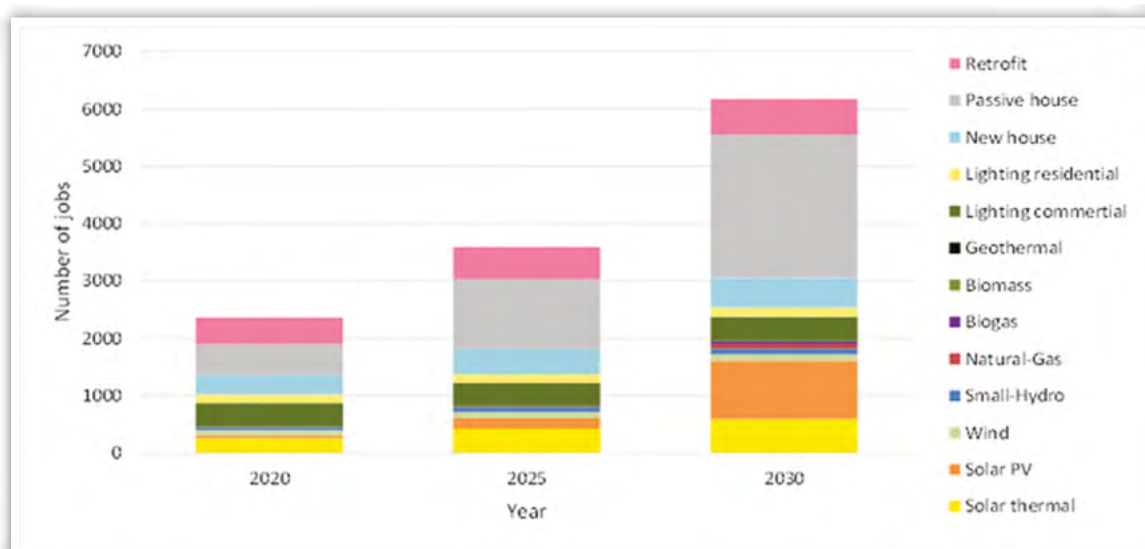
The rigid labour market and unsuitable labour force structure, especially from the perspective of educational attainment, age and time taken to get a job, have had a negative influence on creating a suitable environment for investment. For instance, in 2008, 90% of the unemployed in the country had four years of secondary education. The highest rate of unemployment, over 50%, is among those who have no education, whereas the rate falls to about 35% for people with four years of secondary education. Those with higher education face a 20% unemployment rate, the lowest in the country. Since there are plenty of unresolved



environmental issues in the country, and most of them need trained people, opening secondary schools with an environmental orientation would also be a step towards reducing unemployment.

For the first time in the Republic of Macedonia, the *number of domestic jobs created as a result* of implementing Intended Nationally Determined Contributions mitigation measures in the area of energy efficiency and energy supply has been assessed, using the macroeconomic input-output method, based on investments, and information from the literature. The analysis shows that by implementing energy-efficiency measures in buildings and introducing low-carbon energy-supply technologies (renewables and gas), about 6,000 green jobs can be created by 2030 across the country.

Energy-efficiency measures in the construction sector have the greatest potential for creating new jobs. Introducing higher efficiency standards in new buildings and retrofitting old ones could provide 3,500 jobs by 2030. A switch to LED lighting will also create employment, since enabling new channels for sales and more innovative installations. It is estimated that investment of US\$ 1 million (EUR 0.92 million) will create 5.1 direct jobs and 4.2 indirect positions (supply goods and services). Using more renewables for power generation, in particular solar photovoltaics, wind, biomass, hydro, geothermal and landfill gas, would provide some 1,300 jobs by 2030, mainly in the photovoltaic sector. This sector is fairly labour intensive, especially where small installations are placed on roofs. Establishing such a sector offers the best prospect of employment among the supply technologies.



Source: Green jobs potential in Macedonia, <http://balkangreenenergynews.com/green-jobs-potential-in-macedonia/>

This initial assessment reveals a wealth of existing opportunities to scale up the reduction in GHG emissions while increasing the potential for green jobs. It creates an area of opportunities for the whole Balkan region – an effective, readily achievable set of actions to reach a prosperous and stable environmentally healthy world for all.

Green economy case studies

Analysis of the GHG emissions by sector showed that the energy sector has a major role in climate changing conditions, since it provides the largest share of GHG emissions. Furthermore, the fuels we use today are having significant negative implications on the soil and other media in the environment. In future, the Republic of Macedonia must put the political focus on adaptation and mitigation measures in this sector, especially by providing a suitable environment for the use of renewable energy sources.

In this study of the Republic of Macedonia, several examples of successful green economy best practices have been revealed:



Photovoltaic project on a building rooftop.

The '50 KW installed power' photovoltaic plant produces 80 MW/h of electricity per year. The investor signed a 15-year contract with a feed-in tariff. He was obliged to provide all the licences, according to national legislation, prior to building the photovoltaic plant and selling the electricity.



The use of photovoltaic plants will contribute to climate change mitigation. Using the sun's energy will help to protect the environment since the GHG emissions will be significantly reduced and very large areas that might be used as a source of coal could be preserved. Photovoltaics is an environmentally friendly technology implicated in the transition towards the green economy. It has great potential to lower energy dependence, reduced current consumption needs, mainly at the local level, and can significantly reduce electricity bills, too.

Sustainable agriculture

Arbekina Oliv is a company based in the city of Valandovo, in the south-east of the Republic of Macedonia. The company was founded by Mr. Dimce Balevski, who is also the owner.

In 2003, the company started organic agriculture. Since then, it has continued to improve the quality and quantity of its production, which includes almonds and persimmons sold on the local Macedonian market and in Italy.

The organic production is contributing to climate change mitigation in the region and helping to reduce land pollution. The traditional method uses local practices and local climate conditions for food production without creating any pollution in the environment, and has proved particularly valuable for lowering poverty among the rural population. Since nationally there are many abandoned productive areas, the development of organic production could be a good business solution for the local populations.



Brown economy initiatives in the 21st century

In the last few years, there have been several foreign investments of a somewhat suspicious nature, supported by the former government, for opening gold and copper mines in the eastern and south-eastern part of the country in mainly agricultural regions with great potential for rural tourism. The potential harm to the territory of the Republic of Macedonia is estimated at 40%, since the technologies planned to be used in open mines use highly toxic chemicals. The population affected by opening these mines in the south-east region have shown a high level of environmental awareness. They have self-organised and raised their voice against old brown technology models in their municipalities. Several local civil organisations have successfully put pressure on the local authorities to organise referendums. Three have been successful, but the other two were unsuccessful due to depopulation in the municipality and pressures applied by the local authorities. Despite that, the civil organisations have created a network which is continuing the fight against these harmful initiatives. Therefore, this might be the perfect time for new green stimulus packages for transition towards developing a green economy in the region.

Conclusions

The Republic of Macedonia offers many opportunities for sustainable green economic development. However, the green economy concept is still not clearly seen as a sustainable track that the country should follow in the coming years. There is need to develop mechanisms for sharing information about the advantages of the green concept among the decision-makers in different sectors, between local and higher-level government agencies and across decision-making bodies. Appropriate support is necessary from the local and national authorities for a successful transition towards green economy development by implementing the green economy concept.

The country is still at the start of the road towards European green economy practices although on a national scale the economic sectors have great potential for development. The analysis revealed so many fields in which green stimulus packages can be applied on the way towards achieving a national green economy transition. In addition, there are so many possibilities for creating green jobs that will undoubtedly help to reduce poverty and protect the environment.

Actualisation of the green economy concept on the political scene and providing new solutions using the green economy trends present in other more developed countries remains the main driving force towards a vast green economy transition in the country.



5. Green Economy Overview – Serbia

A full-page background image of a forest. A dirt path leads into the distance, flanked by tall, slender trees with dense green foliage. Sunlight filters through the leaves, creating a dappled light effect on the path and the surrounding vegetation. The overall atmosphere is bright and natural.

As part of the research report for the project *Revision of the Economy in the Balkans: Change Policy not Climate!*, this chapter provides an analytical overview of the Serbian economy, its stage of development and national policies. It also addresses some of the factors for 'greening' Serbia's economy. The chapter aims to contribute to the regional study and inspire further research into the potential for the economy to advance in this area. Research was conducted by analysing the main legislation, strategies and action plans, and similar studies, a focus group organised in Belgrade, an online questionnaire and individual interviews with various stakeholders. Aspects addressed cover the specific national policy sectors, such as: energy production and energy efficiency; green buildings; innovations and science; green public procurement; sustainable transportation; sustainable agriculture; eco-tourism; land and water management; as well as the endorsement of and emphasis on new green business models. The above-mentioned policy areas and thematic directions have been chosen in line with the overall project methodology, as well as with the ongoing green economy policy initiatives at the EU and global level.

Republic of Serbia and overview of the green economy

The Republic of Serbia is at the initial stage of developing a green economy and green jobs. There are plentiful natural resources in the country which has a suitable geostrategic position. However, bearing in mind that climate conditions are changing and considering the legacy and history of the Western Balkans region, we can say that the transformation toward green alternatives is the best way to achieve sustainability and citizens' welfare.

The general direction of the Serbian economy and the focus of decision-makers are attracting foreign investors and providing an ambience for large corporations which mainly use a low-skilled workforce and pay minimum wages. Development plans of declared national interest are mainly large and mega infrastructural projects, enlargement of the agricultural sector and privatisation of natural resources. Small and medium-sized enterprises (SMEs) face a number of challenges, including an unstable business ecosystem, difficulty in charging their own work and services, a high level of para-fiscal charges, and difficult and costly access to finance. The informal economy is estimated to be around 20-30% of GDP, leading to losses in budget revenue, a lack of labour protection and, along with corruption, is a major obstacle to fair competition. Unemployment remains particularly high among young people — around 40% of youth are without a job and close to one in four is not in employment, education or training. Women's position in the labour market is characterised by significantly lower activity and employment rates compared to men (European Commission, 2016). The consequences of this economic direction can impede the development of new forms of the green economy.

Greening the existing economy in Serbia is not an endeavour without obstacles. At the moment, the European Union is a biggest supporter of this transformation, since Serbia is a candidate country for EU membership. The most important part of EU regulations, after agriculture, relate to environmental protection – Serbia has a long road ahead in the process of harmonising its national legislation in this area with that of the EU. Based on the state of environmental infrastructure in Serbia and estimates from countries which have joined the EU, it is projected that the total cost of meeting the requirements of the environmental *Acquis* will be around EUR 10.6 billion (between now and 2030), the most demanding sectors being water (EUR 5.6 billion), waste (EUR 2.8 billion) and industrial pollution (EUR 1.3 billion) (National Environmental Approximation Strategy, 2011). At the same time, allocations for environmental protection in Serbia do not exceed 0.25% of GDP per year. Many strategic and general documents have been adopted in the last 15 years, but the environmental system is still being assembled.

In addition, long-term changes are urgently needed because Serbia is extremely affected by climate change – droughts, floods, forest fires, landslides and erosion are just some of the catastrophes experienced in the last decade. For instance, Serbia suffered extensive flood-related damage (officially estimated at EUR 1.5 billion, or about 5% of GDP) in late May 2014, which has severely affected vital sectors such as energy, mining and agriculture (EBRD, 2014).





Floods Serbia Obrenovac

Financing aside, environmental awareness is one of the greatest problems. At the moment, the general perception is that environmental protection and greening the economy are things Serbia is doing to become a member of the EU, and that the standards and legislation being adopted are part of fulfilling the necessary steps in the negotiation process with the EU. Research shows that citizens do not recognise the effect of industrial pollution on health, or the impact of pollution on the economy (HEAL, 2014).

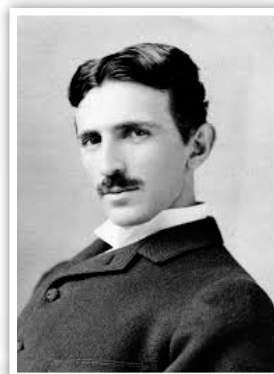
6.2 Potential for green innovations in Serbia

Being the country of origin of innovators such as Nikola Tesla and Mihajlo Pupin, Serbia takes pride in its innovation and science legacy. In today's economic setting, innovation – technological innovation in particular – is considered to be a major driver of economic growth. Within the green economy, innovations are one of the key elements – not only technological but also new, innovational social forms of organisation, new patterns of production, and of particular importance, consumption. Tesla's dream of free and available energy for all still lives in the hearts and minds of all people who are 'green'.

Today, even with low investment in education, young Serbians are excelling in science. Unfortunately, with a small budget from the state and virtually non-existent funding from the private sector, talents are leaving the country to carry out their research work in more developed countries. OECD data show that each year the average number of emigrants from Serbia to the Member States of this organization was 26,000, increasing in 2013 to 45,000, and in 2014, rising to 58,000. Effective cooperation between science and economy is one of the main preconditions for advancing innovations and their application in the economy and industry, and consequently for economic growth and job creation.

Since 2007, the Global Innovation Index (GII) has been ranking world economies according to their innovation capabilities and results, using approximately 80 indicators that include measures of human capital development and research, development funding, university performance, and international dimensions of patent applications, among a host of other important parameters. GIJ ranks Serbia in 65th place, only ahead of Belarus, Bosnia and Herzegovina and Albania.

In 2015, Serbia adopted the Strategy on Scientific and Technological Development for the period 2016-2020, with a special focus on research for innovation. The Strategy sets out measures and programmes for the



Nikola Tesla



promotion of excellence in science and targeted research for developing the economy and society over the next five years. It defines six specific objectives, as follows:

1. Encouraging excellence and the relevance of scientific research in the Republic of Serbia;
2. Strengthening the connection between science, economy and society to encourage innovation;
3. Establishing an effective management system for science and innovation in the Republic of Serbia;
4. Ensuring excellence and the availability of human resources for science and economy and social affairs;
5. Improving international cooperation in the field of science and innovation;
6. Increasing investment in research and development through public funding and encouraging the business sector to invest in research and development.

In 2011, the Serbian government founded the Innovation Fund as part of a broader innovation strategy. The aim of this Fund is to contribute to the overall development of innovations through various financial aid instruments, particularly by fostering the establishment of new companies and strengthening existing ones by directing them towards accessing venture capital markets, and by attracting foreign direct investment in high-tech research and development.

EU funds play a very important role in supporting Serbia's innovations. Since 2011, the Innovation Fund has been implementing the Innovation Serbia Project. Valued at EUR 8.4 million, the project has been funded by the EU through the Instrument for Pre-Accession Assistance (IPA) funds, and administered by the World Bank. Innovative start-ups and technology-intensive enterprises have been supported within the framework of this project under its two pilot programmes – the Mini and Matching grant schemes, designed to provide the necessary funding for project development during the research and development phase. More and more smaller programmes, such as Climate-KIC, are being supported by the Serbian Chamber of Commerce which not only supports start-up ideas but also young researchers and professionals with their

More investment and programmes are needed in the field of social science research in aspects of the green economy, like social, gender, inclusion, poverty and other issues. There should be greater cooperation between researchers and policy-makers as well as decision-makers to create evidence-based policies at all levels.

Buying green: green public procurement in Serbia

Statistics show that public fund spending on public works, goods and services accounts for about 16% of total EU GDP, which amounts to about EUR 2 trillion a year, making public administration the largest consumer in the EU. In Serbia, this percentage is significantly higher, bearing in mind the Socialist legacy and consequently the role of the public sector and the state administration in the economy. In 2015, in Serbia, the state administration spent EUR 2.6 billion on public procurement. In this context, the public sector can contribute significantly by influencing the achievement of sustainability targets at the local, national, regional and international levels, through environmentally friendly consumption. The tool for such a contribution is green public procurement.

The concept of green public procurement has a double significance and effect – development of sustainable consumption and encouraging economic growth. Green public procurement is recognised in numerous EU documents as both the driver and engine of green economic development. Application of this concept by EU Member States is voluntary – the states independently determine the extent to which they will apply these standards. It has become clear that production and consumption, based on the exhaustion of natural resources, not only leads to a reduction in their reserves, which can negatively affect economic growth and development in the long term, but also directly affects human health. In order to overcome potential problems, green public procurement is seen as an instrument for encouraging and directing public administration to use green services and products.



Introducing green criteria into public procurement procedures encourages greater energy efficiency of products and production cycles/processes, the use of renewable energy sources, the application of the life-cycle cost methodology, the economic consumption of natural resources, the use of materials based on renewable raw materials, and the subsequent application of high-quality technologies for saving water, etc.

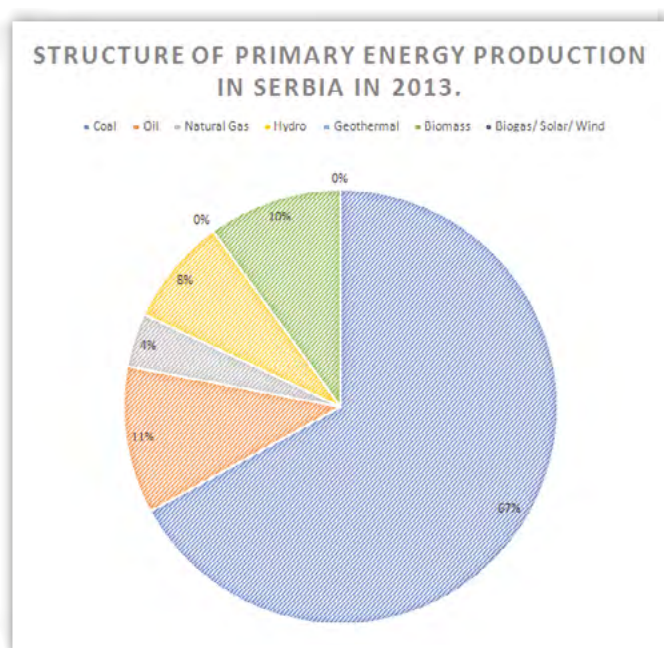
One of the key features of green public procurement is to support the development of local economies by encouraging SMEs to apply for calls for tender through mergers, in the form of a joint offer or a consortium. The biggest problems for SMEs are the conditions they have to fulfill both in terms of technical specifications and those related to financial or personnel capacity, which in most cases cannot be fulfilled individually. One solution is to develop decentralised forms of self-organization, such as cooperatives.

Promoting green procurement affects the increase in demand for certain products, as well as the development of technology. As regards the cost of the life cycle, green public procurement impacts saving resources and protecting the environment.

According to the legal framework, public purchasers in Serbia have the possibility to apply the most economically advantageous bid as the criteria for evaluating bids for works, services or goods, rather than simply the lowest price offered. The criterion of the most economically advantageous bid is based on various elements such as life-cycle cost, energy efficiency, social issues and other sustainable goals. Local municipalities do not have the capacity to apply this as a criterion in public procurement procedures. Thus, it is necessary to give them political encouragement from the national government level to use any criteria that is not a lowest price offered. For this reason, it is recommended that Serbia adopts a national action plan for green public procurement – to create the ambition and encourage the local government to use green criteria more often in sectors where it is possible to do so.

Green energy perspective

Like many other countries in South-East Europe (SEE), Serbia has significant, untapped potential in renewable energy and energy efficiency. As stated in the official policy documents, a vital task for the Republic of Serbia will be to provide a secure, quality and reliable supply of energy and reduce the country's energy dependence (Republic of Serbia Ministry of Mining and Energy, 2016).



Structure of primary energy production in Serbia in 2013.

According to Eurostat, in 2014, Serbia's dependence on imported energy was 28.3%. At present, the country is heavily reliant on fossil fuels, especially for electricity production where more than 80% comes from coal, imported oil and gas. Energy Strategy foresees over 1 GW of new coal-fuelled power plants by 2030. This extremely high dependency on coal (lignite) for electricity production is causing serious negative effects on Serbia's agriculture, health system and economy. Thermal power plants produce more than 5.5 million tonnes of ash per year, which creates huge air and water pollution and land degradation, such as acidification of agricultural and forest areas. Serbia's coal power plants are the single largest source of SO₂ in Europe. The World Health Organization, in its publication 'Economic cost of the health impact of air pollution in



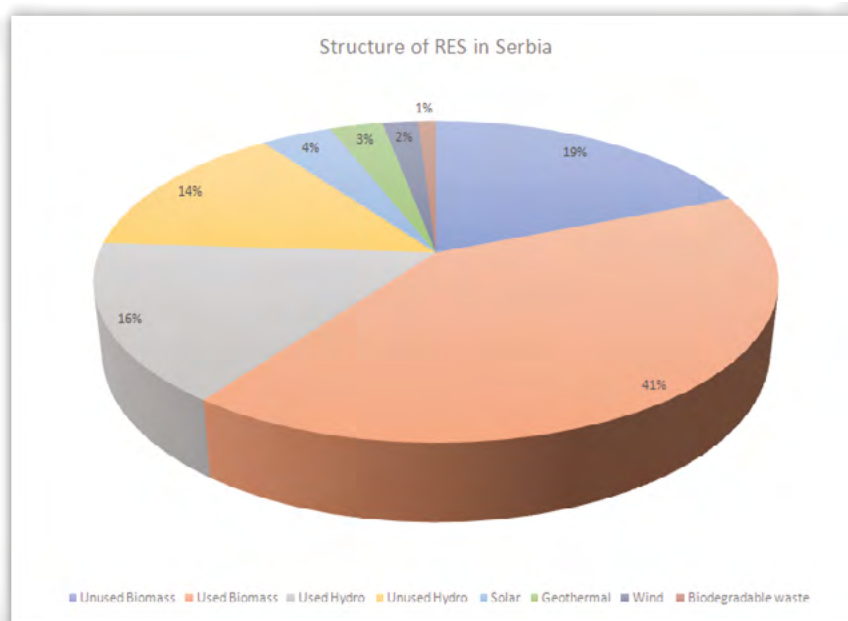
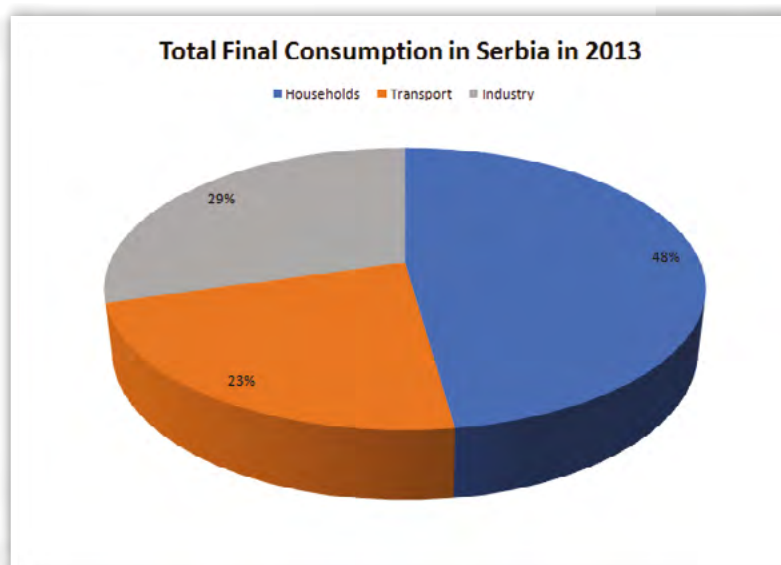
Europe', estimates that the economic costs of premature deaths caused by air pollution in Serbia amounted to 33.5% of GDP.

On the subject of energy consumption, most of the energy is consumed in Serbian households, which is not the case in the Western European countries. This is because of the low energy efficiency of buildings and energy equipment, the ruined industrial sector and the increasing use of electricity for heating in winter, especially in rural areas where the growing demand for heating cannot be met by the available wood reserves.

Serbia adopted its National Renewable Energy Action Plan (NREAP) in 2013. The document presents the Republic of Serbia's framework policy and sets out the pathway in the field of RES until 2020. In accordance with Directive 2009/28/EC and the Decision of the Council of Ministers of the Energy Community of 18 October 2012 (D/2012/04/MS-EnC), a binding target was set for the Republic of Serbia of 27% of RES in its GFEC in 2020. In district heating systems, RES should have a 11.2% share in 2020, or 12.1% in 2025

(at present, the share is negligible). In the final energy production, the use of RES (except biomass) is foreseen at between 270 and 307 thousand TEN by 2025 (the current use is 5 thousand TEN). Official estimates of the technically usable potential of RES are about 5.6 Mtoe per annum, although there are several independent studies that show that the potential is much greater.

The current use of renewable energy sources is based on electricity generation from large river flows and the use of biomass mainly for household heating and to a lesser extent in industry. The main support scheme for the production of electricity from renewable energy sources is a feed-in tariff, regulated by the Energy Law and special decrees. Plant operators need to obtain the status of a "privileged power producer" in



order to acquire the right to a price support for the electricity generated under the legal requirements. Having concluded a power purchase agreement with the plant operator, the guaranteed supplier the 'Electric Power Industry of Serbia' is legally obliged to buy the specified amount of electricity from privileged producers at an incentive price (Art. 23 No. 2 Regulation on Incentive Measures). The feed-in tariff price is determined in the Decree on

Structure of RES in Serbia, National Renewable Energy Action Plan of Republic of Serbia.



Incentive Measures for Electricity Generation from Renewable Energy Sources and High-Efficiency Cogeneration of Electricity and Heat, and depends mainly on the type of RES technology.

Several independent studies show that transition to 100% renewables up to 2050 is possible with a lot of investment. The organisation 'One Degree Serbia' estimates that the transition scenario for an economy driven by 100% renewables would cost between US\$ 92 and US\$ 206 billion. If the investment is reduced to an annual level for a period of 30 years (2020-2050), it represents an investment of between US\$ 3.1 and US\$ 6.9 billion (Samardzija, 2017). If we take into account the enormous costs that pollution from the energy sector have on health and the opportunity to reduce import dependency while increasing energy security, investment in renewables sounds like a smart decision.

Improving energy efficiency is by far the most cost-effective measure, given the Serbian economy's very low energy efficiency. A more comprehensive calculation is required of the potential of different energy consumption sectors, accompanied by an assessment of the most effective policies and regulations that would allow this potential to be exploited. In the public sector, the largest potential is in the renovation of heating systems, by substituting old boilers that predominantly use fossil fuel with new ones using renewable energy sources. Other technologies, such as heat pumps, solar power, etc. can be also applied.

The most important policy measure for Serbia's energy sector is democratisation and decentralisation, giving individual households and cooperatives more incentives to enter the energy market which, under the current economic situation, is almost impossible.

Green building in Serbia

According to the Statistical Office of the Republic of Serbia, construction has a significant share in the number of employees. From the total number of registered employees in 2016, construction accounted for 4.6%, making the sector very important for the Republic's national economy (Statistical Office of the Republic of Serbia, 2016).

As regards Serbia's green building sector, the greatest technical potential is in energy savings and the implementation of energy-efficiency measures. In view of the data available, it is necessary to adopt a strategy to determine the number of facilities in which to invest in order to adapt and fulfill the principles of energy efficiency and to establish the best financing system.

It is evident that a large part of the housing and non-residential funding in Serbia concerns the irrational large-scale consumption of all types of energy, primarily for heating, but more recently due to the rise in average temperatures during the summer months and the need to cool buildings. Among the existing residential buildings in Serbia there are a large number of unfinished houses (without facades), although government officials do not have data on the exact number of such buildings.

Research by the Serbian Chamber of Engineers in 2014 shows that of around 3 million buildings in Serbia, 90% are energy-inefficient (Serbian Chamber of Engineers, 2014). According to the Program for the Implementation of the Energy Development Strategy of the Republic of Serbia, the average specific final energy consumption for heating and domestic hot water in Serbia is estimated at around 220 kWh/m². This means that energy consumption in Serbia is more than twice that of other countries which are members of the Organisation for Economic Co-operation and Development (OECD, 2014).

The root of the problem is that residential buildings built during the seventies and eighties in the last century, during a period of the most intensive growth in the housing stock, are characterised by excessive consumption of final energy and the growth of thermal energy consumption. As regards energy efficiency, since these buildings are poorly built, the thermal properties of their exteriors are very inadequate and are adversely affected by ageing. According to an advisor to the Ministry of construction, transportation and infrastructure, Maja Djurovic-Petrovic, it is estimated that, by 2020, Serbia could increase the energy efficiency of its current housing stock by 50%, although to achieve this it is necessary to invest EUR 1.6 billion (Djurovic-Petrovic, 2014).



The state's first step in the development of green building and energy-efficiency alone is the introduction of an obligation that all new facilities must have so-called 'energy passports' that contain general data on building, climate and thermo-technical details, as well as recommendations for improving the facilities' energy properties, which is required for the issuance of usable permits. The energy passport is an important measure leading to the goal, which is the construction of energy-efficient buildings. By the end of 2016, more than 1,600 energy passports have been issued, according to the Minister of Construction, Transport and Infrastructure (Mihajlovic, 2016). The Law on Efficient Use of Energy envisaged the establishment of the budgetary 'efficiency fund' as an efficient way of collecting and placing funds to finance or co-finance projects, programmes and activities aimed at the more efficient use of energy. The fund started operating in January 2014 and the first projects, which were implemented in 2015 and 2016, primarily included measures for improving energy efficiency of the thermal shell of the building (replacement of windows and installation of thermal insulation). There were also projects for improving the thermo-technical system using renewable energy sources. A new law on housing and maintenance of buildings is being prepared which should emphasise that energy efficiency is of public interest, and thus provides a way for local government to allocate funds for this purpose, and for housing communities to apply for calls for energy-efficiency programmes.

The adoption of green construction would improve citizens' quality of life, the culture of life and the aesthetic value of buildings. Furthermore, the necessary investment in this area will encourage additional growth in construction and in other industries related to it. Investing in innovative building technologies has the potential to provide for a cheaper and faster construction process.

Vrbas – success story

In the town of Vrbas, one example of the local government's conscious administration towards energy efficiency is worth mentioning. Determined to show that the municipality is wasting energy, two employees of the Vrbas City Directorate for Construction analysed the energy efficiency of public buildings. Working in the Directorate, they encountered the same problems all the time – high consumption and waste of energy in public buildings and public lighting, as well as poor maintenance.

On their own initiative and in their free time, they went from one public building to another, visiting them all and every room in them, listing all electricity consumers, measuring each and every light bulb, plug, window, all with the aim of establishing an energy-management system and introducing it in institutions.

In July 2011, in this municipality, the Office for Energy Management was founded as a pilot project, which was entrusted to the Directorate for Construction. Energy audits of public facilities were carried out, a public lighting cadaster was prepared, an information system was established, and training sessions were organised for key stakeholders in the energy-management system. Energy management has been upgraded by the energy-efficiency programme and energy certification – among the first in the country, they have been certified by an authorised organisation to issue energy passports, and this service has now been launched on the market. After collecting all the data, it was input into the software, in agreement with all public building managers, to report monthly electricity, heating, and other relevant data.

And they did not stop there: in 2015, the Office introduced the ISO 50001 Energy Management Standard which covers the field of municipal energy management. With this, Vrbas became one of the few municipalities in Europe and the first and only one in Serbia to have this standard. In addition, all bundles of public lighting were noted and, using its own funds, the municipality replaced the lighting in one inhabited area, among other things. Combined lighting, high-pressure sodium and LEDs have brought savings of 47%. Without the need for large budget investments, but primarily via energy management, they are changing habits and controls, compared to the base year 2009, making energy savings in the public buildings of 17% or around 10 million dinars. The municipality is open to providing support and counselling to their municipalities, claiming that this can and must also be implemented in other municipalities because it will provide for enormous savings that can be used for other purposes (Vreme, 2016).



Energy management model at the local level – path to success

Energy management, in the most general sense, represents the management of parameters of energy diffusion within an organisation, starting from the process of production and supply, through the transformation process, to the final use of energy. If such a defined management of energy diffusion is achieved in an organised, structured, systematic and permanent way, then it can be said that there is an established energy-management system within the organisation. This concept is one of the most important for energy efficiency and energy savings. It is also a source of new jobs for highly educated professionals from the energy sector.

Serbia adopted its Law on Efficient Use of Energy in 2013 (Official Gazette of RS, No. 25/13) which defines the energy-management system for the Republic of Serbia. This system includes a wide range of regulatory, organisational, incentivising, technical and other measures and activities which, within the framework of its powers, are determined and implemented by all the system's stakeholders, including state administration bodies and system bonds. This system represents one way to achieve the goals of the policy for efficient energy use at the state level, which include:

1. Increasing the security of energy supply and its more efficient use;
2. Increasing the competitiveness of the economy;
3. Reducing the negative impacts of the energy sector on the environment;
4. Encouraging responsible behaviour towards energy, based on implementation of the policy of efficient use of energy and energy efficiency measures in the production, transmission, distribution and energy consumption sectors.

Since 2015, the Global Environment Facility (GEF) and the United Nations Development Programme (UNDP) have been financing the project 'Removing Barriers to Promote and Support Energy Management Systems in Municipalities (EMS) throughout Serbia'. The aim of the project is to introduce and support the implementation of municipal energy-management systems (EMS), including energy-management information systems (EMIS), throughout Serbia in order to increase energy-efficiency investments in public buildings and municipal services and to facilitate their energy-efficient operation, in line with the provisions of the Law on Efficient Use of Energy.

While the minimum target is for at least 30 Serbian municipalities to formally adopt and start the implementation of EMS and EMIS by December 2020, when the project should end, it also seeks to facilitate their replication in other Serbian municipalities. Complementary activities will include the preparation of energy-efficiency projects in municipal buildings/facilities (technical identification, energy audits, developing investment packages, etc.) along with the implementation of a grant of US\$ 0.5 million for 10 energy-efficiency demonstration projects in municipal buildings/facilities. The grant will be combined with the Budgetary Fund for Energy Efficiency and implemented by the MoME in close cooperation with UNDP.

Establishing a waste management system in Serbia

The circular economy is a relatively new term in Serbia, which has very low resource efficiency. The development of Serbian domestic material consumption per person does not follow the European pattern – having increased until 2004, since then there have been slight annual variations, hovering around 14.5 tonnes and 15.2 tonnes. In 2014, the level of resource consumption in Serbia was 11% above the EU average. Resource productivity increased by 40% between 2001 and 2014, from EUR 0.21 per kg in 2001 to EUR 0.29 in 2014. Although there is an upward trend in resource productivity in Serbia, it is still far below the EU-28 average of EUR 1.98 per kg in 2014 (EEA, 2016).

At this initial stage in developing the circular economy, most of the efforts are directed toward sustainable waste management. Waste prevention, in the form of eco-design, remanufacturing, repairs and similar, has an immense potential that is still not recognised by official policies in the country.



Recycling – the youngest branch of the economy in Serbia, according to the Ministry of Agriculture and Environment – currently employs about 22,000 people in a total of 2,000 companies (Bogosavljevic Boskovic, 2016). Serbia recycles about 5-7% of total waste, which is significantly less compared to other European countries (OSCE 2017). In most municipalities, there is no infrastructure for waste management. Although investment is urgently needed in this area, before that we need sustainable policy measures. With the development of this sector, new jobs will be created which will stimulate the fight against poverty and the employment of a socially vulnerable group of citizens.

Waste management and, in particular, waste collection and sorting, is both an ecological and an economic issue with great potential. The development of the recycling industry in Serbia began after 2009 with the adoption of the so-called set of green laws and introducing recycling into an economically viable system. At the end of 2009, the state began to subsidise companies dealing with the waste treatment of rubber, then electrical and electronic waste, batteries and oil. It then introduced an environmental tax based on the ‘polluter pays’ principle, the purpose being, among others, to support the setting up of systematic waste management in Serbia. With a transparent flow of money and ecological taxes dedicated to environmental protection, the government should support the work of existing facilities and encourage the opening of new ones. However, to ensure a regular flow of funds into the budget, it is necessary to establish more rigorous legislation for illegal disposal and pollution and to control the implementation of the existing legislation more strictly. Furthermore, investing in technological innovation for the better use of recycled raw materials may lead to the application of new products and opening up new markets.

One of the biggest issues holding back further development of Serbia’s recycling industry concerns the government’s debt to the recyclers. In 2015, the state owed recyclers 1.5 billion dinars (around EUR 13 million). Since then there has been a growth in state allocations, but it is still not enough even for survival, let alone the growth of companies in that area. Since the beginning of 2017, Serbia has once again established the budgetary green fund which was set up four years ago after the previous environmental protection fund was abolished. Originally, the latter was closed in 2012 following an allegation that it had been misused by the previous government. As a result, no one was ever indicted for the alleged misuse but the recycling industry was left without funding for the system they were just starting to establish.

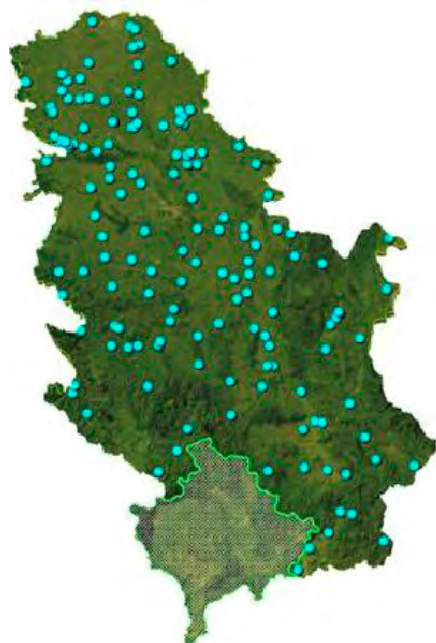
Paradoxically, each year, Serbia exports 300,000 tonnes of secondary raw materials, and imports 250,000 tonnes at a higher price due to transport costs. In order for the state to protect the recycling industry, it has announced that a waste stock market will be soon be set up under the responsibility of the Environment Protection Agency. This will operate according to the following principle: before a company can export waste outside Serbia’s territory, it will have to offer it to domestic companies on the Agency’s website – this advertising will last for five days. If nobody responds during those five days, a certificate will be issued entitling the holder to an export licence.

All local governments will be obliged to develop regional and local waste-management plans, with the obligation of primary separation in households. Reform of communal services requires a completely new framework, control regime and institutions able to implement the regime. Reforms in this area should be implemented as soon as possible through changes in the legal and strategic framework of the Republic of Serbia. Municipal waste infrastructure investments must be coordinated in order for Serbia to fulfill all the objectives of the EU Directives and to build a sustainable waste-management system for its citizens. To achieve this in the municipalities, it is necessary to provide more containers and vehicles for waste collection. To achieve the goals of the EU Framework Directive on Waste, Serbia is aiming for a 50% recycling rate of total municipal waste by 2030. However, at the current pace, that target will be very hard to achieve.

Today the largest part of the secondary raw materials collected and processed in the country originates from the work of an informal group of collectors which in the legal sense is not regulated by the Republic of Serbia’s legislation. According to some estimates, there are 30,000 to 50,000 individual collectors currently working, 70% of whom are from the Roma national minority. Due to the high unemployment rate, poor living conditions and ethnic prejudices, these people find it difficult to find employment in the community where they live, which jeopardises the basic human right guaranteed by the Serbian Constitution Article 60 – right to work. Social aid, on average EUR 50 per household member, is not enough to survive above the poverty line, which is why waste is an additional source of income for this vulnerable group. An individual collector, visiting municipal containers every day, collects a maximum of 1 tonne of PET waste



per month. To achieve this, their working day lasts from 10 to 12 hours, and they cover between 30 and 50 kilometres every day. Unfortunately, individual collectors have no legal possibility to regulate their status and only have the bare minimum of workers' rights – the right to social, health and pension insurance – although they are a key factor in the development of Serbia's recycling industry in Serbia.



164 landfills on the territory of the Republic of Serbia, which are used by municipal public utility companies for waste disposal.

According to the Serbian Packaging Waste Recyclers Association's data for 2016, almost 80% of the total PET collected comes from the private sector, and only 20% of public utility companies, in cardboard and paper recycling industry only 1% of a processed material in 2016. came from public utility companies. Bearing in mind that the private sector gathers most of its waste through purchases from 'natural persons' – informal collectors of recyclable materials – it can be concluded that most of the credit for developing Serbia's recycling business and achieving national targets for recycling in accordance with EU Directives is due to the informal sector.

With reference to animal waste, there is no official data on how much waste is generated in Serbia on an annual basis, although according to the Waste Management Strategy for the period 2010-2019, there are 28,000 tonnes of dead animals per year or 245,000 tonnes of animal waste. It is estimated that only 20% of this is collected and processed, which means 80% of this waste does not end up in processing plants but in many other places, such as rivers, fields, canals and roads.

Annually, in the territory of Serbia, almost 10,000 tonnes of medical waste are produced, of which only 2,000 tonnes are processed correctly. From 2007 to 2013, the EU provided funding through two projects and supported the introduction

of a modern medical waste-management system. As a result, the first project 'Technical Support in the Management of Medical Waste' was developed and a Rulebook on Medical Waste Management of Medical Waste Management was adopted. The project has enabled the development of a system for separating, collecting, marking, storing, treating and disposing of medical waste.

Sustainable transport

Transport and traffic create a quarter of the total pollutants in the environment. Sustainable transport enables the smooth functioning and realisation of all transport requirements while aiming at total environmental protection and avoiding environmental damage. In Serbia, there has been a huge increase in both domestic and international transport, resulting in an increase in the negative impact on the environment. To solve the problems and eliminate further potential risks, it is necessary to approach the problem holistically and in an organised manner.

According to the Republic Institute for Statistics' data, there are currently 45,668 km of roads in Serbia, 3738 km of railway lines, 1593 km of navigable rivers and canals, and two airports. The Serbian government's top priority in terms of investment in the transport network is road traffic and road construction. In Serbia, the government built a total of 128 kilometres of highway in 2016, 91.1 km in 2015, and 58.1 km in 2013. According to these data, the number of cars is continuing to rise which, bearing in mind that the country has very little or no use of electric vehicles, indicates that the risk of pollution caused by traffic is also rising.



REGISTER OF ROAD AND MOTOR VEHICLES

Republic of Serbia

	2012.	2013.	2014.	2015.
Mopeds	12 875	22 294	25 065	24 845
Motocycles	34 362	36 403	38 102	39 396
Passenger cars	1 726 190	1 770 206	1 797 427	1 834 890
Busses	8 834	9 019	9 044	9 482
Freight vehicles	144 075	140 854	139 220	139 886
Trailers	33 389	38 733	38 693	38 551

Register of road, motor vehicles, trailers and semi-trailers.

Although the situation on the roads in Serbia is not enviable, a positive shift is noticeable, primarily in the construction of new roads, as well as in the adaption of existing ones. Unfortunately, there are no sustainable policy measures being directed towards developing other, greener forms of transport. The lack of conditions for the development of sustainable transport is also reflected in the report by the European Commission for Serbia in 2016. As stated in the EC's report, legislation on clean and energy-efficient road transport vehicles, on the deployment of infrastructure for alternative fuel and on an intelligent transport system needs to be developed (European Commission, 2016).

The railways are in poor condition and large investments are needed to raise the quality of rail transport to European standards. An average of 6 million passengers travel on Serbia's railways each year. Since the average speed of trains on Serbian railways is 42 km per hour, there is a huge potential for improvements in Serbia's rail transport.

One of the major railway reconstruction projects in Serbia concerns the signing of a commercial contract and a Memorandum of Understanding with the Chinese Exim Bank for a loan for the Hungarian-Serbian Railways project in the territory of Serbia. It will now be possible to start building a railway with speeds up to 200 km per hour, which will shorten the time taken to travel between Belgrade and Budapest to less than three hours. The work was scheduled to begin in the second half of 2017.

What is needed, and for which there is no recorded data, except for some examples from local self-government, is the creation of bicycle paths. Although it has been recognised that cycling is one of the best ways to reduce traffic pollution, Serbia still does not approach this problem systematically.

There is a great demand for the construction and regulation of a bicycle service throughout the country. Promoting cycling means the country is benefiting in many ways: by reducing energy consumption, cutting costs to maintain a clean environment; and less investment needed in the health system. Following the setting up of an adequate bicycle infrastructure, access to publically available bicycles should be considered in all cities. By introducing such a scheme, the bicycle traffic will intersect with the transport system, which will greatly relieve urban transport, reduce heavy traffic, and improve air quality in towns and cities.



One good example was provided by the City of Belgrade: in July 2016, it introduced five electric buses in city traffic and established the first 'green line' in this part of Europe.

Serbia has favourable economic and geographical characteristics for freight, passenger and tourist water transport. The potential of inland waterways – UPP (rivers and canals) with a total length of 1,677 km – is significant and 21.7 km/1000km² above the EU-27. However, this potential is currently unused. Passenger water transport in Serbia is mainly of a transit-tourist character organised by tourist agencies, mainly from Germany and Austria, in the form of cruises to the Black Sea. There is continued growth in this type of traffic which is an important part of developing trade and tourism. The transport provided by smaller boats (yachts) in the form of yachting tourism does not really exist because marinas with services and other facilities for the reception and servicing of vessels and tourists have yet to be built.

With the exception of the Danube Corridor, the waterways in Serbia are generally not well maintained and the lack of a modern river fleet is also a major problem. Knowing that waterway transport, especially for bulk cargo, is up to five times cheaper than road transport, and that air pollution is up to 10 times less than from road transport, the reconstruction of waterways and the modernisation of the fleet is a great opportunity for Serbia.

What the state should do next is to improve citizens' quality of life and preserve the environment by introducing strict measures to reduce emissions of harmful gases. Stricter regulation of car import regulations would make it impossible to import vehicles that are harmful to the environment.

Water management

The right to a healthy environment and water as a major element is guaranteed by the Constitution of the Republic of Serbia. With reference to this constitutional principle, Serbia has a lot of work ahead for the complete implementation of the sustainable use of water resources. Progress in the area of water management must be prioritised, especially investment in water treatment and protection against the adverse effects of water. This sector is flagged up as one of most problematic in the process of implementing EU legislation, bearing in mind the funding needed.

It is a common belief that Serbia is rich in water resources, but the truth is that only 20% of all water in Serbia comes from national sources – all the rest is transit water. Of the total volume used, 61.6% is underground and spring water, 30.2% comes from streams, and 8.2% is water from lakes and reservoirs. Public water supply coverage is currently around 80%. One of the most urgent issues is sewage: only 58% of the population is connected to urban waste-water collecting and treatment systems. Untreated sewage is one of the biggest polluters. Only 4% of waste-water is treated in Serbia. Of its 165 municipalities, only 20% have facilities for purification of municipal waste-water, while large cities, like Belgrade, Novi Sad and Nis, do not have such facilities due to a lack of funds. More than 50% of industrial plants in Serbia do not purify waste-water as there are no purification systems.

Inadequate investment (very few capital projects) and the lack of improvements in the infrastructure are resulting in devastation, affecting the country's capacities and increasing its vulnerability in the areas of protection against river flooding and erosion. The overall annual commitment required for the operation and development of water management is around EUR 900 million. Existing sources of financing at all water-management levels are about EUR 250 million which is about three to four times less than is currently needed.

The sustainable use of water resources requires specialised programmes for the control and mitigation of drinking water losses in the distribution systems. Such programmes should include projects for distribution network recovery and better management efficiency. Average water losses in public water supply systems were around 33% in 2012. The common characteristics of these systems which are suffering significant losses are limited water resources and a deficit in water supply (European Environmental Agency, 2015).

More than 90% of Serbia's territory falls within the Danube River Basin, so transboundary cooperation is very high on the list of future potential for green jobs. Only a small number of projects are prepared in a way



that would make it possible to seek funding internationally. Local administrations have neither the funds nor the human resources to furnish the higher-level design documents needed for project implementation. Serbia still has significant bureaucratic procedures which means that planning, preparation and implementation of capital projects require numerous procedures and documents, significantly prolonging project implementation. International cooperation, especially with neighbouring countries, is unsatisfactory as there are no bilateral agreements with some of these countries (Bulgaria and former Yugoslav republics). Cooperation with Hungary and Romania is based on agreements dating back to 1955.

Serbia has a high-quality hub in scientific, research, planning, engineering and other fields as the core for future water-sector development. Numerous universities provide a satisfactory level of education, but the issue is that syllabuses and teaching methods need to be updated, including those related to postgraduate studies. There is insufficient involvement of scientific and research institutions in areas of special relevance to water management.

In all green economy sectors there is a lack of an educated workforce prepared to respond to the needs of a growing economy. That is particularly visible in the water management sector. The human resources needed in engineering include those available at scientific, professional, educational and other institutions, which have significant potential and can support government agencies in development project planning and implementation.

Sustainable agriculture

The rural population in Serbia accounts for 40.6% of the 7.2 million people living in the country. The utilised agricultural area is 3.44 million hectares which accounts for 44% of the total territory. Arable farming is the predominant land use (73%) followed by permanent grassland and crops. Characterised by rich land resources and a favourable climate, agriculture represents a vital sector of the Serbian economy (European Commission, 2013).

Budget allocations for agriculture in Serbia are far below the lowest allocations in EU countries, totaling around 5% of the budget, while in other EU countries this percentage is between 8% and 16%. Investments in agriculture either do not exist or are irregular, and construction of the infrastructure is based exclusively on the needs of 'big investors'. The only changes in the legal framework in the agriculture sector were due to harmonisation with the EU's Stabilization and Association Agreement.

Agriculture accounts for 21% of Serbia's employment, generating EUR 29.6 billion of the country's gross domestic product. Among Serbia's 631,000 agricultural holdings, 99.5% are family farms, and 17% of those are held by women. The average farm size is 5.4 hectares, which is 2.7 less than the EU average. Small-scale producers are prevalent in the livestock sector. Farms of between 2 and 10 hectares make up the largest share of the country's farms while holdings of less than 1 hectare account for 29.2%.

Small-scale family farmers face many challenges. In this respect, they have difficulty in accessing markets, and when they do, they lack competitiveness on the European markets. These farms are less resilient to floods and droughts, which means there is a need to strengthen the adaptive capacity of farmers against climate fluctuations. Furthermore, commercial fertilisers are expensive, there is a lack of technical support, limited healthcare, transport, lack of internet, limited knowledge transfers, and young people migrate out of rural areas because of the lack of opportunities (Zólyomi, 2015).

Currently, EU exports of agricultural products to Serbia amount to EUR 768 million, while EU imports of agricultural products from Serbia total EUR 961 million.

Serbia has a lot of potential for organic agriculture which is one of the fastest growing sectors. Demand for organically grown produce exists in many countries and Serbia has excellent eco-climatic and technical conditions to cultivate: in addition to berries and fruits that are grown traditionally, organic cereals and oilseeds are also in high demand. So far, however, farms engaged in organic farming have required assistance to procure the appropriate machinery, other technical equipment and capital in order to raise production efficiency to levels that can ensure their competitiveness in the national, regional and EU markets.



Organic producers mainly lack the seasonal workforce, although, because of migration, there is not enough permanent labour either. Organic farming is impossible without increasing the share of human labour. The National Action Plan for Organic Production was developed and fully integrated into the National Strategy for Rural Development; the law on organic production is mainly in line with EU requirements. In addition, a database was created with the relevant numbers on organic production and producers, an integrated control system, including an EU-approved domestic certification body was established, and organic production know-how has been transferred successfully from Western Europe to Serbia.

OVERVIEW OF THE ORGANIC PRODUCTION			
	AREAS UNDER ORGANIC PRODUCTION (HA)	SHARE OF AREAS UNDER ORGANIC PRODUCTION (%)	
2012.	6340	0.18	
2013.	8228	0.23	
2014.	9547	0.28	
2015.	15298	0.44	

Overview of the area under organic production.

The forthcoming IPARD programme is a major opportunity for the organic sector in Serbia. Through investment support from IPARD, both farmers and processors can begin to increase production efficiency and gradually strengthen the country's role in the European organic industry, building on its existing advantages: uncontaminated soil, renowned and prominent R&D and educational institutions, close ties to specific markets, and a long tradition in growing and processing highly sought after products (fruits, berries, vegetables, cereals and oilseeds).

Land management

Land management and urban development in Serbia is a topic that rarely attracts the attention of decision-makers and citizens – until a natural catastrophe occurs, that is. The land-management system is in the process of establishing and aligning with European standards and policies. Land should be used sustainably and future plans need to be developed in an integrated and sustainable manner. This means minimising the impact urbanisation has on the environment, as well as taking into account social and gender issues. In the light of climate change and the natural exposure of the Balkan area to floods, land erosion and similar risks, adaptation measures must be emphasised.



Recently, policy-makers have focused on simplifying the procedures and speeding up the issuing of building permits for potential investors. According to the World Bank's 'Doing Business Report 2014', in Serbia, on average it took 264 days to obtain a construction permit (World Bank, 2023). In 2017, Serbia has moved a long way up the Doing Business list, mainly by speeding up the procedure for construction permits and improving the reliability of the land-management system implemented by the geographical information system. From the environmental point of view, this process should be implemented with caution, bearing in mind the need for citizens to be involved.

The quality of soil in Serbia and the extent of its degradation has been influenced by many natural processes (erosive processes, landslides, torrential water flows). However, anthropogenic phenomena and processes have also had a very significant impact on land quality. Among the most significant of these are: pollution of the soil by chemical interventions (mineral fertilisers, pesticides) and organic fertilisers (solid and liquid manure) in agricultural production; industrial processes; mining works; inadequate waste disposal, such as the existence of non-sanitary septic tanks (households, livestock farms), land contamination along the roads due to inadequate drainage, changing the purpose of the area (illegal construction), etc. In 2015, 423 potentially contaminated and contaminated sites were identified. A share analysis of the major localised sources of soil pollution shows that the highest contribution comes from public landfills at 42.78% (Ministry of Agriculture and Environmental Protection - Environmental Protection Agency, 2016). Results of an analysis of local soil-pollution sources showed that the majority come from public municipal waste dumps (43.5%) followed by areas used for exploitation and oil production (22.5%). Other important sources are industrial waste dumps and industrial facilities. At the same time, examination of soil samples in proximity to 28 industrial facilities showed increased levels of several elements.

Sustainable tourism

Western Balkan countries enjoy beautiful nature which provides an untapped potential for future green jobs. Serbia's national treasure is its land: over 30% of this country of 7.3 million is covered in forest, and one-tenth of that land is designated as national parks. Near those forests are valuable wetlands which host a variety of flora and fauna that are the envy of much of Europe. The Sava and Danube rivers are particularly important, offering foreign city folk a genuine rural getaway.

The protected areas provide the basis for developing eco-tourism as a niche market for Serbian tourism. There are five national parks in Serbia (Djerdap, Fruska Gora, Kopaonik, Sar planina and Tara), three Ramsar sites (Ludasko jezero, Obodska bara and Carska bara) and one biosphere reserve – Golija-Studenica. In total, there are 418 protected areas, among which are 71 nature reserves, 19 nature parks and 322 natural monuments as well as 215 plant and 427 animal species designated as natural rarities. There are many castles in these parkland areas which were often neglected and have fallen into disrepair, frequently due to a lack of finances (Popesku, 2012).

The Danube region is bursting with tourism potential, bearing in mind that it stretches through 14 countries from the Black Forest to the Black Sea, and is home to over 115 million inhabitants of diverse cultures, traditions and ethnicities. In 2011, the EU Strategy for the Danube Region (EUSDR) was launched in recognition of the need for the region to come together to overcome common challenges and meet its potential in several key areas, among them tourism.

One of the most important forms of sustainable tourism in Serbia is rural tourism, which has an impact on several other areas besides tourism. The Food and Agriculture Organization sees the development of tourism in rural areas as a direct interest for agriculture because it provides a market for its products, both on the farm and outside. It also helps reduce poverty among small farmers and the rural population in general, providing an additional source of farm income by adding value to primary products, as well as recruiting surplus labour and available space and facilities. Rural tourism is doing its best as long as it develops with the critical implementation of good practices, with full respect for the opportunities and aspirations of the local population and understanding their needs, habits and customs, and economic power.



Moving towards an integrated approach to rural development requires great attention be given to at least four key areas:

1. transport and development of electronic communications;
2. provision of public services;
3. valorisation of natural and cultural resources; and
4. promotion of rural enterprises, including the development and financing of small and medium-sized enterprises (OECD, 2006).

Rural areas in Serbia, especially in the mountains, are becoming increasingly less populated for political and economic reasons. In the 1970s and 80s, rural tourism developed sporadically and in an unplanned way. The country did not address this segment of the economy significantly, and intense industrialisation led to the ageing of the Serbian village (Penic, 2017). The 2011 population census shows that the demographic trends in Serbia, especially in its rural areas, are becoming increasingly unfavourable. In the period 2002-2011, the total number of inhabitants declined by 4.15%, primarily due to negative population growth and people moving abroad. In this period, the rural population fell by 311,139 inhabitants (10.9%), to below 3 million, and now accounts for 40.6% of Serbia's total population. In support of negative demographic trends in rural areas, the data show that in about 1,000 settlements, the number of inhabitants is less than 100, which practically indicates that every fifth settlement is on the way to becoming extinct. The largest concentration of such settlements is in the south and east of the country, where every third settlement has fewer than 100 inhabitants (Strategy of Agriculture and Rural Development of the Republic of Serbia).

For several years, a movement has been developing toward sustainable rural tourism. Measures supporting the diversification of the rural economy in socially, economically and environmentally sustainable ways are needed for rural Serbia to improve its quality of life, reduce poverty and fight social and environmental degradation of its natural resources. Sustainable rural tourism is one of the key sectors with a strong potential for diversifying Serbia's rural economy. It looks at tourism within destination areas as a relationship between host areas and their communities and peoples, tourists and the tourism industry. In brief, it is minimising environmental and cultural damage, optimising visitor satisfaction, maximising long-term economic growth, and balancing tourism growth potential with the conservation needs of the environment.

Further concrete, permanent group work is essential to strengthen the value chain of heritage – agriculture – tourism using the model of public-private partnership, the LEADER concept, regional branding, etc. Branding and standardisation of national cuisine, with the introduction of modern standards, rules and procedures in UNJP pilot regions, for example, touch on this but definitely deserve more attention. Also, supporting the expression of the multifunctional role of agriculture in terms of its function as an ecological service, and by support for high-value natural farms, is extremely important in regions where tourism is developing, as well as areas that are significant for nature protection.

The promotion of integral rural development presents numerous challenges for politics and governance. Primarily, it involves strengthening coordination between sectors, different levels of government, and between public and private actors. Transition from single-sector (agricultural) policy

Case study

The village of Vrmdža is an impressive example of rural development and economic emancipation in Serbia. It is located in the municipality of Sokobanja, in the Zajecar district in south-east Serbia, in the untouched nature and landscape of the Rtanj mountain. This settlement was first mentioned in the third century as a Roman fort used to defend the Imperial road, built for the purpose of defence through the centuries. In the 14th century, it became the home of a rich Byzantine nobleman. Today, there are still many traditions and awareness of the vivid past which is constantly developing and being enhanced in fairy tales, providing great potential for modern-day tourism in this magical settlement.

In recent years, Vrmdža village has welcomed over 32 new households. Young, mostly highly educated, freelancers, foreigners and those who do not have family or other connections with this region, come from all over the world to settle in this eco-village where socially responsible entrepreneurship is developing alongside great potential for a model of Serbia's healthy lifestyle. In the village, eco-architecture can be



seen in its traditional houses and barns. The houses are built with stone basements as their foundation, then oak logs are put on top, the walls are made of earth and straw, and sand and lime mortar is added to the façade. The values of traditional architecture and natural materials are regaining their rightful place, and new villagers are trying hard to renovate these old houses or build new ones according to the same principles, with their own hands. Eco-construction is one of the locality's great potentials and incoming villagers mostly opt for this healthier and cheaper way of building, which is also more demanding in terms of personal engagement, as well as experience and a sense of belonging.

In Vrmdža, it is almost impossible to buy food right now because the principle of selling goods for money does not work. Instead, the locals share the excess of what they produce, thereby strengthening the communal spirit. The coexistence of new and old locals is particularly valuable here. While the new inhabitants were quick to adapt, learn languages, village jobs, and make rakia, the old men began to tidy their houses and inviting tourists to stay with cheese, goat and sheep's milk, lamb, local juices, plums and rtanj tea. The locals help each other – the natives help newcomers to cultivate the land, while the newcomers explain the methods of organic production and agriculture without using chemicals to the older ones. They all share experiences, and in such a diverse community where many languages are heard, exchange is both rich and diverse.

The unusual development of Vrmdža village was also identified in the focus of the Center for Corporate Social Responsibility, which is located here. CDOP is a citizens' association based in the village, and is led by Dragana Tomic Pilipovic with a group of experts and volunteers who have many years of experience and expertise in entrepreneurship, management, sustainable development, permaculture, ecology, etc. The Center emerged as a desire to help individuals and organisations develop their personal dreams and potential through socially responsible entrepreneurship, by working on what they like to do, and thereby improving the quality of life in their surroundings. Their rural hub is located in the village, as a co-working space and an educational complex where innovative individuals and organisations can build on their potential. In addition to empowering Serb villages and social entrepreneurship, these rural hubs focus on rural women as important carriers within the social economy, rural youth as potential drivers of social businesses, and local rural communities.

Vrmdža village is a perfect example of how the green economy approach is holistic and can provide solutions for many issues that are social, environmental and economic at the same time.

PESTLE Analysis

With the help of the PESTLE methodology, the analysis of data from Serbia defines the political, economic, social, technological, legal and environmental landscapes for green economy in the following way:

Political factors

- ▶ The government has set out its ambition for the sustainable reform of the economy in its main policy and strategic documents but now needs to implement it;
- ▶ There is a strong political focus on adopting the EU's environmental Directives into national legislation, but insufficient focus on developing the administrative capacity to implement, monitor and execute that legislation, and on establishing the infrastructure required to enable it to comply with the legislation;
- ▶ Political actors in Serbia need to adopt a more positive approach towards environmental protection, rather than only seeing it as a cost;
- ▶ The Republic of Serbia still considers fossil fuels as a strategic energy resource; there is a need for strong political will towards low-carbon development plans;
- ▶ Although local governments are becoming increasingly aware of the potential for energy efficiency, there is no consistent and long-term policy in this area;



- Political focus is on reconstruction of old roads and construction of new ones. More focus is needed on sustainable and alternative forms of transport, especially train and bicycle infrastructure.

Economy

- Environmental financing is not transparent and consistent;
- Policies that stimulate fossil fuels and polluting industries (such as fossil fuel energy price subsidies) should be removed to provide a better investment climate for low-carbon development;
- There is a need to increase the quotas for renewable energy, gradually abandon the system of quotas, and to open the energy market;
- A precise database about the current state of all sectors needed for further development of policies – for example, energy efficiency in public and residential buildings;
- Incentives and capital investments needed in various green economy sectors like organic agriculture, sustainable tourism and waste management;
- Incentives for energy-efficient materials, solar panels, heat pumps, etc. for citizens' homes;
- Investments in waste management can increase employment in this area by 10%.

Social

- More investment and programmes are needed in the field of social science research in aspects of the green economy, such as social, gender, inclusion, poverty and other issues;
- There should be cooperation between researchers and policy-makers as well as decision-makers to create evidence-based policies at all levels;
- Serbia should emphasise eco-tourism as a way to improve rural areas and agriculture, and to encourage young people to go back to villages;
- Take into the account the social and health aspects of a fossil-fuel economy;
- Increase citizen participation in the energy system by means of energy cooperatives;
- Respect is needed for local solutions; the inclusion of vulnerable groups such as the Roma people is a priority for the waste-management sector.

Technological

- Serbia must improve its support for technology development and innovations;
- More emphasis is needed in elementary and secondary education on environmental issues as well as on new jobs emerging in the green economy and specialised workforce.

Legislative

- A critical approach is required in respecting local conditions and needs in the process of aligning Serbia's legislation with EU rules and procedures as part of the country's accession to the EU;
- Updated strategies and action plans needed, especially in the field of green public procurement.

Environmental

- In Serbia, pollution takes a significant toll on the economy and health, which is not being considered;
- The most important environmental issues are waste-water treatment and waste management, air pollution from energy and transport, and historical pollution;
- Less than 10% of sewage water is being treated;
- Serbia is very exposed to natural disasters and needs a comprehensive climate adaptation strategy.



Conclusion

The research has shown immense potential for developing new jobs and ‘greening’ existing ones. It also indicated that the Serbian economy is currently going in a different direction: attracting foreign investments and multinational companies, building large (mega) infrastructure projects, and privatising natural resources. The state of the environment, especially water, air and land pollution, has reached an alarming state and requires attention, not only through funding but also via sustainable policies. Serbia must continue on its path towards the EU, as this is the biggest motivation for positive steps and work on further reconciliation and cooperation in the region. Serbia needs a comprehensive plan for keeping young, educated people in the country and developing more programmes for innovation and science exchange in both the region and the EU. What is needed most, in all the economic sectors analysed, is a bottom-up approach. Greening the economy in Serbia is possible through decentralised initiatives that solve more problems at once, such as our case study of Vrmdža village showed. The development of new environmental, socio-economic alternatives is a way to go, but what is also relevant is rediscovering some old practices that have been overlooked, like experience with cooperatives dating back to the socialist era. For this to be possible, local municipalities need more competences and resources and small and medium-sized enterprises have to be disburdened.



A photograph of a vineyard. In the foreground, there are several gnarled, dark brown grapevines with bright green, emerging leaves. Small yellow wildflowers are scattered among the vines. The background is a soft-focus view of more vineyard rows under a bright sky.

6. A Democratic and Inclusive Green Economy

This closing chapter summarises from a regional perspective the main analytical findings of a study of the existing landscape and policy prospects for a green economy shift in Bulgaria, Macedonia and Serbia. The study was conducted as part of the 'Revision of the Economy in the Balkans: Change Policy not Climate!' project implemented by the BlueLink Foundation Bulgaria, the Association for Sustainable Social-Economic Development Sunrise, Macedonia, and Networked, Serbia, in partnership with the Green European Foundation in Brussels. The project aims to foster a transformation towards an environmental, low-carbon and energy efficient economy, while enhancing prosperity and equity in society. It was supported by the European Parliament.

Best practices have been gathered from a review of the literature and country chapters from the three participating countries, showcasing and promoting the transformation of the economy towards environmental, low-carbon and energy-efficient production along with increasing prosperity and social equity. The facts and arguments collected by in-country researchers are intended to be useful for Green politicians and activists to raise awareness among stakeholders, politicians and the general public about the economic potential of the green economy, to stimulate changes in consumption and production patterns, and to promote a participatory approach to policy-making. The project produced a green economy factsheet for the same purposes as a stand-alone leaflet distributed for everyday use.

Having achieved the research goals, here we take one last look at the analyses and conclusions from each of the countries and compare them regionally. The country conclusions resulted from the so-called PESTLE analysis, whereby the body of collected data and factual findings were screened by the researchers in each country across five dimensions: political; economical; social; technological; legal (and policies); and environmental.

The present regional conclusions follow the same structure, but also include some of the main observations made at the project's closing event in Sofia on 9-10 November 2017. This was the International Practice and Policy Research Conference for Bulgaria, Macedonia and Serbia, entitled 'Eco-innovations for Green Economic Change and Shared Prosperity'. The preliminary outcomes from the study of the policy landscapes in Bulgaria, Macedonia and Serbia, and practical and political recommendations for achieving an equitable green economy in the three countries, were presented and discussed at the conference.

The conference responded to one of the priorities of Bulgaria's forthcoming presidency of the EU in 2018: eco-innovation as a driver for economic progress. It argued that eco-innovations need to work towards achieving shared prosperity and the democratisation of society – i.e. more people should benefit from green economic growth than from traditional economic activities.

While these regional conclusions focus on Bulgaria, Serbia and Macedonia, which were the countries covered by the project research, they are influenced by conference contributions from a wider range of EU Member States, as well as Turkey. An EU dimension has been systematically pursued throughout data collection and analyses.

Political conditions for a green economy

There is political interest in the green economy in Bulgaria and Macedonia although it is still viewed by most mainstream politicians as a luxury rather than an essential tool for climate change mitigation and adaptation. In Serbia, the government's main policy and strategic documents appear to have been set ambitiously for a sustainable reform of the economy, but implementation is hardly visible. The green economy concept needs a boost on the political scene to enable a vast green economy transition across the region.

In Macedonia and Serbia, which are applicant countries for EU membership, strong political focus is observed on adopting the EU's environmental Directives into national legislation. Unfortunately, efforts towards developing the administrative capacity to implement, monitor and execute that legislation, and establish the infrastructure required to be able to comply with the legislation, seem insufficient. For instance, Macedonia does not have an environmental protection agency, which could promote green economy policies and develop green economy initiatives.



Already an EU Member State, Bulgaria appears to be relatively better equipped with policies. The country demonstrates commitment in certain areas of the green economy, e.g. by earmarking national funding for the development of the Sofia metro. Unfortunately, this is a rather stand-alone example, not matched by systematic political support and corresponding public financing for sustainable transportation – such as urban electric transit, and national and international railway and water services. At the same time, there are significant financial restrictions limiting green initiatives in local self-government administrations.

Bulgaria's government has provided energy-efficiency public investments for administrative buildings and residential homes, and encourages certain green economy business initiatives. However, red tape, poor implementation and, in some cases, accusations of nepotism, have adversely affected the efficiency of such measures.

In spite of visible environmental degradation and related health issues resulting from the existing economic practices, political attitudes to environmental protection – which could be a major driver for green economy solutions – range from indecisiveness to outright hostility. In Macedonia and Serbia, nature protection is seen as an unnecessary expenditure. In Bulgaria, the government is engaging in weakening nature protection provisions and redrawing the EU's Natura 2000 network of protected areas.

Fossil fuels are still considered a strategic energy resource in Serbia and Bulgaria. Local governments are warming to the potential for energy efficiency, although there are no consistent long-term policy strategies for energy transition. Instead, the energy sectors appear to be dominated by traditional energy suppliers, such as coal and – in the case of Bulgaria – nuclear. Similarly, mainstream politicians appear focused on road construction and reconstruction, rather than alternative and greener forms of transport. Political will on the national level for low-carbon development plans is a must across the region.

Wider civic and political pressure is required on governmental institutions to acknowledge and prioritise the green economy. Ambitious government strategies, such as Serbia's energy-efficiency targets or Macedonia's GHG commitments must be encouraged and praised, regardless of the political leaning of the governments that adapt them. Any follow-up needs to be controlled.

The economy in focus

The green economy takes a low share of national GDP and employment across the three countries covered. Natural values are still not regarded as capital, which means that environmental degradation is not taken into consideration when calculating national economic growth.

Policies that stimulate fossil fuels and polluting industries (such as fossil-fuel energy price subsidies) should be removed to make better investment in the climate towards low-carbon development. The quotas for renewable energy must be increased in Serbia and Macedonia, and the system for quotas and opening the energy market in Bulgaria and gradually abandoned across the region. Bulgaria has achieved a satisfactory share of renewables in the national energy mix, but policy loopholes and rogue implementation has led to a number of drawbacks in implementing EU-wide pro-renewable policies.

The share of non-public green business initiatives is insignificant. Ongoing green business initiatives or promotional campaigns in Bulgaria are driven by a few private small and medium-sized businesses, CSOs or research and development entities. Environmental projects, especially green economy projects, are mainly financed internationally by international donors, particularly in Macedonia.

Bulgaria sets a good example by offering non-specific assistance for business development, while 'greening' is in place, especially for start-ups and innovative enterprises. But banking procedures for start-up and risk-business financing are complicated, restricted and non-transparent.

To date, national capital markets are underdeveloped and cannot sustain green economy investment. However, there seems to be a growing trend in grass-root market-based green business solutions and innovation in Bulgaria, Macedonia and Serbia, which needs to be sustained and cultivated. Incentives are



required for capital investments in various green economy sectors, such as organic agriculture, sustainable tourism, waste management etc.

It is necessary to ease administrative requirements and provide incentives for energy-efficient materials, solar panels, heat pumps, etc. for citizens' homes across the region. Although Bulgaria already allows citizens to produce their own energy and feed it back into the grid, the administrative requirements are prohibitive. A recommendation has been made for Serbia, which applies regionally, for launching a comprehensive database on the current state of all green economy sectors, which would serve as the basis for further policy development.

Bulgaria's performance in the areas of resource and energy efficiency and eco-innovation remains significantly lower than the EU average and that of almost all the other EU Member States. Even so, it is still higher than that of Macedonia and Serbia.

Industry standards, financing and capacity-building are needed for business initiatives which bring wealth to broader groups and communities and make them less dependent on state-budget subsidies and donations, thereby reducing the pressure on the public debt and government finances. Public service and utility providers, where they exist, need to set a good example of green economic practices.

Social factors and trends

The green economy is generally perceived as a driver for prosperity and development. Investments in waste management alone can increase employment in this area by 10%, as data from Serbia show. But the green economy's potential for reducing poverty and creating new green jobs does not seem to transfer adequately on to the policy-makers' agenda. Recognition and awareness of the environmental economy, its patterns and opportunities is at a low level across the region. Mass-media campaigns, civil society initiatives and demonstration projects are beneficial for the dissemination and incubation of green economy business initiatives.

In recent years, there have been several successful examples of new governmental policies openly neglecting brown economic initiatives in Macedonia. The negative social and health aspect of the existing fossil-fuel-based economy must be accounted for and addressed systematically in all of the countries in the region.

Depopulation of rural areas, which affects all countries in the region, has resulted in the loss of traditional business practices that used to be environmentally friendly. Their revitalisation and marketization offer potential for attracting groups of young urban population interested in both the demand and supply parts of green economy business. The use of EU Structural and Cohesion Funds in Bulgaria has been beneficial, but their effectiveness has been poor due to insufficient control and bureaucratic hurdles that must be prevented in Serbia and Macedonia.

More investment and programmes are needed in the field of social science research into green economy benefits for both society and the economy, as well as for resolving social, gender, inclusion, poverty and other issues. Researchers and policy-makers should co-operate to create evidence-based policies at all levels.

Eco-tourism has great potential in Serbia as well as the rest of the region. Combined with organic agriculture and local green business entrepreneurship, it can encourage young people to go back to their villages and reverse the unsustainable paradigms of low-cost industrial-scale mass tourism observed in Bulgaria.

Individual citizens' access to green economy business opportunities, such as the energy supply system, must be encouraged and systematically pursued.

Existing, traditional, local green economy solutions and practices should be conserved, protected and promoted. Vulnerable groups, such as the Roma or other minorities, should be integrated into green economy models – rather than excluded and ostracised.



Technologies and the green economy

Green technological change is enjoying greater public visibility thanks to its perceived potential for market extension. Products, such as electric cars or smart home appliances, are popularly perceived as trendsetters of a green market shift. This is made possible by the global availability of information about various green and smart technologies and new products.

Yet, development of local green businesses in Bulgaria appears marked by traditional business models, low levels of eco-innovation and entrepreneurship. At the same time, the use of outdated technological resources and old infrastructure, in the context of growing industrial activity across the region, has dramatically accelerated the inefficient use of energy.

Investments in sectors or technologies driven by short-term profit-making still pursue huge negative externalities, leading to a serious depreciation of natural capital and a deterioration in human health.

A lack of relevant education to prepare the specialised skilled and creative workforce has been identified as a problem across borders. Where such a workforce exists, it is easily lost to emigration due to the low level of incomes in the region. Resolving these issues involves support for specialised schools and colleges, but also a systematic approach to raising levels of pay and living standards in the region, particularly in the green economy sector.

Legislative and policy landscape

Bulgaria enjoys a relatively well-covered legal definition of the existing components of the environmental economy, due to the harmonisation of its legislation with EU regulations. But overcomplicated permission-oriented administrative procedures and poor accessibility to e-government administrative services are hampering effective policy implementation.

Macedonia and Serbia are still in the process of joining the EU and adjusting their legislative frameworks to Union laws and regulations. This harmonisation should be performed cautiously, with great care given to adequate budgeting for the implementation and enforcement of the new regulations, to avoid some of Bulgaria's negative experiences during the post-accession period. For example, introducing lucrative tariffs for renewable energy generation requires state bodies that effectively assess environmental and energy market impact and control investment implementation.

In Macedonia, similar to Bulgaria, administrative barriers hamper the potential implementation of green economy initiatives, due to the inefficiency and politicisation of the public administration. Strengthening the human and institutional capacity in order to successfully implement legislation will undoubtedly reduce the environmental pressure from existing economic practices and future climate change.

Government subsidies and state public procurement procedures for developing green businesses are observed in Bulgaria, but lack leadership. Across the region, updated strategies and action plans are needed, especially in the field of green public procurement.

Environmental considerations

South-eastern Europe traditionally features rich national biodiversity and favourable environmental conditions for various local green business initiatives. This potential must be well assessed and protected. The market value of nature protection and healthy lifestyles should be appreciated and taken into consideration when political and business decisions and policies are made.



Pollution takes a large toll on economy and health, which is not accounted for in Serbia. The country is exposed to natural disasters and needs a comprehensive climate adaptation strategy. Less than 10% of sewage water is being treated. Similar to neighbouring Macedonia, the natural balance of rivers is being disturbed by the pollution discharged by urban agglomerations and industries.

Macedonia's energy sector contributes approximately 75-80% of the total GHG emissions in the country. Shifting output towards less energy- and emission-intensive sectors as well as improving efficiency must be pursued to drive energy and GHG emissions closer to EU levels.

The situation in Bulgaria is not much better, although 10 years of EU membership have brought notable improvements in waste and water treatment. The greatest environmental challenges across the region include waste-water treatment, waste management, air pollution from energy generation and transport, and historical industrial pollution.

Environmental watchdog institutions are weak and often unable to limit investment intentions, and independent green civil society and journalists are under increased pressure, particularly in Bulgaria. In spite of this, a drive to prevent megalomaniac mining and conventional energy projects has been observed through local referenda in Bulgaria and Macedonia during 2017.

Existing business practices that benefit from a protected environment are still rare in Bulgaria, Macedonia and Serbia. Yet, there are indications that certain business sectors, e.g. tourism, are warming to innovative concepts, such as ecosystem services assessment, and are ready to oppose indiscriminate construction and industry's abuse of natural resources.

Green economy and democracy

The findings of this report, and the activities of the Revision of the Economy in the Balkans: Change Policy not Climate! project, reveal an intrinsic connection between the green economy and democracy. The current wasteful and unsustainable economic model is deepening environmental devastation, social inequality and insecurity, and leaving many groups and individual citizens disillusioned, disoriented politically and disconnected from prosperity and well-being. Politically speaking, this model is creating fertile ground for ideologies of hate, undemocratic notions and populism. The green economy is – and needs to be promoted as – a democratic and accessible alternative to this model.

Greater public awareness of the potential of the green economy is a regional priority. To turn it into a permanent base for political support for green economic alternatives, dominant stereotypical political and ideological views fixated on over-consumption and growth should be challenged and eradicated. This should be replaced by a vision of inclusive development and fair distribution of wealth, which benefit larger sectors of society.

Innovative, green, smart, but also traditional business models should be encouraged and helped to generate profit in ways that bring overall social progress and strengthen democracy. Circular economy models that improve economic efficiency should be promoted as a new business success philosophy, based on sustainable profit rather than short-term gain.

Economic practices that destroy shared natural resources and undermine local communities' well-being must be effectively discouraged and regulated against. Strict controls and safeguards should be put in place against monopolistic interests that suppress market forces and impose old, unsustainable technologies, business models and energy sources. Removing red-tape and protectionist practices that prevent green energy/green economic initiatives from fulfilling their market potential and green public procurement should become the norm.

Major obstacles to the green economy vision are corruption, nepotism and dishonesty in politics, government, the public sector and in business. These need to be effectively tackled at all levels of government, from local through to national and to the EU. Nature protection, anti-corruption, pro-democracy and health movements and civil society are natural allies for green economic change. But their goals will not be easy



to accomplish without rule of law, effective public participation procedures, government transparency, strong democratic institutions, independent empowering education, and independent media channels.

Progressive, science-based, universally accessible and quality education is key. It must encourage innovation and creativity, rather than repetition and reproducing previously acquired knowledge, particularly during earlier education stages. Investment in such education should be prioritised and encouraged.

In conclusion, the success of a green economy vision depends on its ability to serve society both democratically and inclusively. Political, economic, business and technological change should extend the pool of the 'winners' in society, to bring greater equity and shared prosperity. This involves democratising access to new technologies, making them inclusive and accessible to the majority of the population, small and medium entrepreneurs and communities.



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Description of partner organisations



GREEN EUROPEAN FOUNDATION

Green European Foundation (GEF)

The Green European Foundation is a European level political foundation. It is linked to, but independent of, other European Green actors such as the European Green Party and the Green Group in the European Parliament. Modelled on many successful national green political foundations, GEF works to encourage European citizens to participate in European political discussions and to ultimately forge a stronger, more participative European democracy. The primary source of GEF's funding is the European Parliament. GEF strives to mainstream discussions on European policies and politics both within and beyond the Green political family.

The foundation acts as a laboratory for new ideas, offers cross-border political education and a platform for cooperation and exchange at the European level.

www.gef.eu, www.greeneuropeanjournal.eu



BlueLink

A pioneers civil society e-network launched in 1998, today BlueLink is a well established hub of coordination, exchange of information and smart technology innovation among civil society organisations and citizen initiatives. BlueLink operates from Sofia and Budapest, across Central and Eastern Europe, the EU, South Eastern Europe, the former USSR, and engages globally with Internet rights as a member of the *Association for Progressive Communications*.

BlueLink is registered as a foundation in public interest in Bulgaria. Its mission is to uphold civil society, democracy, shared European values and environmental sustainability. BlueLink strives to its purpose by supporting internet networking, public interest journalism, policy advocacy and research. BlueLink's main fields of activity are in:

- maintaining the *BlueLink Civic Action Network* - a networking, coordination and information exchange hub at www.bluelink.net;
- supporting civil society participation, access to information and justice, and stakeholder engagement through strategic use of internet and other activities;
- operating a virtual newsroom to publish *Evronegdan* (in Bulgarian) and *BlueLink Stories* (in English, for Central and Eastern Europe) as e-magazines for ethical journalism in public interest; and
- fostering *research and analysis* of internet freedom, smart green economy, social change, civil society, democracy and sustainable development, and shaping policies that foster them.

www.bluelink.net/en



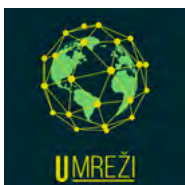
Sunrise ASSED

SUNRISE is an Association for Sustainable Social and Economic Development from the civil sector, based in Macedonia, striving to influence the public opinion on environmental issues by offering sustainable models and solutions for social and economic transformation.

Since 2009, Sunrise continuously contributes towards a sustainable society and economy by engaging in national and international projects in Europe. Their cooperation with diverse organisations and institutions are in the fields of education, environment and sustainable development.

www.izgrejsonce.mk





U mreži (Networked)

NETWORKED is a civil society organization founded in 2013. by professionals working in the areas of environmental protection, entrepreneurship and IT, political science, journalism and communication. This broad expertise makes Networked a unique blend of different perspectives, experiences and ideas.

Networked is connecting people and ideas for application of the principles of sustainable development in all domains of society - for the expansion of green economy, fair and local entrepreneurship, science and innovation, climate change and environmental protection, gender equality, human rights, media rights and freedoms. Since its establishment, Networked collaborated with prominent academics, researchers, journalists and activists in the region, organized public events and educational programs.

www.umrezi.org





Contact us:



GREEN EUROPEAN FOUNDATION

GREEN EUROPEAN FOUNDATION ASBL

Rue du Fossé 3, L-1536 Luxembourg
Brussels Office: 15, rue d'Arlon,
B-1050 Brussels

t: +32 (0) 2 234 65 70

e: info@gef.eu

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