3RD CLIMATE CHANGE, ECONOMIC DEVELOPMENT, ENVIRONMENT AND PEOPLE CONFERENCE

PROCEEDINGS

6th-7th December 2013.
Podgorica, Montenegro

Organised by:
University Donja Gorica
Alliance of Central-Eastern European Universities

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Contents:

Preface.....I
Green economy in Europe (present state), *Vladan Božović, Aleksandra Martinović, Marija Vugdelić*.....*1*
Promoting balanced regional development in European Union: towards more growth and prosperity, *Elena Todorova*.....*9*
The green jobs market situation and its potential, *Andrea Katić, Simonida Vučenov, Tanja Knežić*.....22

Exploring the barriers to circular economy in Montenegro, *Dragana Radević, Dragana Mileusnić*.....*32*
Sustainable development towards PES scheme implementation, *Milica Daković*.....39
Economic valuation of the protected areas system of Montenegro, *Jovana Drobnjak*.....*56*
Higher education management improvement and rural development, D*imitar Dimitrov, Ognyana Stoichkova, Mariyana Ivanova, Vihra Dimitrova, Boyan Mitev*.....*67*

Marketing with social goal in function of environmental problems, *Saša Raletić*.....*81*

Sustainable rural development by networking in organic agriculture and niche tourism, *Dimitar Dimitorov, Svetla Dimitrova, Ekaterina Arabska, Ivanka Shopova*.....*89*
The importance of agriculture in Montenegrin economy, *Gorica Bojić*.....109
Safe food production system- a Montenegrin perspective, *Aleksandra Martinović, Marija Vugdelić, Vladan Božović*.....121

European Aspect on Environmental Regulation, *Branislav Prelević*.....*130*

Geographical Information Systems (GIS) as a tool for adequate emergency response-great challenge for Serbian society, *Vesela Radović, Dušanka Lečić*.....*142*

The past and the future of protected areas – global and Montenegrin perspectives, *Marija Vugdelic.....152*
The risk strategy in future remediation activities - how to avoid the failure, *Vesela Radović, Slobodan Rakić.....168*

The protection of the environment during armed conflict, *Marijana Mladenov.....177*

Effects of climate change on Montenegrin agriculture, *Marija Orlandić....186*

Doing business in a changing climate, *Dragana Mileusnić, Slavica Nikolić....199*

Climate change and its influence on Montenegrin economy, *Aleksa Nenezić, Igor Kilibarda.....211*

Preface

The Climate Change, Economic Development, Environment and People (CCEDEP) Conference, 2013, was a third such conference initiated by the ACEU Network. After conferences in Novi Sad (Serbia), and Presov (Slovakia), this year's host was University of Donja Gorica, Faculty for food technology, food safety and ecology, an ACEU member in Montenegro.

The conference was established in order to present the results of different research and initiatives in the areas of the environmental management and economic development, and to stimulate dialogue, new initiatives and cooperation on current issues regarding the environment and man's place in it, with the special emphasis on the challenges imposed by the global climate change.

Climate change caused by the anthropogenic influences, is a recognized problem of the modern world, and it has already started to transform the life on our planet – temperatures are increasing, the precipitation patterns are changing, the sea level is rising, droughts, wildfires and extreme weather conditions are becoming more frequent… All of this causes the loss of biodiversity, changes in ecosystems, and affects human safety and wellbeing.

The forecast of the future events and the impacts of those changes on the nature and humans give ground for concern, because it is expected that they will cause further degradation and loss of a whole suite of ecosystem services that affect the quality of life, including the security of food, water and other goods derived from the nature.

Those forecasts are especially concerning for the countries of South-East Europe, and the Mediterranean, which is considered one of the region's

most vulnerable to climate change. At the same time, the countries of SE Europe are undergoing a transformation of their social and political structures in the context of EU integrations, which presents a unique chance to incorporate the issues of climate change mitigation and adaptation into the relevant national policies.

Except climate change, the degradation of ecosystems due to pollution, land conversion, infrastructure construction incurs further losses of ecosystem services. Solving this problem calls for alternative approaches to the development that will have to be based on the principles of sustainability, and which do not neglect the consequences of the loss of natural capital.

From the above said, it can be seen that the climate change and other environmental issues do not affect only ecological processes, but have implications for socio-economic, developmental and political agendas. Therefore, it is necessary to involve all segments of the society, to link the scientific and research institutions with the industry, policy-makers and general public, all with the aim to achieve sustainable development through integrated and holistic approach.

This conference is a contribution to efforts in that direction.

Organizing committee

Green economy in Europe (Present state)

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Abstract

Global economic crisis, soaring commodity prices and growing awareness of humanity's impact on the environment have pushed the 'green economy' concept into mainstream policy debate in recent years. In large part, this reflects a recognition that the prevailing model of economic growth — founded on ever-increasing consumption of resources and emission of pollutants — simply cannot be sustained in a world of finite resources and ecosystem capacity. By developing the set of indicators and analysing them, findings suggest that Europe has made more progress in improving resource efficiency than preserving ecosystem resilience.

Keywords: green economy, sustainability, indicators, resource efficiency

Introduction

A range of elements of the green economy concept are relatively well integrated in EU strategic documents, such as Europe 2020 and the Resource Efficiency Roadmap although the focus in the EU is arguably on achieving green/sustainable growth, rather than achieving a 'green economy'.

Essentially, the green economy concept comprises a twin challenge. First, we need to focus on the economy, finding ways to increase prosperity without increasing resource use and environmental impacts. Put simply, we need to become **more resource efficient**. By itself, however, resource efficiency will not guarantee steady or declining resource use. After all, we could become more efficient but still put excessive demands on the environment. For that reason, to achieve sustainability we also need to focus on **ecosystem resilience** — the status, trends and limits of natural systems.

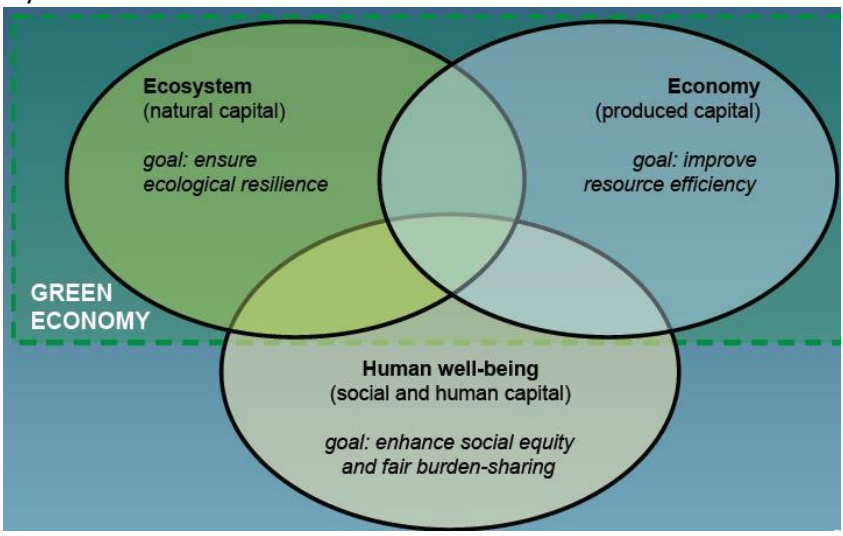

Figure 1 - At the core of green economy is a dual challenge: improving resource efficiency and ensuring resilience (source: EEA 2012.)

Results

Policy making and planning require a clear understanding of concrete and measurable goals through measurable indicators, when it comes to both, resource efficiency and ecosystem resilience. Fulfillment of the objectives can be followed by measurable indicators developed in different sectors directly linked with green economy concept. This approach has been taken in several documents produced by the European Environment Agency and other relevant European institutions. This paper provides an overview of the results presented in several EU documents and gives comments on present state, regarding green economy concept in Europe.

Environmental indicator report 2012 published by EEA (European Environment Agency) stresses an important message regarding green economy: there has been progress, but not enough. Environmental policy has delivered substantial improvements, however, major environmental challenges remain which will have significant consequences if left unaddressed. This statement is based on the analysis of the pressure indicators that illustrate resource efficiency and state indicators to explain ecosystem resilience.

Table 1 - Environmental 'pressure'indicators illustrate progress in improving resource efficiency

Environmental issue	EEA 38 - trend?	EU 27 target / objective - which?	EU 27 - on track?
Transboundary air pollution (NO_X, NMVOC, SO_2, NH_3)	↘	To limit emissions of acidifying, and eutrophying pollutants	☐
Greenhouse gas emissions	↘	To reduce greenhouse gas emissions by 20 % by 2020	☑
Air pollution	↘	To limit emissions of ozone precursor pollutants	☐
Maritime transport emissions	→	To reduce greenhouse gas emissions	☐
Water use	↘	N.A.	N.A.
Decoupling and recycling (decouple resource use from economic growth)	↗	To decouple resource use from economic growth; to move towards a recycling society	☐

Almost all (except Maritime transport emissions indicator) pressure indicators show a negative trend, which means that undertaken measures and policy instruments provide adequate results. Contrary indicators which "measure" the ecosystem resilience show that only in case of Biodiversity loss (marine species and habitats) we have negative trend, in all others analysed indicators this is not a case. Even more, the Global mean temperature change indicator show a positive trend influencing the ecosystem resilience the most.

Analysing the resource efficiency indicators (Table 1), it can be concluded that the establishment of appropriate policy instruments (primarily regulations and EU directives) led to an increase of resource efficiency. Following the specific parameters in the long term, (concentrations of NOx,

SO2, NH3, PM particles), a situation in air pollution was improved by introduction of new policy measures and standards.
Achieving the target for near-zero landfill appears to require a radical change in waste management, particularly in the EU 12. The EU's progress towards the landfill target appears to resemble progress towards the EU's objective that Member States should recycle 50 % of municipal solid waste by 2020. As a recent EEA report observes: 'While five countries have already achieved the target and another six will achieve it if they continue to improve their recycling rate at the same pace as in the period 2001–2010, the majority of countries will need to make an extraordinary effort in order to achieve the target of 50 % recycling by 2020.'

Most urgent needs in this sector are for decoupling waste from economic growth and addressing the fast growing challenges (e-waste) and increasing their recycling rate. Emphasis is also put on turning waste materials into valuable resources (biomass waste in composted or recovered for energy) and reducing food waste due to losses and waste in the entire food chain – including agricultural and post – harvest practices.

Table 2 - Efficiency environmental 'state 'indicators to demonstrate whether we are ensuring ecosystem resilience.

Environmental issue	EEA 38 - trend?	EU 27 target / objective - which?	EU 27 - on track?
Conservation status (safeguard EU's most important habitats and species)	→	To achieve favourable conservation status, set up Natura 2000 network	☐
Global mean temperature change	(↗)	To limit increases to below 2°C globally	☒
Air quality in urban areas (particulate matter and ozone)	→	To attain levels of air quality that do not give rise to negative health impacts	☒
Biodiversity loss (marine species and habitats)	(↘)	To reverse negative species abundance trends	☒
Water stress (water exploitation)	→	To achieve good quantitative status of water bodies	☐
Ecological footprint (footprint versus biocapacity)	→	N.A.	N.A.

According to the environment state indicators presenting ecosystem resilience, the main challenge remains global mean temperature change. For years, European governments have had climate protection high on their agenda, but still the effects of the policy measures are not visible. The 'green revolution' somehow doesn't seem to be getting off the ground; in part, probably because Europe just has too many crises to deal with at the moment and too many fires to put out.

Investments in green economy

These are all bad conditions for grand investments, even though the technologies for more climate protection are mostly already there and simply waiting to be used and implemented. The main stumbling blocks in green economy concept implementation are follows:

1. The long-term security of the investments. Talking about sustainable investment, investments in infrastructure, in cities, trains, transport, investments in the energy sector and other industrial sectors, there is still missing adequate security in investments through laws and other legal acts. Therefore, security for investors has to be guaranteed through a framework of regulations and they are still significantly lacking in Europe. One example is European emissions trading. The prices have dropped so low that it's not profitable for companies to invest in environmentally friendly technology.
2. Another key issue is subsidies. An investor, for instance, would have to be able to rely on information as to how much and for how long a government would continue subsidizing renewable energies. Subsidies have been partly cut in dramatic fashion, in cases in Spain even with retroactive effect and that has gotten a lot of projects into trouble.
3. The success of the concept of the green economy depends profoundly on the research and innovation and their introduction trough technologies and new products. Energy provides a simple example. It is not enough to simply replace coal-fired power plants with windmills. What's needed is a real transformation of the economy, which will have an impact on other sectors as well and lead to more investment across the system.

Political leaders in EU (EU Commission) and leaders in the Western Balkan countries need to set up the legal parameters and financial incentives in a way that creates opportunities for investment in green economy. It was also important to deal with general stumbling blocks to investment, regardless of whether they are linked to environmental issues or not. From the other side, more effort should be put into ecosystem resilience protection, while this can have an effect on the long term objectives and goals set in the green economy concept.

Conclusion

European environmental policies appear to have had a clearer impact on improving resource efficiency than on maintaining ecosystem resilience. Environmental indicators highlight that improving resource efficiency remains necessary, but in itself is important to ensure a sustainable natural environment. In a green economy policy context, there would be value in considering objectives and targets that more explicitly recognize the links between resource efficiency, ecosystem resilience and human well-being. The main obstacle in achieving more visible results in green economy is low investment caused by missing adequate security in investments through laws and other legal acts, missing of subsidies and lack of introduction of research and innovation in the green economy concept.

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Promoting balanced regional development in European Union: towards more growth and prosperity

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Abstract

There are big gaps between the regions in the European Union regarding the density of population, economic activity, employment rates, access to services and facilities. Differences exist between EU Member States and inside the Member States. These disparities have increased with the enlargement of the EU. The aim of the EU regional policy is to reduce the disparities and imbalances between the regions, make them tolerable and to help each region achieve its full potential (by encouraging growth and prosperity of the less developed parts).

In a globalised and interrelated world, sustainable and balanced development is essential for improving the quality of life. Because most of the economic activity is concentrated in cities and towns, it is very important to strengthen the economic competitiveness, capacity for growth and equal access to services of the rural areas in EU, while preserving their cultural and natural resources. Rural areas are very important and EU is responsible for obtaining their sustainable development, improving the quality of life for people that live there and promoting equal opportunities for all.

Long-term strategies at national and international level are necessary for reducing regional disparities and ensuring harmonious development. EU regional policy involves many actors- the EU that set its legal bases and

priorities, the Member States, local governments, private sector. Encouraging cooperation across borders and promoting cooperation between different levels of government and between the public and private sector is essential for addressing this problem effectively.

Key words: regional policy, balanced development, strategy, growth, cooperation

European Union is constituted of many regions that are different in their economic, territorial and social level of development. Differences exist between the EU Member States and inside the Member States regarding the density, economic development, access to services of general importance (education or health services), infrastructure, access to high speed internet etc. With the accession of Greece (1981) and Spain and Portugal (1986) regional disparities in the then European Community of 12 Member States have widened significantly. The regional disparities in economic and social welfare have increased even more with the enlargement of the EU with the Central and Eastern European countries. The biggest EU enlargement in 2004 incorporated 10 new Member States which increased regional disparities. The recent financial and economic crisis (the worst in the recent history) resulted in greater unemployment and slowing down of the industrial production, creating uncertainties and making the situation more complicated. The aim of the regional policy is to reduce the disparities and imbalances, make them tolerable and to help each region achieve its full potential. Cohesion policy has made significant contribution in reducing disparities by promoting growth, jobs and prosperity. Its aim is to promote harmonious development of the EU and its regions.

To achieve this aims, the European Regional Development Fund (ERDF), the European Social Fund and the Cohesion Fund were created (together they account for more than one third of the EU`s overall budget for the period 2007-2013). The aims of the EU regional policy are: to help each region achieve its full potential, improve competitiveness and employment by investing at regional level in areas of high growth potential, with an added value for EU as a whole, and to bring living standards in the countries that have joined EU since 2004 up to the EU average as quickly as possible.

Regional policy was mentioned (not sufficiently) in the Treaty of Rome (1957/1958) - in the Preamble and article 2; in the main body of the Treaty, the regional issue was addressed in several articles indirectly, through some of the policies, such as the transport policy or agriculture. The European Investment Bank was created as a financial instrument to promote regional development. Because of the insufficient articles regarding the regional policy in the Treaty of Rome, the Commission took the initiative for its establishment and further development, starting with the organization of a Conference on Regional Economies in 1961. The first Commission Communication on Regional Policy was adopted in 1965. In 1968 the Directorate-General for Regional Policy was created.

European Commission published the “Report on the regional problems in the enlarged Community” (COM(73)550 final) in 1973, that laid down the main features of the regional policy and operational guidelines for a regional development fund. This report made it clear that the aim of the Community regional policy cannot be to substitute the national regional policies of the Member States, but to complement them in order to reduce the disparities across the Community (V. Guidelines for a Community regional policy, para. 29). Because of this, the effectiveness of the Community`s policy will depend on close cooperation with Member States.

In 1975 the European Regional Development Fund was established, with an aim to strengthen the economic potential in the assisted regions, supporting structural adjustment and to help promoting growth and lasting employment.

The Single European Act (1986) set the basis for an integrated cohesion policy. The chapter on economic and social cohesion in the European Single Act provided the Treaty bases for fundamental reform of the Structural Funds in 1988. With the Treaty on European Union the strengthening of economic and social cohesion became one of the three priorities of the EU alongside its economic objectives of the Single Market and Economic and Monetary Union. The Treaty of Maastricht introduced a new instrument- the Cohesion Fund for the less prosperous Member States, and required the Commission to publish a Cohesion Report every three years, to examine progress made towards achievement of economic and social cohesion (in the years between, a progress report on economic and social cohesion is published). Furthermore, this Treaty established a new institution- the Committee of the Regions.

In 1988 the Council agreed on a regulation that put existing EU funds into the context of "economic and social cohesion", a term which the Single European Act has introduced. Since then, the EU Cohesion policy has become one of the most important EU policies. The 1988 reform introduced a number of principles for Cohesion policy and its instruments, including five priority objectives. The 1999 reform reduced the number of Structural Fund objective to the following: Objective 1: Promoting the development and structural adjustment of regions whose development is lagging behind; Objective 2: Supporting the economic and social conversion of areas facing structural difficulties; Objective 3: Supporting the adaptation and modernization of policies and systems of education, training and employment. The 2006 reform defined the following priority

objectives (EU Regional Policy, Inforegio panorama, EU Cohesion Policy 1988-2008: Investing in Europe`s Future, 2008, p. 10-20):

- Convergence: aims at speeding up the convergence of the least developed Member States and regions defined by GDP per capita of less than 75% of the EU average;
- Regional competitiveness and employment: covers all other EU regions with the aim of strengthening region`s competitiveness and attractiveness as well as employment;
- European territorial cooperation: based on the Interreg initiative, support is available for cross-border, transnational and interregional cooperation and networks.

Regional policy is investing in all EU regions, supporting job creation, competitiveness, economic growth, improved quality of life and sustainable development. These investments support the delivery of the Europe 2020 strategy, where the objectives to be reached by 2020 were set in five main areas (Europe 2020: A strategy for smart, sustainable and inclusive growth, COM (2010)2020, 3.3.2010, p. 10-11):

- The employment rate of the population aged 20-64 should increase to 75%, including through the greater involvement of women, older workers and better integration of migrants in the work force;
- Investing in research and development (R&D) and Innovation (3% of the EU`s GDP should be invested in R&D)
- Reduce greenhouse gas emissions by at least 20% compared to 1990 levels or by 30%, if the conditions are right; increase the share of renewable energy sources in the final energy consumption to 20%; and 20% increase in energy efficiency;
- Education: reducing the dropout rate of early school leavers to 10 %; whilst increasing the share of the population aged 30-34 having completed tertiary education to at least 40% in 2020;

- The number of Europeans living below the national poverty lines should be reduced by 25%, lifting over 20 million people out of poverty.

The promotion of social cohesion requires reduction of disparities that arise from unequal access to employment opportunities and to the rewards in form of income. This inequality tends to have serious social consequences through marginalization of some parts of the society, such as long-term unemployed, young unemployed and poor. Reduction of disparities between Member States and regions means convergence of basic incomes through higher GDP growth, of competitiveness and of employment. The solidarity dimension is given practical effect through universal systems of social protection, regulation to correct market failure and systems of social dialogue. In addition, policies which promote solidarity and mutual support are themselves a factor in strengthening the productivity and contribute to economic and social-wellbeing (First Cohesion Report, 1996, p. 13-14).

The European Commission Fifth Report on economic, social and territorial cohesion (Investing in Europe`s Future, 2010, Chapter 1) has shown that compared to the United States, Japan and Canada, the EU experienced higher economic growth per head between 2000 and 2007, largely due to the higher growth rates of the less developed and moderately developed EU Member States. Growth in the less developed Member States was particularly high between 2002 and 2008- almost three times higher than in the highly developed ones. This contributed strongly to the regional convergence in the EU- the overall gap in GDP per head between the most and the least developed countries narrowed, so did regional differentials. Employment rates in the Nordic countries, the UK and the Netherlands are already in most regions above the 75% target. On the other hand, in Sothern Spain, Southern Italy and Greece and many of the regions in the

EU-12 rates are considerably below 65%. Training and higher education can increase labour productivity. Higher education also tends to increase people`s income and life satisfaction independently of income levels. In all Member States, except Spain and Germany, the capital city region has the larger share of people with tertiary education. Regions with larger share of tertiary educated have considerably higher levels of productivity, which is one of the reasons why Europe 2020 Strategy aims to increase the share of tertiary educated aged 30-34 to at least 40% (although tertiary education is not the only or an automatic source of highly skilled workers).

The Treaty of Lisbon has added territorial cohesion to the goals of economic and social cohesion. The aim of the territorial cohesion is to ensure harmonious and sustainable development of all regions in the EU and to enable their inhabitants to use as much as possible of the features characteristic to those territories. The prosperity of the regions also depends of connection of the territories (such as providing adequate transport- building roads, rails, access to health care, education, internet, energy networks etc.) and cooperation and coordination in the managing assets of different territories. That cooperation has to be at different levels of government and to include public and private actors. At the same time, the need to protect the environment and natural resources and areas remains essential aspect of development and growth of the territories.

Three specific types of regions (although not exclusive) in some cases face particular development challenges (European Commission, Green Paper on Territorial Cohesion- Turning territorial diversity into strength COM (2008) 616 final, 6.10.2008, p.8-9):

1) Mountain regions, which are often border regions and in which more than a third of the people live in rural areas. Some 10% of the EU population live in these regions. Mountain regions are confronted with the challenges posed by climate change, reliance

on a limited number of economic activities, pressure linked to tourism and loss of biodiversity;

2) Island regions, which in many cases are mountainous and more than half of the population also live in a border region; islands include 6 of the 7 outermost regions. Some 3% of the EU population live in these regions. Island regions are confronted with problems of accessibility, of small markets, and of high cost of basic public service provision and energy supply;
3) The 18 sparsely populated regions, all rural and almost all border regions. In this regions live 2,6 million people. The barriers to development of these regions are low density, peripherally and structural weakness such as dependence upon primary industry.

The concept of territorial cohesion extends beyond the notion of economic and social cohesion by both adding to this and reinforcing it, which goal is to help achieve a more balanced development by reducing existing disparities, avoiding territorial imbalances and by making both sectoral policies which have spatial impact and regional policy more coherent (European Commission, Third Report on Economic and Social Cohesion, 2004, p.27)

Rural areas are in different situations- there are remote rural areas that suffer depopulation and decline to peri-urban areas under increasing pressure from urban centers. They face challenges as regards growth, depopulation, jobs and sustainability, but they have potential for growth in new sectors, the provision of rural amenities and tourism, attractiveness as a place in which to live and work, a lot of natural resources and landscapes. Rural development is a complex issue that involves different sectors and policies. There are three standard problems that rural areas are confronting and basic strategies that deal with them (Commission Communication COM (88) 501: The future of rural society,1988, p. 32-37):

1) the pressures of modern life on rural society- protection of environment and development of the countryside must be in the centre of the activities aimed at economic development of the rural areas. An integrated approach in the planning and use of the land has to be applied, as well as protection of the countryside from pollution;
2) rural decline- economic diversification is less advanced in the rural economy. A job creation policy is required that will provide lasting and economically viable employment outside farming. It is very important to maximize the use of indigenous potential.
3) the problems posed in particularly vulnerable areas (like certain mountain and hill areas and certain islands that are far from the major tourist routes and centres) that are relatively inaccessible and remote, too sparsely populated or that have a little in the way of infrastructure and little potential for economic diversification.

The EU cohesion policy involves many actors- the EU, the Member States, local governments, private sector. The EU has taken responsibility for significant parts of this policy through its institutions and bodies. Each EU institution has active role in achieving the targets of the cohesion policy. For example, the European Commission is working together with the Managing Authorities in EU countries and regions to ensure that this resource are invested effectively so to provide sustainable growth. The managing authorities (at national, regional or another level) are designated by the member states for every program and their task is to inform potential beneficiaries, select the projects and generally monitor the implementation.

The new policy instruments called JASPERS (Joint Assistance to Support Projects in European Regions), JEREMIE (Joint European Resources for Micro to Medium Enterprises) and JESSICA (Joint European Support for Sustainable Investment in City Areas) will improve cooperation between

European Commission and the European Investment Bank and other financial institutions in order to strengthen capacity-building and ensure that Member States and regions establish efficient use of funds. The European Grouping for Territorial cooperation will enable regional and local authorities from different countries to set up cooperation groupings as legal entities for projects such as cross-border transport or health services.

Cohesion policy has made significant contribution to spreading growth and prosperity across the EU. The Fifth report on economic, social and territorial cohesion (the first cohesion report adopted under the Lisbon Treaty) shows that the policy has created new jobs, increased human capital, built critical infrastructure and improved environmental protection. EU should facilitate exchanges of experience, best practices and networking in solving problems regardless of administrative borders. The EU cohesion policy is implemented through many developments projects. There are many successful projects that show how the cohesion policy through its funds have helped the development of regions and countries and benefited millions of citizens across Europe that cover a broad range of themes (EU, Investing in our regions- 150 examples of projects co-founded by European Regional Policy, 2010).

Enhancing accessibility is critical for strengthening regional economies and boosting competitiveness. Poor transport networks stall economic development. Massive EU investments in transport over several decades helped in reducing inequalities. Landmark bridges, improved railway connections, modernized airports, better public transport facilities are examples of the EU investment projects. For example, the new Sofia Airport (Bulgaria) is one of the first projects approved for Cohesion Fund assistance by the European Commission in 2000 and the first major project under the fund. The plans for building a new terminal at the Sofia airport

began in 1990s and the contract was signed in 2003. The new passenger terminal building and related infrastructure were 37% financed by the Cohesion Fund. 45 million Euros were allocated to the Sofia Airport project from the EU Cohesion Fund for the period 2000-2006. Thus, the airport modernization provided the raising air traffic in Bulgaria and prepared the country for EU accession.

Rural areas play a vital role in preserving the European way of life. Ensuring the sustainable development of rural areas and protecting the rural environment is an important priority. EU regional funding plays an important role in improving the quality of life in rural areas by developing the tourism and preservation of natural and cultural assets. An example is Drava River project that was allocated 3,3 million euro from the ERDF for the period 2006-2008. The Drava River project saw five regions and 20 municipalities work together to enhance eco-tourism development of the river area, preserving the environment. As a result of the project, a wide range of activities were offered- tour paths, canoe tours, lookout towers, bird parks. Regional funds invest in both rural and urban areas. Around 21,1 billion euro of regional funding has been earmarked for urban development between 2007-2013. Maribor stadium (Slovenia) has been in the centre of the sport and cultural life in Maribor and Podravje region since it was built in 1950s. The decision to reconstruct the stadium played a key role in the development of the town and region- new jobs were created at the facility and the opportunities for boosting local business were provided. For the reconstruction of Ljudski vrt Maribor stadium 3,3 million euro was allocated from the ERDF for the period 2006-2007.

Research and education are the crucial for growth and innovation. The EU has put in place a comprehensive set of policies and strategies, at European, national and regional levels, aimed at bolstering investments in research and technology. An example is the competence centre for wing

system and wind tunnel verification, set up in Schleswig-Holstein, Germany, that offers services rarely available elsewhere and works in tandem with the maritime industry. The centre received 983 000 euro from the ERDF for the period 2003-2008.

Tourism often plays a key role in underpinning the economic development of many EU regions. EU regional funds provide support to improve the quality of tourism at regional and local levels, and to encourage more sustainable patterns of tourism. Restoration of the old brick bridge across the river Venta in the town of Kuldiga (Latvia) made it an interesting destination and contributes to the promotion of regional development through tourism. The project was implemented by the Kuldiga Town Council, with financial support of ERDF, which allocated 1,42 million Euros for its renovation over the period 2006-2008.

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The Green Jobs Market Situation and Its Potential

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Abstract

Europe 2020, the EU's new economic strategy, stresses the need for smart, sustainable and inclusive growth. That means building a competitive, low-carbon, resource-efficient economy and safeguarding the environment. A flagship initiative 'New Skills for New Jobs' within the Europe 2020 strategy for smart, sustainable and inclusive growth aims at creating new job opportunities in the EU. To realise this goal, citizens must have the skills and training needed to work in the green economy. More than 20 million European jobs are already linked to the environment in some way – and as the EU gears up for a greener future, we could see the creation of millions more green jobs, both directly and indirectly through supply chains. A green-collar worker is a worker who is employed in the environmental sectors of the economy (Wickman, 2012). Environmental green-collar workers (or Green Jobs) satisfy the demand for green development. The aim of this paper is to analyses current situation and potentials at green job market.

Keywords: green jobs, green economy, Europe 2020

1. Introduction

Most of climate scientist's views are that the continued accumulation of greenhouse gases in the troposphere, cause changes in global patterns of temperature and climate variability in the coming decades. In addition, it is estimated that the surrounding levels of ultraviolet radiation increased to ten percent in the past two decades, and have effects on human health (i.e. skin cancer) and biodiversity (Dreher and others 2008). Sokolova Djokic explains how local environmental problems stem mainly from local economic problems, as well as the globalization of production and marketing leads to globalization and environmental problems in the world. Developed countries have the problem of depletion of natural resources that accompany rapid industrialization and urbanization. Underdeveloped countries with explosive demographics are trying to solve the following consequences: hunger, poverty, disease, high infant mortality comments (Sokolova Djokic, 2004). The first ecological movements have been organized in the United States, in year of 1896, and only in 1970 enacted the first laws of conservation of the natural environment - the law of clean air, clean water, and the Environmental Protection Agency was also established (Rakas, 2004).

In 2007, the European Council has adopted ambitious targets for energy and climate change by the year 2020: reduction of greenhouse gas emissions by 20% to 30% if the conditions are right, increase in the share of renewable energy to 20% and improvement of energy efficiency by 20%. The European Council also gave a long-term advantage to reduction of carbonization so EU and other developed countries need to reduce emissions by 80-95% by the year 2050. European energy and climate goals are included in the Europe 2020 strategy for smart, sustainable and inclusive growth adopted by the European Council in June 2010, and the initiative "Resource efficient Europe" is included (European Commission,

2011a). Strategy 'Europe 2020' within its major initiative “Industrial policy and resource efficiency” sets a new framework for the modernization of the industrial base and the transition to a resource efficient economy, low CO_2 emissions. At the same time, the European industry has strong growth towards more sustainable methods of production achieved in the so-called 'eco-industries'. However, sustainable growth is not exclusive to certain sectors. Represents a re-orientation, where the resource and eco-efficiency and innovation have become a major for achieving environmental and other social objectives, while at the same time strengthen competitiveness and ensuring growth and jobs (European Commission, 2011b).

2. Europe 2020 Strategy

In March 2010 the European Commission adopted a new strategy "Europe 2020: A strategy for smart, sustainable and inclusive growth" that comprehensively describes the most important elements of the new program (European Commission, 2010). Three main priorities of the strategy are defined:

- Smart Growth: developing an economy based on knowledge and innovation
- Sustainable growth: promoting resource efficient, greener and more competitive economy
- Inclusive growth: provision of high employment with social and territorial cohesion

Europe 2020 Strategy places a greater emphasis on sustainability than is the case with the Lisbon strategy, while continuing to emphasize the importance of education and technological readiness. In the foreground are five main objectives:

- increase the employment rate of the population aged 20 to 64 to 75% through variety of activities, including greater participation of youth, older workers and low-skilled workers, as well as better integration of legal migrants;

- improving the conditions for research and development, especially given the common goal of increasing public and private investment in this sector to 3% of GDP;

- reducing emissions that cause the greenhouse effect by 20% compared to the level recorded during the '90s of the previous century; increase the share of renewable energy in total energy consumption to 20%, increase energy efficiency by 20%;

- improving the quality of education, with special emphasis on reducing the rate of people leaving school at less than 10% and increase the share of persons aged 30-34 in tertiary or equivalent education level of at least 40%;

- promotion of social inclusion, in particular through the reduction of poverty, in order to have at least 20 million people rise out of poverty and exclusion.

The main goal under the Europe 2020 strategy is to support businesses and to enable them to improve their competitiveness globally whilst helping them make the shift towards a green economy. To realise this goal, citizens must have the skills and training needed to work in the green economy. One of the Europe 2020 flagship initiatives - the New Skills for New Jobs agenda – is designed to support the transition to a low carbon economy by helping Europe anticipate its future labour market needs in this area and support the dissemination of new training opportunities. More than 20 million European jobs are already linked to the environment in some way – and as the EU gears up for a greener future, we could see the creation of

millions more green jobs, both directly and indirectly through supply chains (European Commission, 2010).

LIFE program is committed to EU financial instrument for the environment. Launched in 2010, initiative "New skills for new jobs" within Europe 2020 Strategy for smart, sustainable and inclusive growth aims to create new opportunities for employment in the EU. LIFE has encouraged green skills and jobs and contributes to the development of green jobs market where employers and employees can find each other. In that way, LIFE project has promoted the transition to a greener and sustainable growth (European Commission, 2013).

3. Green Jobs Concept

The concept of green jobs is new. “Green jobs” does not lend itself to a tight definition but certainly includes direct employment that contributes to the reduction of environmental impact to levels that are ultimately sustainable. This includes jobs that help to reduce the consumption of energy and raw materials, decarbonizes the economy, protect and restore ecosystem and biodiversity and minimize the production of waste and pollution. Thus a green job aims to preserve the environment for both present and future generations and to be more equitable and inclusive of all people and all countries (Bahauddin K., Iftakhar N., 2013).

A green-collar worker is a worker who is employed in the environmental sectors of the economy (Wickman, 2012). “Green jobs” are defined as “jobs that reduce the environmental impact of enterprises and economic sectors, ultimately to levels that are sustainable (European Commission, 2013). The broadness of the definition means that potentially almost every job can become greener. Environmental green-collar workers (or Green Jobs) satisfy the demand for green development. Generally, they

implement environmentally conscious design, policy, and technology to improve conservation and sustainability. Formal environmental regulations as well as informal social expectations are pushing many firms to seek professionals with expertise with environmental, energy efficiency, and clean renewable energy issues (www.greenandsave.com, 2013). “Green skills” already can be found in existing occupations. A green economy affects skills in different ways. New job opportunities will arise in industries that are expected to grow as economies go green (including renewable energies, green building and waste management). Workers moving from declining ‘high carbon’ jobs into growing green sectors will require retraining; thus the role of employment services in matching skills to jobs and in providing training will be crucial (European Commission, 2013).

Green collar workers include professionals such as conservation movement workers, environmental consultants, council environmental services/waste management/recycling managers/officers, environmental or biological systems engineers, green building architects, holistic passive solar building designers, solar energy and wind energy engineers and installers, nuclear engineers, green vehicle engineers, "green business" owners, green vehicle, organic farmers, environmental lawyers, ecology educators, and ecotechnology workers, and sales staff working with these services or products. Green collar workers also include vocational or trade-level workers: electricians who install solar panels, plumbers who install solar water heaters, recycling centre/MRF attendants, process managers and collectors, construction workers who build energy-efficient green buildings and wind power farms, construction workers who weatherize buildings to make them more energy efficient, or other workers involved in clean, renewable, sustainable future energy development (www.greenandsave.com, 2013).

In publication ”Sizing the Clean Economy: A National and Regional Green Jobs Assessment“, the following is concluded:

- The clean economy, which employs some 2.7 million workers, encompasses a significant number of jobs in establishments spread across a diverse group of industries.

- The clean economy grew more slowly in aggregate than the national economy between 2003 and 2010, but newer “cleantech” segments produced explosive job gains and the clean economy outperformed the nation during the recession.

- The clean economy is manufacturing and export intensive. Roughly 26 percent of all clean economy jobs lie in manufacturing establishments, compared to just 9 percent in the broader economy.

- The clean economy offers more opportunities and better pay for low- and middle-skilled workers than the national economy as a whole.

- Most of the country’s clean economy jobs and recent growth concentrate within the largest metropolitan areas. Some 64 percent of all current clean economy jobs and 75 percent of its newer jobs created from 2003 to 2010 congregate in the nation’s 100 largest metro areas.

According to the International Labour Organization[1], green jobs and the promotion of green economy are pivotal for achieving an economic and social development that is also environmentally sustainable. Increasingly, countries are developing policies and implementing strategies to reduce

[1] http://www.ilo.org/empent/units/green-jobs-programme/lang--en/index.htm

emissions, develop more efficient energy scenarios and improve waste management. A broader policy agenda for climate-resilient strategies and sustainable growth that also reduces poverty is emerging. Evidently, this has far reaching consequences for employment and the overall functioning of labour markets.

Some of the many successful experiences in implementing the Programme of green jobs in 2012 are Mexico at the level of policy implementation in terms of the potential for green jobs sector, South Africa especially in the newly waste production chapter in management and tourism, Central America and China in terms of practice and training in accordance with the policy at the enterprise level, Asia, highlighting the importance of knowledge transfer after the implementation of the program.

4. Conclusion

Green jobs are worthy jobs that contribute to the preservation and restoration of the environment. They are not only present in green growth sectors such as the renewable energy and energy efficiency, but in traditional sectors such as manufacturing and construction as well.

At the enterprise level, green job places can produce goods and services beneficial to the environment. Green jobs are not always those that produce organic products, so are the jobs that are in line with ecological production processes (green jobs and work on the so-called green jobs can reduce water consumption and improve recycling system).

It is more than necessary to adapt and work on the environment protection, so, national economies have to implement green jobs, for the strategies of development as well as employment market require that.

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Exploring the barriers to circular economy in Montenegro

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Abstract

The most recent economic crisis exposed vulnerabilities in Montenegro's development model, dependant on imports and foreign direct investments. At the international level, the UN and the EU undertook actions to halt this downward trend and demonstrated a clear commitment to shifting development pathway towards the concept of green economy, based on knowledge and innovation. This model induced emergence of other concepts, among others - the idea of circular economy. Circular economy puts waste management into the centre of its framework and allows for a holistic, systems thinking approach, where waste is perceived as a resource, not a merely discarded material. It proposes a system where the waste is recycled, while the non-recyclables are used for energy generation. In practice, there are numerous impediments for implementation of such a model. This paper examines barriers identified for Montenegro, namely the incoherent policies, lack of appropriate waste management and the lack of consumers' enthusiasm in accepting changing behavioral patterns. We conclude with a set of conclusions and recommendations that should contribute to enabling a more convenient environment for the shift to circular economy in Montenegro.

Keywords: circular economy, waste management

Introduction

Back in 2007, Montenegro was the first country in the region to adopt the National Sustainable Development Strategy (Ministry of Tourism and Environmental Protection, 2007). Although this document presented many good ideas and was rooted in the legislative frameworks set by the European Union and the United Nations, it had not managed to deliver a significant proportion of the proposed measures. Undoubtedly, one of the key obstacles that led to this outcome was the economic crisis of 2009 that negatively affected further economic growth, both globally and nationwide. However, it appears there were other reasons as well, since individuals participating at the consultation process[2] indicated that reluctance towards the Strategy existed even at the time of its adoption.

At the global level, the crisis was a wake-up call for economic experts, as structural inadequacies of the current linear economic model were exposed. Thus, gradually, new paradigms developed. Firstly, the concept of *green economy* was presented. This pathway is still a dominant one in Europe and it has put human wellbeing and social equity at the core of its interest, emphasising the need to reduce environmental risks and ecological scarcities, leading to decoupling of economic growth from environmental damages (as defined by UNEP and widely accepted in terminology).

However, certain authors realised this was not enough, since a very important factor was left out (McDonough & Braungart, 1992; Pauli, 2010). It was the issue of waste, and more broadly the entire life cycle of a product and its impact to the environment. Based on this, and inspired by natural principles, other economic models evolved. Finally, the idea of

[2] The National Sustainable Development Strategy is now being revised under a public consultation process.

circular economy emerged and is now incorporated in the guiding principles of the EU policy through the European Resource Efficiency Platform.

The concept of circular economy

Circular economy shifts waste management into the centre of its framework and allows for a holistic, systems thinking approach, where waste is perceived as a resource, not a merely discarded material (Popović, forthcoming). It proposes a system where the waste is recycled, while the non-recyclables are used for energy generation. The latest report of the Ellen Mc Arthur foundation *Towards the circular economy* (2013) presents staggering figures indicating substantial potential benefits for companies accepting circular business models. Moreover, additional benefits such as higher land productivity and job creation are highlighted, together with increased competitiveness and efficiency of the economy.

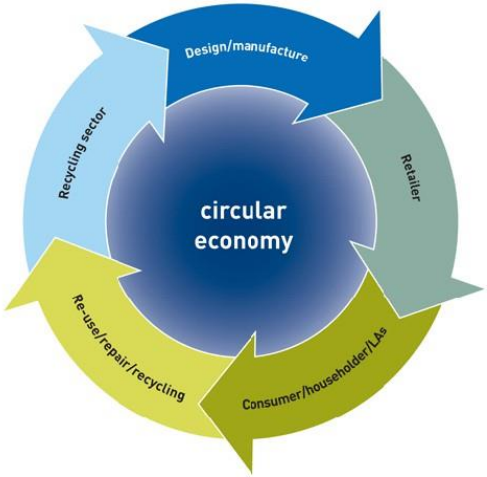

Figure 1 - The principle of the circular economy (Source: http://www.waste-management-world.com/articles/2013/02/reuse-recycing-targetef-by-circular-economy-100.html)

Figure 1 describes basic pillars of the circular economy concept. It entails a closed loop process, where each link in the chain should develop having the circular structure in mind. This means that firstly, product designers and manufacturers must change the way they approach materials they are using, to allow for their products to be recyclable to the highest possible extent. Furthermore, retailers and consumers would also need to adapt to this new model, as they would be the next link in the chain and the success of circular system will directly depend on their behaviour. Finally, recycling system would need to be well developed to process input materials and provide new ones in a timely manner to meet the needs of further use.

Analyzing impediments to circular economy in Montenegro

Following recent developments in the EU regarding this issue, a similar approach is envisaged to be applied when revising the National Sustainable Development Strategy of Montenegro. The revision process is currently underway and is expected to offer a framework for sustainable development till 2020. However, there are numerous impediments for implementing such a model in practice in country such as Montenegro. Namely, since waste is being treated as the central issue of this new economic model, an established waste management system is required.

Countries of the EU already have such systems in place, which are often highly sophisticated, with significant shares of recycling or other types of waste processing (such as waste to energy technology). Unfortunately, Montenegro is not one of these countries, therefore facing a more complex task. We are experiencing increased volumes of waste disposed at unsanitary landfills, causing severe consequences to human health and the environment, and eventually even social unrest, as in the latest case of Beranselo in the north of the country. Being a barrier to circular economy, these occurrences simultaneously present an important opportunity for Montenegro; they make the case for circular economy even stronger, as it

should be perceived as a tool to tackle two major issues – waste management and sustainable development (Montenegro Business Outlook, 2013).

However, management system is not enough in itself. As mentioned previously, consumers as the end users of products are to be held accountable for adequate waste separation and disposal. As acknowledged by the Waste Management Plan in Montenegro for the period 2008-2012, a behavioural change is needed in order to achieve this. It is indicative that people's awareness on recycling is at a rather low level so this issue should be tackled simultaneously with the establishment of a waste management system.

Taking into consideration the scale of change in shifting from linear to circular economic model, business sector will also need to be included. At the moment, Montenegro awaits the adoption of the new national Waste management Strategy, together with local action plans. These are expected to provide a wider legislative framework but a clear policy signals should be sent to business community that Montenegro is determined to follow this development path. Also, new entrepreneurs should be incentivised to choose this approach in developing their businesses, with different types of exemptions, lucrative loans and similar.

Pilot initiatives as role models

Still, some development is recorded and individual pilot projects might be taken as role models for national movement. Just recently, Capital City of Montenegro – Podgorica, in its local Parliament adopted a decision to set up an open call for interested partners from the private sector to produce electricity at the landfill "Livade" in Podgorica, which is one out of two sanitary landfills in Montenegro. Podgorica will look for the opportunity to transfer the waste biogas into electricity and thermal energy as well as

valorisation of carbon credits, through private-public partnership. Moreover, it is planned to install solar collectors at the roofs of sanitary tubs, which would provide one more source of renewable energy.

Conclusions and recommendations

The above analysis demonstrated numerous issues coming from the process of transitioning to circular economy in Montenegro. In order to address these obstacles and set foundation for this type of development by 2020, we propose several measures to be undertaken in the nearest future.

Firstly, it is necessary to establish an operational waste management system, which will allow for adequate separation of waste. This is a basic prerequisite of any functional circularly-oriented economy, but also a necessity in terms of health and safety issues, as well as policy goals arising from the EU accession process.

Second objective refers to the awareness raising of the population. However, this does not involve a mere educational campaign (which would undoubtedly be useful, especially if targeted towards the youngest generations) but a program which would spur final users to engage more actively with the problem and realise their importance and contribution to the whole process and therefore, the wider economy. Only formation of a responsible citizenship could drive them to take more active roles in their communities (Westheimer & Kahne, 2004).

Finally, policy framework needs to provide a clear incentive for businesses to adapt to this new model and plan their operations and management accordingly which we expect to be achieved with the revision process of the National Sustainable Development Strategy.

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Sustainable development towards PES scheme implementation

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Abstract

Sustainable development with its three pillars (social, economic and environmental) is defined as the concept of 'ecological modernization' and represents a key precondition that will guarantee long-term sustainable development. The idea behind economic valuation of public goods that are existing within protected areas is developing over time, since ecosystem is deteriorating over time. On the other hand, in case where ecosystem services are defined with prices, those prices are often underestimated. This brings the issue that economic valuation of ecosystem services needs to provide optimal solution and use of ecosystems. According to that, for the long-term financial sustainability and ecosystem preservation, it is necessary to define Payments for Ecosystem Services (PES) as well as Payments for Watershed Services (PWS) in particular case of watershed protection, as new mechanisms that will help sustainability of the ecosystems on the long-run. Even though it represents quite a new model of financing, PES and PWS are spreading on the global level and their importance is increasing.

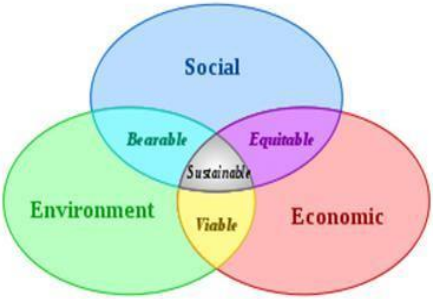
Keywords: payment for ecosystem services, PES, economic valuation, payment for watershed services, sustainable development

1. Sustainable development

Sustainable development concept is based on variety of definitions that are explaining its different perspectives and the nature of sustainable development that is deep and complex. According to the *'zero growth strategy'* from 1970s, sustainable development is not compatible with economic growth which can result in *'limits to growth'* (commissioned by the Club of Rome whose authors were Donella F. Meadows, Dennis L. Meadows, Jorgen Randers and William W. Behrens). Clear concept of sustainable development was defined in 1980s. Sustainable development, as defined by the Brundtland Commission (1987) is *'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'*. Additionally, the main goal of sustainable development, by definitions from 1980s was to '*achieve conservation of living resources'* (IUCN, 1980). It can be noted that at that time sustainable development had just one dimension - ecological dimension based on the environmental protection and ecological sustainability. According to academic works of Lele in 1990s *'sustainable development is a model of societal change that, in addition to traditional developmental objectives, has the objective of maintaining ecological sustainability'* (Baker, 2002). But, there was also a significant change in sustainable development definition in the nineties. There are four different aspects of sustainable development. The first definition of sustainable development is related to its first characteristic which is addressed to *'reproduction'*. Campbell (1996) stated that *'Sustainable development is a long-term ability of system to reproduce'*. The second characteristic of sustainable development that derived over time is related to Kaiser's definition on the *'balance among environmental, economic and social values'*. A third role that can be found in the works of Mega, defines sustainable development as *'a link from global to local concerns'*. In nineties another scholar (Maclaren) emphasized characteristic of

sustainable development that emerged and was defined as *'a dynamic process that extends from the formulation of a plan'* (Berke, 2002). At the beginning of the 21st century and in addition to the broader scope on the role of sustainable development, some authors such as Berke were addressing the importance of sustainable development as *'a dynamic process in which communities anticipate and accommodate the needs of current and future generations in ways that reproduce and balance local social, economic and ecological systems, and link local actions to global concerns'* (Berke, 2002). New broader scope on sustainable development was strengthened with academic works of Rao who pointed out a link between sustainable development and capital stocks. According to Rao, *'Sustainable development is the process of socioeconomic development which is built on the sustainability approach with an additional requirement that the worth of the capital stocks vector (valued at applicable shadow prices) is maintained constant, or undiminished, at each time interval, forever'* (Rao, 2000).

Figure 1 - Three dimensions of sustainable development (Source: IUCN, 2006)



Sustainable development evaluation is predetermined with deep understanding of the meaning of sustainable development itself and its clear interpretation. According to Hajer, sustainable development can also

imply on the term *'ecological modernization'* which represents a key precondition for long-term sustainable development, based on environmental standards (Murphy, 2000). This analysis of sustainable development is confronting sustainable development plans given in the EU 5th Environmental Action Plan. According to the EU Plan, sustainable development should address mutual dependence between environmental and economic issues and, as a consequence of that should derive from bottom-up strategies and policies adopted on the EU level (Baker, 2002). Sustainable development with its three pillars (social, economic and environmental) represents a process that is tightly connected with different theories and methodologies that cannot be analyzed separately.

Management of protected areas

Biodiversity, according to the broadest definition, represents a richness of life on the Earth. More specific and in accordance with the Convention on Biological Diversity, there is another definition on biodiversity which states that biodiversity is *'the variability among living organisms from all sources including inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems'* (GCP, 2012). According to the presented definitions, it is obvious that human society is interconnected with nature and biological systems and has great influence on its further development and richness. Additionally, it is important to point out another issue such is the lack of financial resources to support biodiversity conservation on global and European level, which was one of the key reasons why global biodiversity 2010 targets were not reached. Key goals related to biodiversity until 2020 are again completely relying on the optimal ways and methods for financing in order to obtain its long-term sustainability. *'An* ***ecosystem*** *is a dynamic complex of plant, animal, and*

microorganism communities and the nonliving environment, interacting as a functional unit' (UNEP, 2012). They are globally under a great influence of current economic processes, which resulted in their rapid degradation. On the other hand, there is an increasing issue of finding the best methods and approaches on how to manage and keep ecosystems sustainable in terms of their financing and preservation from negative influences of the global economic processes.

Ecosystem services can be defined as '*functions of an ecosystem that directly or indirectly benefit human wellbeing'* (Daly and Farley, 2004). A key word behind the ecosystem services is related to monetary value of biodiversity and its valorization in order to achieve its long-term sustainability. In other words, ecosystem services can be defined as different benefits that population can gain by using the ecosystems. One of characteristics of ecosystem services is that if one ecosystem service is free it is hard to estimate its value. As a consequence of the fact that some ecosystem services are free they are often underestimated, taken for grant, which has negative consequences for further development of ecosystem and which leads to its degradation. Taking into consideration another characteristic that it's socially valuable ecosystem services have developed its economic dimension. This means that ecosystem services can be measured and quantified which brings two fields - ecology and economics together. The aim of ecosystem services valuation tools is to help local municipalities, regions as well as policy makers to develop, efficiently use, manage and preserve biodiversity.

There are several issues related to the efficient ***valuation of ecosystem services***: (1) Lack of knowledge about ecosystem processes. In order to avoid the problem some quantitative models are developed, such as the expert judgment models, semi-quantitative models followed by inputs provided by local stakeholders in order to create a model that will be a

standard for ecosystem processes. Additionally, quantitative models have been developed, but are often faced with the greatest issue such is the lack of information; (2) Time constraints is another issue on the way to effective ecosystem valuation; (3) Transferability of research outcomes across the ecosystems.

Table 1 -Measuring the value of ecosystem services (Source: UN, 2007)

Approach	Why do it?	How to do it?
Determining the total value of the current flow of benefits from an ecosystem	To understand the contribution that ecosystems make to the society	Identify all mutually compatible services provided; measure the quantity of each service provided; multiply by the value of each service
Determining the net benefits of an intervention that alters ecosystem conditions	To assess whether the intervention is economically worthwhile	Measure how the quantity of each service would change as a result of the intervention, as compared to the quantity without the intervention; multiply by the marginal value of each service
Examining how the costs and benefits of an ecosystem are distributed	To identify winners and losers, for ethical and practical reasons	Identify relevant stakeholder groups; determine which specific services they use and the value of those services to that group (or changes in values resulting from an intervention, such as a

		change in land use or management practice)
Identifying potential financing sources for conservation	To help make ecosystem conservation financially self- sustaining	Identify groups that receive large benefit flows from which funds could be extracted using various mechanisms

According to IUCN, there are six different categories by which protected areas (PA) can be managed. All six categories of management over protected areas can be defined as following: (1) Management for science and wilderness protection; (2) Management for ecosystem protection and recreation; (3) Management for conservation of specific natural features; (4) Management for conservation through management intervention; (5) Management for landscape/seascape conservation and recreation and (6) Management for sustainable use of natural ecosystems. A key question behind the management of PA is related to the ways of financing which will enable long-term sustainability of PAs. Before the process of defining which are the most suitable mechanisms for financing of PAs, it is important to take care of specific preconditions such as:

1. Identifying full range of costs that are present in a PA;
2. Identifying parties that can benefit from PA management;
3. Identifying full range of benefits that a PA can bring to its stakeholders;
4. Identifying suitable financial framework for efficient management of a PA;
5. Developing financial schemes for financing.

Knowing the fact that mainstream sources of PA financing need to be replaced with new innovative financial schemes, a wide range of financial schemes is developed in order not just to provide enough financial

resources but to provide long-term financial sustainability of PAs which seems to be a primary goal. However, a quite new category of 'market-based fees for PA goods and services' put the emphasis on the fact that very often PAs are producing a great number of goods and services with significant economic value that is often underestimated. Many PA goods and services are underestimated and, as a consequence, underpriced. It causes problems for biodiversity protection and conservation due to the lack of general awareness between the consumers about their value. According to that, there are three different market-based ways of financing for PA goods and services such as: (1) Tourism charges; (2) Resource extraction fees; (3) Payment for ecosystem services-PES.

Payment for ecosystem services

Ecosystem services represent a 'product' that is available to community and is based on biodiversity conservation. One of the key characteristics of PA goods and services usage among different stakeholders is that they are using it at a very low or zero costs, which brings a conclusion that even though community is using such services they are not obliged to pay for them. In order to bring changes in that field, PES are created as financial instruments for all stakeholders who are using PA goods and services in order to generate funds on a voluntary basis. One of PES definitions is that it represents 'a *voluntary agreement to enter into a legally-binding contract under which one or more buyers purchase a well-defined ecosystem service by providing financial or other incentives to one or more sellers who undertake to carry out a particular land use on a continuous basis, which will generate the agreed ecosystem service at specified levels'* (Emerton, 2010). Or, *'PES is a voluntary based transaction and for implementation it needs to have previously defined ecosystem service. Moreover, it needs to be bought by at least one ecosystem service buyer and from one service*

supplier in those circumstances where environmental service secures the service provision' (Wunder, 2005). *'A **PES scheme** is a transparent system for the additional provision of environmental services through conditional payments to voluntary providers''* (Tacconi, 2012). PES represents a type of written or oral contract/agreement between at least two parties with the main purpose to protect ecosystem service and obtaining long-term financial sustainability of ecosystem based on the environmental services. PES can be defined and structured in different ways and it can have diverse characteristics. It can be:

- Voluntary –where stakeholders are entering PES on a voluntary basis.
- Beneficiary pays –where beneficiaries of ecosystem services (end-users, individuals, companies, business or governments) are paying for ecosystem services.
- Direct –where payments are made directly to the service provider.
- Conditional –where payments are conditional on the delivery of ecosystem service benefits.

PES schemes are based on the idea that ecosystem service providers (sellers) should receive a reward for their ecosystem services which will correlate with the cost of preserving the ecosystem. However, from the side of buyers' who are ecosystem users, it is important that they should pay the amount which will be proportional to the value they receive from ecosystem usage. There are different types of PES schemes and most of them are relying on the country/ecosystem specificities. In general, there are three types of PES schemes (Greiber, 2011):

1. Private schemes – require direct payments between buyers and sellers where both subjects are private entities, such as private companies, individuals or different groups of individuals. In the case of private schemes government can have a role as an intermediary.

2. Public schemes – are mostly based on governmental systems such as fiscal instruments (taxes and subsidies) where the public entity is either a buyer or a seller.
3. Trading schemes – are related to the mixture of governmental and market based schemes. Additionally, it is based on aggregate maximum amount (cap) for conversion of ecosystems.

However, there are three key preconditions for the efficient use of PES: ecosystem services need to be very well defined on the national/municipal level; they need to be highly valued by key stakeholders and they need to be regulated within national legislation. PES schemes can be either public or private as well as government- or user-financed. Private PES schemes represent agreements between buyers and sellers which are private entities (individuals, associations, companies or NGOs). In such circumstances those individual beneficiaries have a direct contract with ecosystem service providers (i.e. National Park). These mechanisms are common for the markets that are not regulated. On the other hand, public schemes are involving different stakeholders such as municipalities, local or national governments who are paying for using the ecosystem service.

They are based on direct payments between local authorities and ecosystem service providers. In order to define effective PES scheme it is important to:

1. Identify the ecosystem service
2. Define institutional and technical capacity
3. Design agreements and business plans
4. Implement PES agreement

One of the ways for watershed protection is based on ***Payments for Watershed Services*** (PWS). The first one is related to development of valuation technique that will be a helpful tool for policy makers in a way

that it will provide economic valuation for using watersheds. The second one is based on the fact that such tools are also helping policy makers to balance preservation of eco-systems in a way to provide economic value of watersheds to have sustainable watershed systems. It is very important to define exact costs and benefits of watershed protection and implemented PES. According to the neoclassical economic approach, local communities (i.e. municipality of Žabljak) aim to balance marginal costs and benefits related to watershed usage. On the other hand, while defining the total economic value of watershed usage, it is quite difficult to be accurate. In order to be more specific it is very important to develop different types of values of watershed systems and ways for future economic valuation. Economic value of watershed systems can be divided into two separate parts: 'direct use' and 'non-use' values. Direct values are addressing those values that are deriving from direct use of goods and services (for example, watershed's drinking water). 'Non-use' values should be additionally taken into account since they are representing potential values and benefits that can derive from watershed services use in the future.

Case study: Possibilities for PWS implementation in the National Park "Durmitor"

In order to create proper methodology for PES scheme implementation in NP ''Durmitor'' it is important to:

- Define ecosystem service in NP Durmitor and to define key economic parameters
- Identify potential buyers for PWS in NP Durmitor
- Identify potential sellers of PWS in NP Durmitor
- Define regulatory and policy framework for PES implementation
- Define potential PWS support services and organizations

A methodology should be based on the following steps and answer the following questions:

Step 1 - Are there any water management problems recognized within the municipality? - On the basis of analysis of key trends and mechanisms of water supply in municipality of Žabljak, it can be seen that water supply is depending and deriving from watersheds located within the NP ''Durmitor''. On the other hand, according to the recent trends in the Utility Services Company, it can be seen that they are facing challenges in water management from the perspective of low level of payments for these services from the end-users (individuals and private entities).

Step 2 - Are ecosystem services useful tool that can help water management in the municipality? - In order to fulfil step 2, it is important to analyze effectiveness of current measures in water management from the side of policies, regulations, infrastructure system and financial instruments. From this perspective, it seems that water management in municipality of Žabljak has space for further improvements.

Step 3 - Is proposed PES scheme providing more benefits than the existing mechanisms of water management in the municipality? - A valuation of ecosystem services needs to be prepared together with the cost-benefit, cost-utility and cost-effectiveness analysis. Considering the fact that there is no written, but only informal agreement between NP ''Durmitor'' and Utility Services Company on watershed usage, an introduction of PES scheme based on previously signed agreement between the two parts will be a new step forward that will result in PES scheme for watershed services.

Step 4 - Are there conditions provided by regulations that PES can be easily implemented within the municipality? In order to identify the best model for PES in particular case it is important to organize meetings and discussions with key stakeholders and to present favorable models with their key characteristics (risks and opportunities). For the purposes of PES

implementation it needs to be prepared regulatory framework on national and municipal level in municipality of Žabljak.

Step 5 - Identifying potential buyers and sellers of PES - Preparing stakeholder analysis and identifying who are the main service providers and beneficiaries. In this particular case there are two main stakeholders that are recognized as main buyers/intermediaries/sellers in PES scheme for watershed service usage in municipality of Zabljak. There are three main stakeholders recognized for the future PES scheme development in NP ''Durmitor'' such as following: NP ''Durmitor'', Utility Services Company, end-users (individuals and private entities).

Step 6 - Is there a possibility that negotiations between potential buyers and sellers will be successful? - Developing awareness raising campaigns in order to present key benefits for both sides is a key precondition that can guarantee that negotiations between supply and demand sides will be successful and will result in PES agreement.

Table 2 - Main preconditions for PWS implementation in the case of NP ''Durmitor''

MAIN PRECONDITIONS FOR PWS IMPLEMENTATION	CASE STUDY NP ''Durmitor''
If there is at least one buyer of ecosystem services who will be at the same time ready to invest in ecosystem service in order to maintain and raise funds for those purposes.	
If demand for ecosystem service is clearly marked and defined as well as estimated as financially important for at least one buyer.	
If supply is under threat due to limited potentials of resources which can endanger ecosystem service in general.	
If resource management is well defined in order to be changed and which ecosystem services will guarantee improvements in supply side.	

If there are defined intermediaries who will be in charge for proper identification of resource management alternatives, initiate communication between buyers and sellers and be in charge for monitoring activities.	
If there are mechanisms that will be established in order to evaluate expected outcomes of efficient use of PES schemes.	

Conclusion

Biodiversity protection can be additionally strengthened by better management of existing ecosystem services through the implementation of new methods such as PES schemes. Even though PES schemes are recognized as quite young and innovative way to finance PAs, they are still developed on a small-scale or as small pilot projects. On the other hand, PES schemes implementation is growing on the global level. A key challenge regarding successful implementation of PES schemes can be seen in their particular design (a model that will be best suitable) and implementation. One of the key preconditions for successful implementation lies in detailed consultations and cooperation with supply and demand side (providers and beneficiaries). In particular case of NP 'Durmitor' a key focus behind the introduction of PES schemes is to strengthen its „own resources". Introduction of PES scheme would give incentives for the development of the agriculture and tourism across NP "Durmitor", its protection zones as well as guarantee long-term financial sustainability of NP.

In order to define exact amount of payments for ecosystem services in a particular case of watershed in NP "Durmitor", it is advisable to firstly estimate end-users' willingness to pay for such services by using survey methods. Those results will serve as a basic point for further actions in PES

implementation in NP "Durmitor" as well as end-users' maximum willingness to pay. Additionally, it will be a basis for further development of PES schemes in municipality of Žabljak. Implementation of PES in Durmitor NP will help improvements in current watershed protection, landscape beauty and biodiversity protection in the long-run. However it will improve financial sustainability of NP "Durmitor", as well as the quality of services that are provided to end-users in terms of quality of water supply in municipality of Žabljak.

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Economic valuation of protected areas system in Montenegro

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Abstract

The problem of sustainability of protected areas acquired a global scope after the 1992 Summit in Rio de Janeiro. The fear of irreversible loss of scarce resources due to the inefficient modes of use and deficiencies in their conservation opened a series of debates and attempts to solve the problem. Two proposed solutions, which are closely related, are the economic valuation of protected areas (i.e. how much are they really worth) and the ecosystem services of protected area (i.e. what they provide). According to the Spatial Plan of Montenegro Until 2020, about 25% of Montenegrin territory will be placed under the protection . This decision creates a new market that must be effectively managed. Therefore, it is important to calculate the limits of the market, which products are placed and how, but without compromising the fundamental role of protected areas, which is the protection of biodiversity.

This article gives an overview of the protected area system (PAS) and the methods of its valuation. Particular attention is given to the valuation of PAS in Montenegro with the discussion on how it affects the economy of the whole country.

Key words: *economic valuation, environment, protected areas, ecosystem services, resource*

Introduction

It appears that the relationship between man and nature in the age of modernization of the state is lost. And the loss of the natural balance has led to problems that are not initially visible. Today, the problem of the loss of natural balance is being addressed through a variety of sciences that only at first sight have nothing to do with it. One of these sciences is economics. And, in this context, it does not refer to the study of natural resources, the scarcity being the main element of study – here the focus is on the "invisible" benefits that man obtains from the nature. In recent years, economists have begun to treat the natural environment in the same way as labour and capital as well as funds and resources. In particular, the relationship between the economic development and environmental quality comes forwards. The concept of eco-development, strategies of economic development with environmental overtones and the concept of sustainable development, promote the view that between economy and ecology there can be both positive and negative interdependence.

Environment has an essential importance for human society. It is a part of working and living conditions, in general. Natural environment, with its natural resources and natural conditions of the area in which the economic activity of people takes place, are both productive and non-productive. At the time when environment became a scarce resource, it became a study subject of economics (Ponting, 2009).

One of those "invisible" benefits from the nature is known as ecosystem service. "Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such

as spiritual, recreational, and cultural benefits; and supporting services, such as nutrient cycling, that maintain the conditions for life on Earth" (Alcamo, 2003).

Specific sites where all these services can be measured are protected areas (PA). According to the World Database on Protected Areas (WDPA), in 2008 there were 120,000 protected areas covering a total of about 8 million square miles of land and sea (that is an area more than twice the size of Canada); terrestrial protected areas cover 12.2 % of the Earth's land area and marine protected areas cover 5.9% of Earth's territorial seas and 0.5% of extraterritorial seas.[3]

This large territory creates great economic activity and values. But main problem in calculating the economic value of a PA is that a lot of services that a PA provides aren't marketed. Moreover, economists traditionally make calculations of products and services that have an exact market price. In the last twenty years, a lot of methodologies were used to find the right way to calculate those products and services that have no market price.

The Total economic value (TEV) is a specific methodology that includes provisioning, supporting and regulating services and cultural services, which are further divided into direct, indirect, option and existence values. This is the right way of calculating the economic value of a PA encompassing ecosystem services because this applies not only to the already created value but also to the values that will be created in the future.

[3] www.wdpa.org

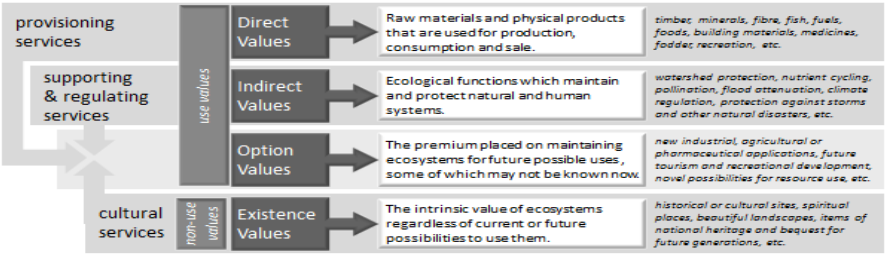

Figure 1 - Total Economic Value of PA ecosystem services (Source: Emerton 2009b

Figure 1 provides a cross section of those values. What may be considered a deficiency is that parts of a service can be duplicated (e.g. forest ecosystem has provisioning services with direct value of timber, and supporting and regulating services with indirect value of erosion prevention). But with careful use of data (e.g. input output tables of ecosystem services) these may be avoided.

The main question in economics is how PAS affects other sectors and economics outputs and indicators: tourism, agriculture, energy, or the GDP, employment, public revenues? This is particularly important because PAS encompasses these sectors. This primarily refers to the fact that PAs are what attracts tourists who come specially to spend the time in these areas, or the collection of plants and wild fruits from the territory of PA, which raise their prices.

All of this added value must be recognized by the public and decision-makers so the business sector could adequately use it.

The system of protected areas in Montenegro

In the early nineties of the 20th century, Montenegro has become an ecological state committed to sustainable development and conservation of natural resources. “The ecological state is a form of government,

especially a form of economic system, which ensures sustainable development through production in balance with nature" (Burić, 1992). In the past twenty years, Montenegro has built a system of sustainable development. The historical circumstances through which Montenegro passed have slowed this process. What particularly suffers is a legal system that couldn't follow all changes. Also, creation of large number of new institutions related to sustainable development led to fragmentation of competencies and conflicts among them. A system that is particularly affected by this is the Protected Areas System (PAS).

In 1878 King Nikola established a so-called royal ban for the area of Biogradsko Lake, an area that later became National Park Biogradska gora. Today, on the basis of national legislation, protected areas cover about 9.3% of national territory[4]. The current plans envisage the expansion of the protected area surface to 25% the total territory of Montenegro. In this moment there are five national parks, monuments of nature, special natural areas and nature reserves. Approximately, 20% of the overall flora and sub-endemic plants are protected, whose distribution is limited to the territory of Montenegro and for some of neighbouring countries. As is the case with other natural resources, biodiversity resources are already in use (forests, fishing, hunting, collecting edible and medicinal plants, etc.) or will be used in the future. Many restrictions and limitations of use are established, including those that ban any kind of utilization (e.g. of protected species, within reserves of the protected areas) or restrict the use in time or over particular areas.

The present-day Montenegro passes through a transition phase, and quite an important question is how to preserve nature and its parts and how to

[4] Ministry of Spatial Planning and Environmental Protection (2010) - National biodiversity strategy with action plan for period 2009-2014, Government of Montenegro

make natures' goods and services marketable. The balance between economic and environment issues is particularly important because it will determine whether some protected areas are financially sustainable.

Montenegrin protected area system (MPAS) has been financed mostly from the state budget. Due to the low economic activity in Montenegro and large social loading on the state budget, there was a significant reduction in the budget of MPAS in 2012 (reduction of 39% compared to 2011; Law on Budget for 2011 and 2012). In order to cover these losses and provide financial stability of PAS, it is necessary to recognize the business potential within the system. Protected areas are forced to turn to the market and sell their products there.

Managing authority for PA is Public enterprise for National parks of Montenegro (PENPM). Even if more than 50% of PENPM finance is its own income, for the rest it relies on the state budget. So, what certainly has to change is a way of thinking about managing systems of protected areas. What is obvious is the existence of protected areas, even in the region (Secovlje Salina Nature Park Slovenia, Plitvice Lakes in Croatia) that not only aren't financed from the state budget but that generate significant profits.

Economic valuation of Montenegrin PAS

But what are the services that PA can offer to the market? In 2011, a pilot survey "The Economic value of protected areas in Montenegro" was carried out. Using TEV approach, it was calculated that in 2010, the quantified value of PAS equated to some 2.2% of GDP, or economic benefits of €106 generated per capita of Montenegro's population, which is an annual €68 million (Emerton, 2011).

Main sectors are PA tourist value and sales, water supply, guided tours, hiking and land sports, water sports and recreational fishing, use of other PA land and resources and watershed/flood protection services.

Table 1 - Contribution of different sub-sectors and activities to PA values 2010 (Source: Emerton 2011)

	Value (€ mill)	Contribution %
Guided tours, hiking and land sports	2.9	4.3
Water sports and recreational fishing	5.7	8.3
Other PA tourist values and sales	35.2	51.9
Use of other PA land and resources	3.5	5.2
Water supply services	19.0	28.0
Watershed/flood protection services	1.5	2.2
Total quantified value	67.8	

Data showed that most of revenues come from other PA tourist values and sales (51.9%), than water supply services (28%) and water sports and recreational fishing (8.3%). This means that these sectors are currently the most competitive, but still there is great area for improvement of them.

Also, if we look at the cross section of generated revenues (Table 2) it is obvious that non-commercial users/beneficiaries and private sector make up more than a half of all sectors that generate income from PAS. Taking into consideration that most of protected areas are located in the north part of country, which according to all the indicators is less developed and with lower economic activity than the rest of the country, the data from this research indicate that there is a good scope for the development of

local business and investment in these areas and increasing economic activity.

Table 2 - Distribution of PA values across beneficiary groups 2010 (Source: Emerton 2011)

Beneficiary groups	Value (€ mill)	Distribution in %
PA authorities	1.0	1.4
Other government	9.5	14.0
Non-commercial users/ beneficiaries	32.3	47.6
Private sector	25.0	37.0
Total quantified value	67.8	100

Conclusion

The research of this kind was implemented in Montenegro for the first time. Although, it has to be emphasized that the exact value of PAS cannot be calculated because there are products and services which cannot have a price or price would be very high, this research still provided a useful indication of the potentials that could be utilized.

Even on the basis of this basic calculation, it is obvious that sustainability of PAS isn't an environmental but an economic problem. With such influence on other sectors and such profit potential, it should be managed like a private business whose main concern is the protection of biodiversity. With such an approach, considering the consequences of the degradation of PA to human population becomes extremely important.

If we go back to the initial idea of Montenegro as an ecological state aiming towards the sustainable development and compare it with these calculations, then it can be concluded that PAS provides an opportunity for the implementation of such an idea. Not only it can lead to significant revenue generation, but it can lead to the growth and development of the whole economy. Wise use of resources can create a good base for the future generations.

Economic valuation is a new method that assists the decision-making process. Although this method needs improvement, still, it is a good start to help not only in managing and protection of PA but also to enhance the quality of life and raise the economic activity of local communities.

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Higher education management improvement and rural development

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Abstract

The study suggests a new approach to quality assessment and control in the higher education within the countries from Central and Eastern Europe and its significance for rural development in the context of Europe 2020 Strategy of intelligent, sustainable and inclusive growth. Disadvantages of the national accreditation system in the Republic of Bulgaria are discussed and which system was developed in the years of post-socialism and it undoubtedly carries conservatism at a great extent, as well as it leads to limitations of flexibility and innovativeness. The advantages of international accreditation are underlined at the same time. A model for establishment of a regional accreditation body is proposed in which, on one hand, clumsiness and subjectivism of current national accreditation systems are overcome, on the other, the model provides the needed transparency in accreditation procedures and mutual recognition of quality assessments – i.e. opening of educational markets and free movement of trainees and trainers. Taking into consideration the main function of accreditation structures as external evaluators of the higher education quality provided by universities, the components of that quality are considered. Specific recommendations for higher education management and use of modern ICT in conditions of accreditation at an international level are made. The importance of quality assurance in the higher education and the increase in motivation of trainees and trainers are both

underscored concerning capacity development, transfer of innovation, raising in competitiveness of national economies and rural development – areas in which the international accreditation will contribute directly or indirectly to the indisputable progress.

Keywords: higher education, quality assessment, accreditation, rural development

Introduction

We live in a time when intense reforms are reinforcing for structuring and harmonization of the European higher education area. Strategic framework for changes was introduced in Bologna in 1999. Within the European higher education area establishing a relationship of mutual trust, according to the labor markets and enhancing the attractiveness to citizens of all countries are the most directly related issues to the quality of education.

The higher education competitiveness is a separate category that also needs clarification. European governments have a difficult task to decide: which are the best ways to make the national higher education systems more competitive in a global scale: cooperation or competition at national or European level, or mix of these options which is more likely? National policies often demonstrate combinations of various strategic options (Dimitrov, 2013(1). Europe shows strikingly large differences between countries and systems, because of deep-rooted traditions that are difficult to overcome.

Undoubtedly, however, the quality assurance in higher education is a basis for the development of each university as well as the need for qualified personnel for economic development in the context of EU regional policy.

On the basis of analysis that were made (Dimitrov, 2013(2) it can be concluded that parties interested in quality of education in a university are:

First: The students' families

Second: The University

Third: The businesses

Fourth: The students themselves

The quality of education in universities is the most important criterion for accreditation and it is a subject of endless debate in the media and academia.

Accreditation of higher education has two main tasks: monitoring to ensure minimum quality requirements and periodic evaluation to support the process of maintaining and improving the quality. The first serves as a "filter mechanism" and the second leads to the analysis and recommendations, including specific strategies to ensure and maintain quality. The evaluation has two dimensions: internal (self-evaluation) and external (carried out by external independent experts). Recommendations reflect the main purpose of accreditation, which is to support the further development (Arabska, 2012).

Olson (2005: Wende, 2009) underlines the existence of competing visions in Europe, among the university as a service enterprise in competitive markets, the university as an instrument for national political agendas, and the university as a public service model based on the argument that higher education cannot be solely market-driven because the logic of the market does not apply easily to education. Europe demonstrates strikingly large differences in performance between countries and systems, differences that are deeply rooted and difficult to overcome.

Definitions of quality

Achieving quality in higher education, both at macro and micro level, should be consistent with the belief that education is a systemic, integrated concept, which in any case is not limited to mechanical sum of its elements. According to the staff of UNESCO such elements of higher education are (UNESCO, International Conference of Education, 1989): quality of teaching staff, quality of curriculum, quality of education methods, quality of the objects of education, quality of infrastructure, internal and external environment. Today searching effective ways to solve the problem of the quality in higher education has become one of the most important conditions for educational system development (Dimitrova, 2011).

When defining the quality it is not necessary to list all the components which it depends on. For sure some of them will miss. Components that provide this quality are internal running of each specific university:

- strategies;
- tactics ;
- approaches;
- expertise /know-how/;
- methodologies;
- academic staff ;
- administrative potential;
- international cooperation;
- educational management;
- scientific management;
- administrative management;
- financial management;
- resource management;
- management of the infrastructure ;

- management of the learning environment; etc.

Many more elements can be listed but let it be a task that the academic autonomy imposes on a university.

The authors, independently of the great number of approaches for defining the concept of quality in higher education, consider the quality as an educational service from the following points of view:

1) Existing state legislative requirements;

2) Employers' requirements;

3) Quality characteristics in higher education institutions and training processes.

Although there are some discrepancies in short-term results, community and state requirements have some logic. In conditions of fast change in information, the orientation towards labour market needs means that in less than five years there would be a need of additional training. When increasing the age, the ability of gaining new knowledge and skills decreases. Furthermore, the new qualification would require additional investment too. That's why the state determines fairly the necessary requirements towards the preparation not only of highly qualified specialists, but of broadly trained staff through humanitarian, social, economic, mathematics, ICT, arts, etc. Although a big part of the knowledge in these fields could not be used in practice and living, they undoubtedly contribute to the increase in intellect and personal cultural level. None could predict what would be the pace of contemporary development and what knowledge and skills would be needed in conditions of high economic and political instability.

The inclusion of blocks of compulsory fundamental and specialized subjects in universities' curricula plays an important positive role. They determine

the minimum of knowledge and skills for the correspondent educational direction. In conditions in too big competition between higher education institutions and the appearance of other organizations offering training services, the availability of legislative requirements allows to maintain the quality requirements in higher education system against unconscientious participants on the market of educational services.

The necessity of state control over higher education institutions' activities is also connected to the fact that in contemporary conditions the education could be used as a powerful factor for changing behaviour of young people in a very dangerous direction – impact of extremist religious organizations and sects.

Many investigations show that young people and their parents wish to study at the universities because they want to gain knowledge, to work in a specific field or to make a career. Unfortunately, most of the universities do not sustain contacts with the business strong enough. The reasons for that on one hand are objective: in conditions of monopolized economy the successful functioning of many companies depends on the ability to find common interests with state bodies and control agencies. That way, in absence of competitiveness, there is not expressed necessity of development, diversification, expanding and improvement. This situation explains in a great extend the low interest in many managers to actively search for skilled graduates. Along with this there are subjective reasons connected to the motivation of managers to invest in staff improvement. As every one investment, that in human resources contains a risk expressed in the uncertainty in anticipated future incomes. That makes the employers to transfer training expenses on state and public institutions (hence taxpayers) or to the employees (Mallier&Shafto, 1989).

At the same time, it should be emphasized that in availability of interest in higher education institutions' management bodies, there are tremendous

opportunities for development good relations with employers or graduated students (alumni) succeeded to make career in economics or their parents.

It should also be pointed that in conditions of instability one point of higher education quality has great importance – the ability of students to self-train – to be a part of the process of lifelong learning. This approach is important because in four or five years of training in a university the knowledge is getting old and there is a need of permanent improvement. This statement is confirmed by investigations of Prahalad and Krishnan (2002) in relation to the problems of quality improvement in informational products. They suppose that when the environment, in which the program support is, has stability, then for the consumer the most important thing is the ability of the program support to execute preliminary set functions without mistake. When a company is in instability, the most important thing is the ability of the supplier to modify and change the program support in accordance to the requirements of outer environment. This approach could be applied in the field of higher education because before all the graduates operate with knowledge, habits and skills which in their totality are information. In other words, the graduates should have knowledge in the history of the studied subjects, main directions in theory and practice development I the corresponding area, use of critical analyses and theory development methods, improvements in existing methods, conducting critical dialogue with colleagues, modelling real objects and processes, high motivation to improve qualification and incessant personal development.

The insufficient adaptation of social and economic processes to educational activities are more often expressed in the direct transfer of economic parameters on the educational process; in predominant characteristics of educational institutions as producers of educational services and the accent on the relation “producer – consumer”; in prevalent attention to outer factors and economic essence of quality as

conformity to the service and consumers' needs. The most popular models of inner quality assurance system are based on TQM (Total Quality Management) and ISO 9001:2000.

For example, the inner quality assurance system in most universities includes (according to the process and complex approach) the management of the most important processes which cover: candidate-students, higher education, qualification improvement, informational support, financial and material resources, etc.

The authors accept this approach as justifiable. Quality of education should be maintained on all levels. In this case, the point is not on quality management but quality assurance which is different activities.

The experience in the use of modern methods of higher education quality management shows that in some universities the practice of introduction and certification of education quality management systems is even expanded. This is made first in accordance to requirements and recommendations of ISO 9001:2000 and principles of Total Quality Management. Along with this self-evaluation of acquisition in the training process is made by the universities in relation to determination of advantages and disadvantages of educational, scientific research, administrative, financial and economic activity, for establishment of strategic partnerships with employers to assure strong connections between universities and employers.

It is broadly accepted that on the saturated market of educational services namely the quality determines the success and the competitiveness of universities. This makes universities' quality improvement in a strategic goal in them. It should be underlined that the availability of a strategy isn't still a guarantee for success and the implementation of concrete actions meets significant financial and human limitations which are accompanied

by institutional inertia, reluctance and even resistance of trainers and administration to change rules and norms of work.

It is necessary to put an accent on the attention of state policy in the field of higher education, on the opportunities that the control role of state has for reaching bigger quality in higher education. In Bulgaria much work is being done to accept criteria on which basis university ranking to be made and this to be the basis for state financing. This definitely will stimulate state universities getting annual subsidies from state. For private institutions responding to all requirements of National evaluation and accreditation agency the inclusion in the list of "the best universities" undoubtedly is a matter of prestige and social prove. The criteria of universities ranking are those that show employers' estimate for the level of preparation and the adaptability of the graduates in the real business practice.

Quality of education is a combination of characteristics of contents and results in the educational process in relation to its ability to respond to the needs of the three interested parties (candidate-students, state and labour market). In this relation, the quality of educational services could be determined as a rational correlation of attributes and characteristics of educational process, its results, correspondence to standards and labour market requirements with a view to development of personalities of innovation type of thinking, capable in time and adequately to react on the typical changes in society (Dimitrova, 2011).

Findings and recommendations:

1. The European Union needs a new approach to higher education in the newly joined countries. This also applies to those who were also in totalitarian regimes, and are on their way to join.

2. Factors that positively influence the quality of higher education: the parents of the students, the university, businesses and students. Factors that adversely affect quality in a university are: competitive universities (which are not accredited); involved (corrupt) media, state, type of accreditation "You to me – me to you".

3. The introduction of international accreditation will undoubtedly contribute to progress in European higher education.

Internationalization of evaluation and accreditation of higher institutions is necessary. The first reason is that universities actually work in an international competitive environment. Opportunities for internationalization of accreditation are following:

- Expanding the network of international agencies for assessment and accreditation and their legalization in all European countries, including Bulgaria.
- Scale international cooperation of Bulgarian National Evaluation and Accreditation Agency /NEAA/ in a group with other agencies in EU member states. The main advantage of this co-operation will be the possibility to involve accreditation experts from several countries.
- Signing agreements between Bulgarian NEAA and other European national agencies for mutual recognition of accreditation procedures. This way each university can choose which agency to conduct the accreditation.

These formulas lead to overcome the monopoly in the accreditation system.

Perhaps there are other options, such as creating a second or third agency as public or professional body.

4. Professionalism, moral and academic ethics of professors influence in a significantly stronger way than accreditation on the quality of teaching.

European universities are in a competitive environment among themselves, as well as in a global competitive environment. This means that besides the transparent segment, each university should have a segment that is a company secret. In this segment should be stored strategic management, marketing approach designed to implement innovation know-how, etc. It is therefore unacceptable accreditation agencies to require full transparency and reveal of university researches. This applies to any company operating in a competitive environment.

5. National planning and coordination between public needs and number of student seats for admission is necessary, especially in times of economic crisis. This can reduce the number of students with a state subsidy and increase the number of students paying by themselves.

Concept for the establishment of Association for Quality Assurance in Higher Education

A number of setbacks created by the government-led agencies for evaluation and accreditation have given way to this idea and in particular:

- The evaluation and accreditation experts as a rule are nominated from universities that are either in friendly relationship or in sharp competition with the evaluated institution;
- There is a clear tendency of 'standardization' of universities with different missions and operating in various contexts by imposition of uniform quantitative indicators
- The evaluation judgments and accreditation results are often far from objectivity, where uncritical attitude towards old and state-funded universities prevail, while the new or private ones are regarded with distrust.

- In a nutshell, accreditation is converted into an instrument for fighting the competitive institution or reproducing the status-quo, rather than to promote quality in higher education; this kind of evaluation and accreditation process is not fit for the purpose of quality improvement and quality enhancement.

The purpose of this project would be to reinforce quality assurance in universities and support them in achieving real quality through a process of fair and independent external peer review. In the interests of equity and reliability, the accreditation decisions following the review should be based on clear and consistently applied criteria. This can be achieved by internationalization of review panels, development of expert knowledge and skills, and exchange of best international practice.

The Association shall finance its activities through a membership fee, donations and external financial resources drawn through consultancy, research, publications, training and external evaluation and quality assurance.

The membership in the Association can take two forms: full and candidate membership. The establishing institutions and those who join the Association at its first General Assembly, which is to take place within three months upon the registration, shall automatically receive a full membership status. In addition, there should be a possibility for 'observer' institutions to attend the meetings and participate in the activities of the Association.

The governing body of the Association shall be the General Assembly, which is to approve its Statute and nominate the Board, the President and Vice-Presidents. It shall also make decisions on financial matters and approve strategic plans and annual reports. The Association administrative staff shall be managed by a Director. In addition, the Association shall have

an International Advisory Council, expert panels, Resource Centre, Committee on Ethics, etc. The work of the Association shall strictly follow the norms and standards for quality assurance drawn from the best European practice. Within a relatively short period of time, e.g., two years upon its establishment, the Association shall take the opportunity to apply for membership in the relevant European bodies, like ENQA and EQAR. Among the key principles and values in the work of the Association shall be:

- The true respect of institutional autonomy and academic freedom;
- The recognition of and support for the spirit of creativity and innovation of the academia;
- The recognition of institutional efforts to modernize and liberate itself from the archaic patterns of work and teaching paradigms.

If all the universities are to be the same, it would be enough for just one university to exist.

Recommendations for the management of higher education

The triangle "knowledge- education- business" is the basic formula of the society that generates, creates, transfers and uses knowledge. Within this links between education and business need to be created to transfer this knowledge to the business sector and society.

The universities and colleges should effectively contribute to regional economic development through their multiple dimensions and activities: knowledge creation through research and technology transfer; knowledge transfer through education and human resources development; and, cultural and community development, which they argue can contribute to the conditions in which regional innovation thrives. The formulation of innovation projects is of a crucial importance for the development of

higher schools of a new type and should be a part of the strategic priorities of the universities' leaderships (Dimitrova, 2013). Modern higher education should prepare specialists who can successfully define the priorities of region and state economy as a whole, using innovations as the basis for achieving competitive advantage in a socio-economic system.

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Marketing with Social Goal in the Function of Environmental Problems

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Abstract

Today, social needs and problems affect that marketing with social purpose become one of the most important areas of social and humanitarian sciences and deeply entered all aspects of daily life. Marketing with social aim uses commercial marketing models and techniques tailored to its purpose. It is engaged in meeting the needs of the society, which includes its impact on the prevention and resolution of social problems. As such, marketing with social order is the subject of this article. Marketing with social aim accomplishes in four ways by: donating, volunteering, cause-related marketing and a combination of the above forms. Today, among exemplary social issues allocate global environmental problems, which need to be repaired as soon as possible. Because of that the purpose of this paper is to show how marketing with social goals through its four main forms of implementation can effectively impact to increase of global environmental problems.

Key words: social marketing, environmental problems

1. Introduction

If comparing the environment and the forms of behavior of market operators, it can be concluded that the behavior is closely related to the state of the environment and that the damage to the environment rises mainly as a result of socially irresponsible behavior of market participants. Environment now subsidizes current consumption and production. When such subsidies are longer the risk of significant social and environmental consequences will be higher. The current trend of consumption and production cannot be sustained, because the next generation of consumers will bear the huge cost of it.

Growing public concern about environmental issues has forced the actors to take responsibility for the consequences of their economic behavior in the society. In other words, today's social responsibility aims to achieve the interaction of social responsibility and marketing. This integration is justified by the fact that a purely commercial marketing ignores the potential conflict between short-term desires of market operators and long-term well-being of the society, with respect to global environmental problems. The result of cohesion, of social responsibility and marketing is social marketing. Social marketing, as such, is the subject of this article. Goal of this article is to point out the importance of marketing with social objectives for the recovery and reduction of environmental problems.

The paper consists of five parts. The first part introduces initial problems that are analyzed later in the paper. The second chapter defines the concept of "marketing with social goal", explaining the possible ways of its implementation. The third part describes the current major global environmental problems which require rapid development of ecological awareness. The fourth part represents the connection between marketing

and development of ecological awareness. The final part provides a conclusion of work and review of the literature.

2. Marketing with social goal

Marketing with social goal is "an adaptation of commercial marketing for the programs' impact on the voluntary behavior of target groups, which will thereby improve their personal welfare and the welfare of society as a whole" (Parsons and MacLaran, 2009).

Social marketing is a micro approach for solving the macro problem. It is based on personalized activities of market operators (companies, international subjects, governments, nonprofits organizations and customers). Participation of market players in social marketing is not a transfer but a transaction (Kotler, Kartajaya, Setiawen, 2010). This involvement in social marketing is a form of pro-social behavior.

Methods and forms of realization of marketing with social objectives are:

- Donations - non-refundable transfer i.e. donation in the form of cash, goods and/or services where the donor does not require a favor;
- Volunteerism - unpaid, unprofessional work i.e. engagement which also does not require a favor;
- Cause-related marketing - raising funds from the sale of products which a portion of the sales price will be set aside for social reasons
- A combination of all of the aforementioned - a marketing campaign with a social aim in itself can contain more than one way of implementation, donations and volunteering, and cause-related marketing.

3. Environmental Problems

If a comparison of the environment and the patterns of behaviour of market operators can be made, the conclusion will be that the human behavior is closely related to the state of the environment and the damage to the environment is mainly a result of socially irresponsible behaviour of market participants. Environment now subsidizes current consumption and production. What is more – the longer this kind of subsidies exists, the risk of significant environmental impacts is being greater.

Global problems are often ignored because people think they have enough of their existential problems. Mental and physical problems are only the consequences of a much larger, societal problem. The presented following examples confirm the previously stated views. (Ecology Society of America, 2013)

- Consistently industrial water pollution, household, agricultural, and other chemicals have led to the fact that today 50% of the world's population remains without drinking water.

- Deforestation by the wood industry and the need for agricultural land have led some forest systems to destruction in a short time and caused a disruption in the natural water reservoirs, landslides and climate disruptions.

- More than 34 000 plant species, and 5 200 animal species worldwide are threatened to extinction, and many thousands of them go extinct before they are listed on the endangered species list. The disappearance of species means losses of the whole system, because each species depends on other species, which means the disappearance of food, medicine, natural filtering system, linking soil moisture and drastic changes.

- The destruction of stratospheric ozone threatens to increased ultra - violet rays (radiation) that can destroy most life (sort of) on the planet. These problems are already being felt. This occurs due to the industry, chemical products and hundreds of unnecessary things that we buy.

- The Earth is overpopulated. The possibility that the planet absorbs harmful effects has expired. The ability to produce food and energy are running out. In all segments, we are approaching the limits of nature.

It can be concluded that the environmental awareness is not only a knowledge about the relationship between nature and society, disruption of the ecological balance and the need to protect the environment, but also the mind and will of the individual and the society as a whole to engage in environmental protection.

4. Marketing with Social Aim in Function of Environmental Problems

Combining the principles of environmental protection and marketing is often considered paradoxical. The reason is that the traditional management methods are based on economic theory which treats the natural resources in a wrong way, and considers them as limitless, which leads to the thought that their use does not create an opportunity cost. However, ecologically irresponsible behaviour creates an opportunity cost[5]. In the 1987. document "Our Common Future", The United Nations recognized and highlighted that the ecological and economic issues should be treated equally (Parsons and MacLaran, 2009).

[5] Ecological opportunity cost, for example, may be an incensement in government spending for cleaner air, treatment of outbreaks caused by contaminated environment or renovation of property caused by natural weather conditions.

Modern theories consider the investment in environmental protection as economic growth, so the long-term economic growth is depended on better protection of the environment (Jordan Quynn, 2001). European Commission estimates that the industry invested 640 million Euros in environmental protection by the year 2010, and that this investment will provide economic growth of more than half a million (The EC). Marketing with the social goal is just part of the modern theory, which attempts to move the theory and practice of marketing away from traditional economic theory that is closer to man as a human being and to the nature. Social Marketing is a cause and consequence of the development of public awareness of environmental protection. Social marketing is considered as a proactive type of marketing.

The results of a previous study, which was concerned with the implementation methods of social marketing, show that most of the respondents (62%) want to be involved in promotion of the common good, which also includes environmental issues, through cause-related marketing. Volunteering is in the second place with 22% of respondents, while the least number of 16% of responders choose grant to help society (Raletić, Radojević, Katić, 2011). The assumption that explains the cause-related marketing as a dominant form of customer philanthropic is its way of functioning, i.e. a small cash outlay to be allocated from the sale of products /services. According to the research, shoppers are more likely to extract a small amount for a public good (Chang, Chen, and Tseng, 2009). Volunteering as a second form of consumer philanthropic behaviour can be explained by the assumption that the beginnings of Capitalism created an atmosphere where man must turn to constantly acquiring capital as a basic life value. The assumption that customers want to contribute to the common good but do not have enough money and material goods for the gift, which includes a little "higher" amounts and quantities of goods, explains why donations to the last one was.

5. Conclusion

It can be concluded that marketing can play an important role in promotion of a healthy lifestyle with the goal of reducing the use of energy and material flows. To take advantage of these opportunities, people need to develop creativity, foresight and commitment towards the environment. With the advent of socially responsible marketing, many companies, in creating their brands, have to change the whole concept. Considering the importance of getting natural, organic stuff, humanitarian action and a good relationship with the world is essential, and companies need to change they paradigm of observation and to focus toward marketing with social goal.

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Sustainable rural development by networking in organic agriculture and niche tourism

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Abstract

This paper studies the opportunities that networking provides for rural development putting the accent on the use of ICT in establishing new forms of intersectoral networking in social networks sites.

Organic farming and alternative tourism are key sectors in the rural development. The integrated approach to sustainable rural development through these two sectors will bring economic and social benefits. More customers are interested in organic farming and want such products to be included in their daily menu. At the same time niche tourism products are created to meet tourists' expectations and as a result of tourism resources of a specific region.

This study proposes a new approach in networking in these sectors having customers' motivation as a main target rather than joint production, marketing or other activities. The primary goal is not to present specific products / services of specific farms / companies but to provide enough information about sustainability and to motivate customers to search for such "sustainable" products and services. The direction is towards increasing "sustainable" demand which is supposed to lead to increase in supply, i.e. sustainable rural development.

A sustainable organic agriculture and niche tourism network could be an informal forum of individuals and organizations that have keen interest in giving relevant information, contributing to understanding and promoting sustainable practices, increasing cooperation and partnership, sharing of experiences and innovations, organizing events to promote rural regions etc.

The paper investigates these opportunities examining the opinions of consumers and proposes a model of a network for sustainable rural development. The proposed model takes into consideration the demands of the different groups in the supply chain – safe and healthy food and environment on one hand, and profit-making and economic growth, on the other, paying special attention to the uniting link of sustainable development pillars.

Keywords: networking, ICT, organic agriculture, niche tourism, sustainable rural development

Introduction

The role of networking in knowledge and innovation transfer is doubtless, as is the case of information and communication technologies (ICTs) in the contemporary world of globalization that is suffering a depletion of natural resources and disturbance of the balance in the nature. In this paper, examining some opportunities for sustainable rural development, organic farming and tourism are emphasized as the main possible drivers of economics in rural regions in the most sustainable way. In years of increasing attention to environmentally-friendly practices, safe and healthy environment, the raise in organic agriculture activities (measured by

organic areas, number of organic farmers, money spent on organic products, etc.) is very fast as is the demand for "clean" and preserved landscapes and villages for rest. Thus, last years' concerns about environmental protection and development of future generations are bigger than before. They are usually expressed by the concept of sustainable development accepted in a number of international and national strategic and legislative documents. The state and institutional support is thus clearly defined. The implementation of all the strategies and plans should however involve the whole societies in order to be efficient. The question is how to do this? The opportunities provided by both networking and ICTs should be used but the ways and models for these should be carefully investigated. Network actors have to define their roles, rules of interaction, goals of cooperation and means to achieve these goals. The process of networking is a new 'structuration' process among established institutional fields. Networks become a bridging ground for different institutions. Explicitly these combinations of fields' interconnectedness and the network form of organisation make institutional innovations and consequent shifts towards more sustainable practices possible (Fadeeva, 2004).

ICTs are a range of technologies that integrate information technology devices like personal computers with communication technologies such as telephones and telecommunication networks. Both the range of the technologies and their convergence with conventional media is expanding all the time (Rao, 2007). Indeed, the growth of social media has been rapid and has resulted in the adoption of social networks to meet specific communities of interest (Mares, Torra, 2013). By now, social networking (SN) has become part in the daily life of Internet users in many different ways. SN is not merely a platform to keep in contact with one's old school friends, but rather has become much more. There exist hundreds of

subjects, thousands of networks, and millions of users. The exchange of information lies within the focal point of any social network (Taha, 2013).

Cross-sectoral networks have become one of the common forms of collaboration in the area of environmental management and sustainable development (SD). Recognised as a necessary step towards societal sustainable development, they expand the number of collaborative links of public and private organisations or stretch the boundaries of their collaborative constellations far beyond the conventional arrangements (Fadeeva, 2004). With great leaps within the domain of communication and information technology (CIT), the access to information is made very trivial. Most of currently used hand-held mobile phones can provide as much information as large desktop computers do (Taha, 2013). In the future, as ICT infrastructure grows and connectivity and hardware costs decline, the critical constraints are likely to be the development of appropriate policy and institutional environments for the creation and delivery of information and knowledge to the end users (Rao, 2007). It is widely recognised that the Internet has been one of the most important tools for modern day international business (Glavas, Mathews, 2013). As universal platforms of social capital, social media are burgeoning in politics, business, and culture beyond the originally intended function of individual social interactions online. With the principles of participation, sharing, openness, and collective intelligence, social media are spreading all over the world. In particular, social network sites (SNSs) have gained much attention, especially the two global frontrunners: Facebook and Twitter (Choi, Sang-Hyun, Cha, 2013). Social networks are generally defined as web-based services that allow users to construct public or semi-public profiles, as well as communicate with other users who share their interests (Taha, 2013). Diverse social networking services have attracted attention in recent years, and one of the most representative services is social applications (Li, Hsiaoo, Lee, 2013).

Social networks have become an essential ingredient of interpersonal communication in the modern world. They enable users to express and share common interests, comment upon everyday events with all the people with whom they are connected (Mares, Torra, 2013). Social networks are said to facilitate learning and adaptation by providing the connections through which network nodes (or agents) share information and experience (Kenney *et al*., 2013).

Networks reveal a varying degree of imitation and innovation in different phases of their development. Innovations in networks occur through the ways the networks are established, while imitations occur through finding the means of achieving the established goals (Fadeeva, 2004). The accumulation of a firm's Internet capability can assist international operations, especially when operating in fast changing dynamic Internet environments (Glavas, Mathews, 2013). ICTs can become key enablers of the agri-food sector by making dynamic and real-time global level exchange of data, information and knowledge quick, interactive and easy throughout the agricultural value chain. Their effective deployment can lead to increased agricultural competitiveness through cuts in production and transaction costs, raising production efficiencies and farm incomes, conserving natural resources, and by providing more information, choice and value to stakeholders (Rao, 2007).

European agriculture and rural areas are facing multiple socio-economic changes, including a transition from an agriculture-based to a service-based economy. This restructuring forces agricultural and rural actor-networks to reformulate their (self-) definitions. One reformulation prevailing both in policy and scientific circles focuses on the notion of multifunctional agriculture (MFA) (Dessein, Bock, Kroma, 2013). Agriculture in the 21st century will therefore be an extremely diverse industry driven by the twin concerns of raising rural incomes and ensuring long-term sustainability of its natural resource base. It will involve a diversity of

economic activities that affect a far wider range of stakeholders than ever before, including consumers, farmers, government, industry, and the society at large. Farming will, therefore, have to be intertwined with information and communication technologies (ICTs) across the supply chain to attain targeted outcomes and impact (Rao, 2007). Regarding tourists, social networks play an increasing role to share experiences with each other (Taha, 2013). The case-analysis findings identify the coordination of cooperative activities in tourism business networks as a prerequisite for (1) enhancing the value-creation process, and (2) building the brand-identity process across the network (Lemmetyinen, Go, 2009).

The marketing of tourism destinations is a complex task. The reasons for this include the interdependence of the multiple stakeholders, the fragmented resources, and an almost complete lack of hierarchy and authority and of mechanisms of control and regulation (Lemmetyinen, Go, 2009). Innovation and entrepreneurship provide essential value to the advancement and quality of the international tourism industry (Carlisle, Kunc, Jones, Tiffin, 2013).

Knowledge is an increasingly significant factor of production in modern agriculture. Information and Communication Technologies (ICTs) can accelerate agricultural development by facilitating knowledge management (Rao, 2007). Successful international entrepreneurial firms that encompass high levels of international innovativeness and proactiveness behaviour integrate internet capabilities to a greater degree (Glavas, Mathews, 2013). A growing number of companies are involved in corporate social responsibility (hereafter CSR) as long-term business strategies (Jeong, Paek, Lee, 2013). Lee, Aschermann, Ehrmann, and Mintz (2005) (cited by Jeong, Paek & Lee, 2013) suggest the following six categorizations of CSR: (1) cause promotion/sponsorship, (2) cause-related marketing, (3) corporate social marketing, (4) corporate philanthropy, (5)

community volunteering, and (6) socially responsible business practices (Jeong, Paek, Lee, 2013).

In the Green Book of EU, the corporate social responsibility is a major tool for creating new jobs and sustaining the economic development (Pop, Dina, Martin, 2011). It is based on three fundamental concepts: the voluntary nature of the initiatives, awareness and attention to relations with the market and thus with consumers and, finally, the involvement of all stakeholders. This suggests that being socially responsible means paying greater attention to the environment, to employment and to responsible consumers (Viola , Ruggeri , Rotondo, 2013).

The results of an investigation (Jeong, Paek, Lee, 2013) reveal the following major findings: (1) CRM (cause-related marketing) leads to the greatest consumer intention to join the SNS brand page, followed by CS (cause sponsorship) and control; (2) CRM results in the greater intention to invite friends to the brand page than either CS or control; (3) such effects of CSR are mediated by the consumer expectancy to be seen as favourable; and (4) the effect of CSR on the intention to join is moderated by the type of brand, but not the type of self-friend gender composition (Jeong, Paek, Lee, 2013).

Within networks, the different actors do not exercise a formal authority over each other nor are they bounded by the contractual agreements generally present within the market domain. The restrictive pressure and dominance of specific institutional rules may become diluted when a network actor steps outside his/hers own institutional field and engages in the networking process. Thus, the networks are forms of organisations that are relatively ‘free’, at least at the beginning, from many of the institutional rules that condition traditional organizational practices. The actors become engaged in the process of re-interpreting reality or, in other words, they

become actively involved in the 'meaning-construction' process (Fadeeva, 2004).

Within networks, the links between the actors are different than in a hierarchical organization or firm. The goals of sustainability networks are not always clear, boundaries of networks are not sharply defined, and the authority of one actor over another is weak. The process of change through the networking process is full of complex interactions that provide multiple feedbacks and unexpected interventions (Fadeeva, 2004). In the case of tourism business networks the 'public good' is commonly seen to represent a destination's policy making aimed at mitigating the potential negative impact of tourism processes and safeguarding 'livability' within a society (Lemmetyinen, Go, 2009).

Therefore, it is very important to make as clear as possible the structure and the management of such networks. This paper proposes a model for a network for sustainable rural development working on a voluntary basis through encouragement of organic farming and tourism development and broadly using social networks sites. It is focused on the consumers as an object and on the motivation as a subject. It does not represent a formal association of community-supported agriculture and/or tourism as these are accepted to be with the concrete and targeted financial support to specific farms. (Community supported agriculture (CSA) is a direct-marketing food network that has the potential to decommodify food and support farmers while providing consumers with sustainably raised, seasonal, local food (Hayden, Buck, 2012). Because CSAs represent a way for consumers to acquire healthy foods while providing financial support to local farmers, CSA involvement could reflect, and be related to, greater concern with both health and environmental impact of food choice (MacMillan Uribe, Winham, Wharton, 2012).

The study takes into consideration The Best Practice Guideline for Agriculture and Value Chains of the International Federation of Organic Agriculture Movements (IFOAM).

Materials and Method

The study examines the opportunities of establishing a sustainable rural development network first by a literature overview on which basis a questionnaire for customers was prepared and then used in the subsequent investigation. The results of the questionnaire were summarized and put into figures for the analyses.

Interviewees' profile - Sex: 69% women and 31% men. Age: 56% are from 21 to 30, 25% - up to 20, 15% - from 31 to 40 and 4% - over 41. As address of living they 29% point district town, 57% - town, 14% - village. Place of work: 30% - district town, 58% - town, 12% - village which shows almost the same distribution as address of living.

Results and discussion

The most frequent use of Internet by the interviewees is for getting information and amusement. Most of them have profiles in Facebook. Such sites are visited often and used mainly for social contacts and message exchange, finding and sharing news (Fig. 1). Regarding the feasibility of sustainable development concept on different levels, there is no prevailing opinion. Interviewees think that social networks and social media are most suitable for advertising goods and services, then directing public attention to certain topics, organizing mass initiatives, discussions on serious topics and changing public opinion. There is some hesitation about information reliability in social networks and media. Social networks and media are suitable for dissemination of new knowledge in connection to sustainable rural development, dissemination of information in connection with sustainable rural development through organic farming and tourism.

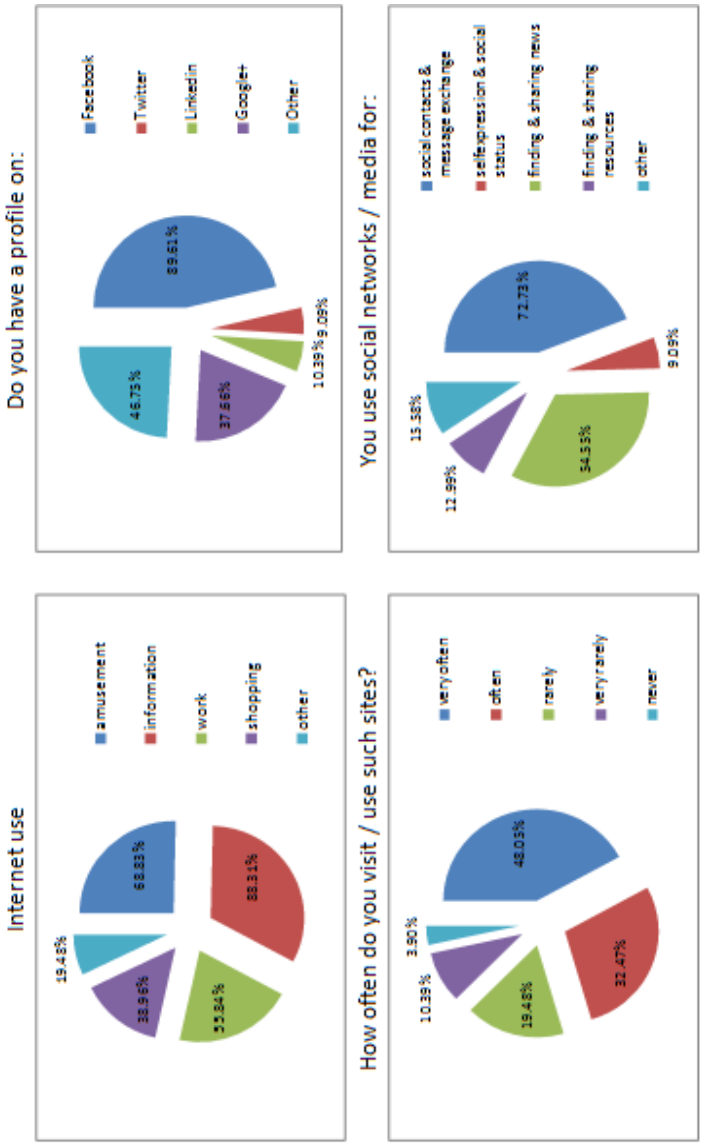
generation, dissemination and exchange of ideas for sustainable rural development, organizing mass or local initiatives in connection to sustainable rural development and organizing networks for sustainable rural development.

The most appropriate type of networking in the field of sustainable rural development turns to be those initiated by associations of producers or traders and by universities and institutes. NGOs, consumers and state and local bodies received less answers yes. A network should definitely support an Internet portal and use social media sites. According to the interviewees' opinion a network should have physical dimension and rely on financing by national and international funds. The idea of establishing a voluntary network working for motivation of society to participate in sustainable rural development processes (organic agriculture and tourism) with active participation of customers and using only social media having no real physical dimension and financing of activities is well-accepted by the interviewees. They think that such a network would help in knowledge dissemination, innovation transfer and encourage entrepreneurship in rural regions, as well as it would be sustainable in long term and have a positive indirect effect on rural development. Most of them would participate passively (sharing the idea) and maybe actively through voluntary work in its maintenance.

Conclusion

In modern times, Internet use for information, amusement, work, shopping or other gives many opportunities for encouragment of sustainable rural development through networking. The attractiveness and the broad use of social networks and media make them very approaprate for message exchange and sharing news in a network. A network on regional and national level would be more feasible (Fig. 2). Such a network would be suitable for directing public attention to certain topics, as well as for

dissemination of new knowledge, information, ideas for sustainable rural development. It could be initiated by associations of producers or traders and universities and institutes. Establishment of own Internet portal is absolutely necessary as well as a representation in social media (Fig. 3). People still think of physical dimension rather than of virtual networking and that's why the need of strong financing is very important. However, bearing in mind the opportunities of modern ICT and fast change in customers' behavior the proposed model below does not predict a network of physical dimension. This could be an informal organization relying on voluntary work and incomes (for maintatining the Internet portal, subscriptions, campaigns, participations, etc.) by different types of advertisements used on the Internet. Its main objective is to provide sufficient and useful information in an attractable way in order to raise the motivation for 'sustainable living'. Such a network would really support both examined sectors and rural development as they do but using a different and more sustainable approach aiming at increase in the community demand for sustainability if it is planned, structured and managed well. The model expands the notion of corporate social responsibility (CSR) to the society as an organization reflecting local culture and traditions, working for economic growth, social justice, and environmental protection and accountable for its actions as a whole.


Internet use
amusement
information
work
shopping
other
19.48%
38.96%
55.84%
88.31%
68.83%
How often do you visit / use such sites?
very often
often
rarely
very rarely
never
10.39%
19.48%
32.47%
48.05%
3.90%
Do you have a profile on:
Facebook
Twitter
LinkedIn
Google+
Other
46.75%
37.66%
10.39%
9.09%
89.61%
You use social networks / media for:
social contacts & message exchange
self-expression & social status
finding & sharing news
finding & sharing resources
other
15.58%
12.99%
54.55%
9.09%
72.73%

Your opinion for the feasibility of the sustainable development concept on different levels:
2.60%
23.38%
33.77%
33.77%
23.97%
global level
regional level
national level
local level
other
Do you think social networks / social media are suitable for:
33.77%
70.13%
59.74%
38.96%
53.25%
advertising goods and services
discussions on serious topics
organizing mass initiatives
directing public attention to certain topics
changing public opinion
Do you think social networks / social media are suitable for:
48.48%
48.48%
39.87%
44.16%
11.17%
Do you think one could rely on the information presented in social networks / media?
16%
26%
26%
14%
18%
yes
rather yes
rather no
no
i can't judge

Appropriate type of networking in the field of sustainable rural development:
Initiated by associations of producers or traders
Initiated by non-governmental organizations
Initiated by state or local bodies
Initiated by universities and institues
Initiated by consumers
16.88%
48.05%
33.77%
23.38%
12.99%
According to your opinion such a network should:
have compulsory physical dimension
support own internet portal
rely on financing by national and intaernational funds
use social media sites
33.25%
66.23%
79.22%
58.44%
Estimate about the creation of a voluntary network*
very good
good
nearly good
nearly low
low
3%
20%
14%
18%
45%
Do you think such a network would:
yes
no
be sustainable in long term
have positive influence on rural development in long term
encourage entrepreneurship in rural regions
help in innovation transfer
help in knowledge dissemination
0.00% 10.00% 20.00% 30.00% 40.00% 50.00% 60.00% 70.00% 80.00% 90.00% 100.00%

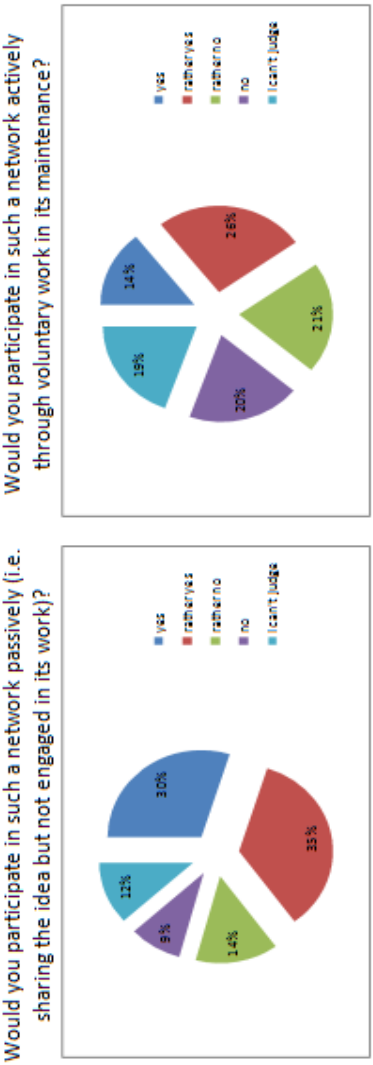


Figure 1 - Results of the questionnaires (interviewees have given more than one answer)

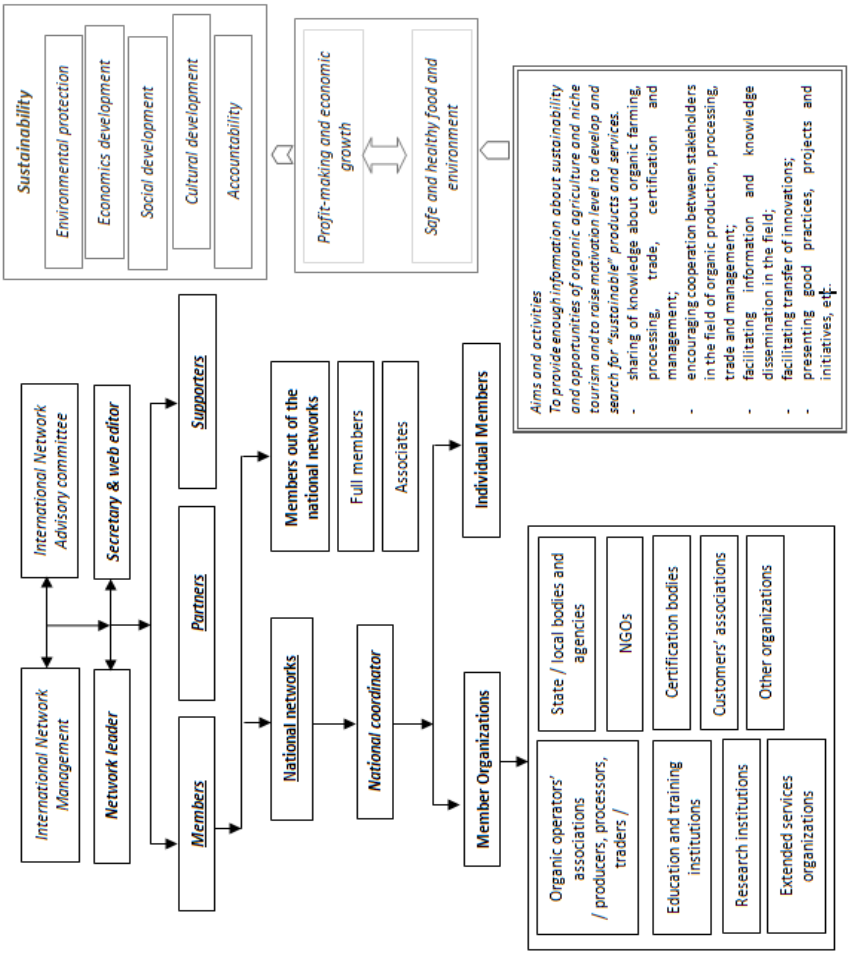


Figure 2 - Proposed structure of a regional network in sustainable rural development made of national networks

Home

- About us – history, vision, objectives, etc.
- Structure
- Members
- Partners and supporters

Events

- List of network events Calendar of network events
- Other events

Campaigns

Newsletters

- List
- Join our newsletter

Contact us

Gallery

Download area Open resource bank

Search

How to join Form

Login form

Statistics

Links sites of related organizations, data bases and other resources

Social networks links facebook, twitter, linkedin, youtube, google+, etc.

Figure 3 - Proposed structure of an Internet portal for a network in sustainable rural development through organic agriculture and tourism

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Importance of agriculture in Montenegrin economy

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Abstract

As the oldest economical sector, which was root for other industries, the level of agricultural development has always been a measure of the community development. Agriculture affects the overall economic development through the production of food and providing raw materials for processing industries. The importance of agriculture in economic development, depending on the level and intensity of development of a particular area, is constantly changing. In the overall development, non-agricultural industries develop faster than agriculture. This results with an increasing reduction of the relative importance of agriculture. However, this does not diminish the absolute importance of agriculture as the primary economic activity. Agriculture has a significant impact on economic growth, especially in the economies which are developing rapidly. Otherwise it becomes a barrier to economic development. In determining the importance of agriculture in the national economy, different methodological approaches can be used. Through the analysis of relevant macro-economic indicators, the paper will analyze the role of agriculture in the economy of Montenegro.

Keywords: agriculture, economy, multifunctionality, rural development

Introduction

Agriculture and rural development are one of the key sectors of Montenegrin economy, and represent a major source of employment and income generation, especially for people in the northern mountains region, as their income generation possibilities are limited.

The surface of agricultural land in Montenegro takes 516 070 ha or 37.4% of the total land area of Montenegro. It makes 0.83 ha of agricultural land per capita, and this represents an important resource for development of agriculture. However, total arable land in Montenegro is 190 000 ha or 0.30 ha per capita. The largest share of agricultural land consists of pastures and grassland, which together make up 88%. The share of arable land (fields and gardens) is only 9%, and the orchards and vineyards take make up the remaining 3%.

Even though small family farms dominate, with average size of a holding 6.3 ha of available land, Montenegro is ahead of its neighbours, including some of EU member states. Regarding the size of used land per holding, which is 4.6 ha, Montenegro is close to Slovenia (6.5 ha), Bulgaria (6.3 ha), Poland (6.5 ha) and Italy (7.5 ha). However, Montenegrin agriculture is characterized with predominantly small holdings with areas less than 2 ha (73%). On the other hand, more than 62% of used agricultural land belongs to holdings exceeding 20 ha in size.

Total number of agricultural holdings in Montenegro is 48 870, 46 of which are business entities, and the remaining 48 824 are family holdings. Total economic value of agricultural holdings in Montenegro is €125 817 765 or in average €2 574 per agricultural holding. Average economic value of family holdings is €2 239 or € 513 per ha of family holding.

Contribution of agriculture in the national economy can be demonstrated through different indicators. In the literature, following indicators are stated as the most important (Božić, Bogdanov, Ševalrić, 2011)

- The share of agriculture in total population and the share of active agriculture in total economic active population;
- The share of agriculture in the GDP;
- The importance of agriculture in the foreign exchange;
- The share of investment in agriculture in the overall economic investments;
- The share of expenditure related to food in total individual consumption of households.

The share of agriculture in total population and the share of active agriculture in total economic active population

The share of agriculture in total population decreased significantly over the last 20 years. The decrease in share of agriculture in total population first started slowly, from 47% in 1961 to 35% in 1971. It then significantly declined to 7% in 1991, and further to 5.3% in 2003. According to the agricultural census of 2010, Montenegro had 48 870 agricultural holdings, while the census of population conducted on 2011 does not provide clear information about the agricultural population.

According to the employment data, business entities in the area of agriculture employ a relatively small percentage of people compared to the total number of employed people in Montenegro - only 1.4% in 2011 (Monstat data). However, according to the 2010 agriculture census data, , there were 98 949 persons working on 48 870 agricultural holdings, whereby 98 341 (99.4%) work on family agricultural holdings. Workforce in family holdings is made of the head of the household, family members, as well as other non-family members who are regularly employed. On average

they have 0.47 annual work units per holding which makes 46 473 annual work units in agriculture.[6] The average number of workers per holding is below one person per holding in many EU countries, while average in EU is 0.8.

Montenegrin agriculture is characterized by unfavourable structure of employees, from the age and education viewpoint. More than 44% of them are older than 55, while 65% are older than 45 years. Majority of people employed in agriculture have completed high school - 55.33%, while only 9.11% have completed either vocational training or university.

The share of agriculture in the GDP

After the Second World War, Montenegro was an underdeveloped agrarian country where agriculture had the highest share in domestic product and national income. However, in the post-war period, a relatively rapid economic growth has been achieved, primarily due to the orientation towards industrialization and infrastructure construction. According to this orientation, industry took over the leading position from agriculture in 1963. The share of agriculture in GDP in 1947. was 48.4%, in 1953 - 38.5%, in 1962 - 24.3% while in 1972 it fell to 15.2% (Kalezić 1976). Decreasing trend continued subsequently. Namely, in 2012, the share of agriculture in national income has almost halved in comparison to 1972 and was 7.37% (Monstat).

In 2012, Montenegrin GDP was EUR 3 149 billion, and sector of agriculture (together with forestry, hunting, and fishing), accounted for EUR 232 million or 7.4% of the GDP. Processing industry, including all processing

[6] The annual work unit (AWU) is used as the equivalent of employment in agriculture and represents the time spent working in agriculture, excluding household works.

sectors and not just food processing, accounts for 135 million EUR or 4.3% of the GDP. Agriculture contributes to the GDP 72% more than the processing industry (table 1).

Table 1 - The share of agriculture and processing industry of the GDP in the period 2003-2012 (Source: Monstat)

Year	Agriculture (%)	Processing industry (%)
2003	10.76	9.50
2004	9.69	9.31
2005	8.76	8.19
2006	8.29	7.66
2007	7.24	5.41
2008	7.47	5.40
2009	8.28	4.89
2010	7.72	4.66
2011	7.94	5.03
2012	7.37	4.30

Compared with EU countries, the share of agriculture in GDP is high, taking into account that in EU-27 the average for year 2011 was 1.7%. In some countries of the EU-15 the share of agriculture in GDP is even lower than 1% (Figure 1).

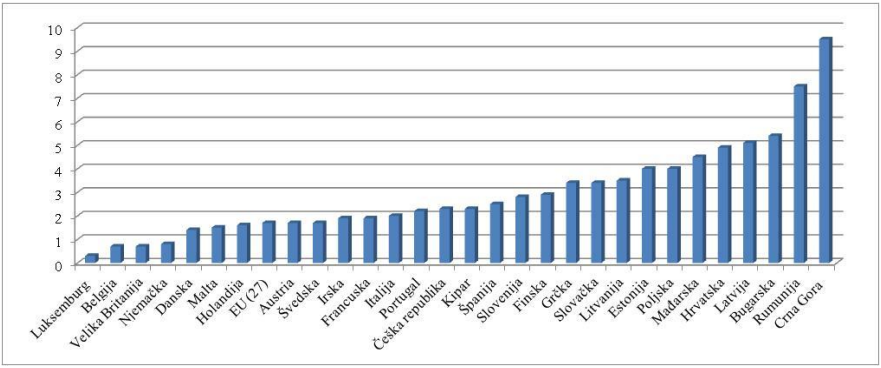

Figure 1 - Share of agriculture in GDP EU – 2011 (source: Eurostat)

The structural characteristic of Montenegrin food production is a higher share of primary agriculture in gross domestic product, compared to the food processing sector.

This indicates a low level of finalization of agricultural products, a significant share of the self-supply of rural population with food, as well as the selling of agricultural products through unregistered trade channels (Ministry of Agriculture, Forestry and Water Resources of Montenegro, 2006).

The importance of agriculture in the foreign exchange

Food and agricultural products play an important role in foreign trade. Montenegro is a net importer of food products. Export of food, beverages and tobacco in 2012 was 53.1 million Euro, while the import value was 421.6 million euro (Monstat - according to the Standard International Trade Classification). Foreign trade of food and agricultural products accounted for 21.71% of the total trade of Montenegro.

In the period 2005 to 2012, export of food and agricultural products increased by 18% while in the same period, import increased by 136%. Coverage of import of food and agricultural products with export decreased from 25.22% to 12.62% (table 2).

Table 2 - Trade balance of food and agricultural products (source: Monstat - according to the Standard International Trade Classification)

Year	Import food and agricultural products 000 €	Export food and agricultural products 000 €	Trade balance food and agricultural products	Coverage of import of food and agricultural products with export (%)
2005	45 054	178 616	-133 562	25.22
2006	36 492	218 616	-182 124	16.69
2007	37 070	298 396	-261 326	12.42
2008	40 699	405 460	-364 761	10.04
2009	40 158	379 713	-339 555	10.58
2010	45 039	388 139	-343 100	11.60
2011	50 662	417 707	-367 045	12.13
2012	53 195	421 649	-368 454	12.62

A small number of exported products highlight the problem of the competitiveness of domestic producers in terms of food safety, quality, price competitiveness and the quantities that could be distributed on international markets. Prices in agriculture are relatively high and thus quite cost uncompetitive.

The share of investment in agriculture in the overall economic investments

Despite the fact that agriculture is recognized as the strategic priority of Montenegro, the level of investment is not in line with the investment dynamics of other industries. The amount of investments in fixed assets in agriculture in the last ten years shows no significant differences and in the year 2012, amounted to 5.82 million Euro. In absolute terms, the value of investments remains at almost the same level, while relative share of the total investment is significantly reduced from 2.79% to 1.33%.

Table 3 - Total investments in fixed assets in the Montenegrin economy and the share of investment in agriculture (source: Monstat - according to the Standard International Trade Classification)

Year	Total investment (000 €)	Investment in agriculture (000 €)	Share of investment in agriculture in total investments (%)
2003	213 620	5 965	2.79
2004	292 903	5 709	1.95
2005	331 573	10 900	3.29
2006	411 044	7 340	1.79
2007	594 102	8 573	1.44
2008	724 640	9 391	1.30
2009	618 422	8 577	1.39
2010	561 587	5 099	0.91
2011	415 395	6 696	1.61
2012	436 548	5 827	1.33

The share of expenditure related to food in total individual consumption of households

Despite a certain decrease in recent years, food expenses have a high share in total expenditure of individual consumption of the population of Montenegro. Often, about half of the households' budget is being used on the purchase of food, beverages and tobacco. The values of these indicators are significantly higher compared with those in economically developed countries. Average consumption in the EU in 2011 was 16.4% (Eurostat). This is a result of the low level of real purchasing power of the population of Montenegro.

Table 4 -The share of expenditures on food, beverages and tobacco in total for personal consumption (source: Eurostat)

Year	Total (€)used resources[7]	Share of expenditures for food beverages and tobacco (%)	Total (€) used resources	Share of expenditures for food beverages and tobacco (%)	Total (€) used resources	Share of expenditures for food beverages and tobacco (%)
	Montenegro		Rural area		Urban area	
2005	469	46.48	423	53.90	495	43.03
2006	453	46.58	405	51.60	482	43.78
2007	560	41.96	499	46.49	595	39.66
2008	638	42.16	564	48.40	682	39.00
2009	587	41.06	458	47.60	665	38.20
2010	564	43.26	450	53.11	632	39.08
2011	557	42.01	443	49.44	625	38.88
2012	581	39.93	494	44.53	626	37.86
Average	**551**	**42.93**	**467**	**49.39**	**600**	**39.94**

[7] Monthly average per household in €

There are significant discrepancies in consumption in rural and urban areas of Montenegro. In the last eight years in the urban areas, the average share of spending on food, beverages and tobacco was 39.94%, while in rural areas it is significantly higher at 49.39%. At the same time, the overall resources used in urban areas are 29% higher than those in rural areas. In urban areas €238 out of €600 were spent for food, beverages and tobacco. While in the rural areas €229 out of €467 were spent. This confirms the Engel's law, which states that by increasing an overall income, the share of food in total expenditure for individual consumption decreases (at constant prices).

According to its strategic documents, Montenegro has chosen a concept of sustainable agriculture development, which means achieving a balance between economic development and preserving both the environment and social cohesion. This concept is based on a multifunctional role of agriculture that places agriculture in the wider context of its external effects, rather than just looking at its gross domestic product contributory value (Ministry of Agriculture, Forestru and Water Resources 2008). Furthermore it promotes a multifunctional role of agriculture, with special emphasis placed on rural development, and with a moderate and flexible protection system as a stabilizer of oscillations in supply and prices (Ministry of Agriculture, Forestru and Water Resources 2006). National development plan 2013-2016 (Ministry of Finance 2013) also indicates multiple role and importance of agriculture. By that plan the multi-functionality of agriculture is reflected by the following: high share in GDP, sustainable rural development; environmental function; economic function; support to tourism development; social function; food safety and preserving tradition and cultural heritage in rural areas.

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Safe food production system - a Montenegrin perspective

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Abstract

Modern food market (domestic and international) and increasing food demands, followed by high consumer concerns have resulted in the establishment of stringent requirements in terms of food hygiene and toxicology and many other elements of the safe foods supply. The result is adoption of a systematic approach to the entire "food chain" with the aim to create and promote the efficient and effective management systems through a variety of preventive activities and documentation support, for ensuring high food safety and the protection of human health. Healthy food production provides the establishment of efficient control systems which should be implemented, monitored, documented and periodically checked. For Montenegro, harmonization of regulations at the EU level is essential for the further functioning of the domestic production and food export. Therefore, in the process of EU integration, Montenegro has undertaken the necessary steps towards integration into the European food safety system. However, there are still a lot of activities that should be done.

Key words: Food safety management, Food control, Food safety legislation

Introduction

Today, the modern society is facing numerous problems ranging from those related to environmental pollution, climate change, economic crisis, malnutrition, increase of the world's population, as well as problems related to the quality and safety of available water resources and food products. Rapid technological development has led to the globalization of markets and thus to significant difficulties in terms of controlling the food products on the market. Furthermore, in developing countries, hunger and insufficient, inadequate nutrition, a number of outbreaks caused by food poisoning and water contribute to the current situation at the global level.

In this regard, solutions proposed by the World Health Organization (WHO), the UN Food and Agriculture Organization (FAO) as well as delegates from the most developed countries of the world undoubtedly contributed to the improvement of that situation. The general opinion is that the security and availability of food can only be achieved on the basis of actions undertaken at different levels. This involves the competent authorities in the countries, experts in production and scientific institutions that deal directly with the relevant fields of food science and nutrition.

Agriculture is a very important sector in Montenegrin economy, since it participates in total Gross Agricultural Output (GAO) with 8.3% and plays a multifunctional role (Bulletins of Central Bank of Montenegro, 2010). In spite of agricultural resources available (about 0.80 ha of agricultural land per capita), the country is highly dependent on import of food. This goes also for meat and milk as the main products of animal origin.

Very important for further development of the agricultural and food production sector is the fact that Montenegro currently obtained the status of potential candidate country to become member of the European

Union (EU). Montenegro signed the Stabilization and Association Agreement (SAA) with the EU in October 2007, while Interim Agreement entered into force in January 2008. Furthermore, the harmonization with the World Trade Organization (WTO) principles and the implementation of the regional Central European Free Trade Agreement **(**CEFTA) are currently important issues for Montenegro. In 2007 and 2008, Montenegro has also joined several other international organisations: Food and Agriculture Organisation (FAO), World Organisation for Animal Health (OIE) and Codex Alimentarius.

EU rationale

As it was considered that a more comprehensive and integrated approach to food safety would be necessary to assure a high level of consumer health protection as well as the functioning of the Common Market, Regulation (EC) No. 178/2002 of the European Parliament and of the Council was adopted in early 2002. Accordingly, Regulation provided basic legal framework for food safety in the EU and the basis for establishing a high level of protection of human health and consumers' interest in relation to food, particularly taking into account the diversity in the supply of food including traditional products. It lays down the general principles and requirements governing food and feed safety, establishes the European Food Safety Authority and lays down procedures for matters with a direct or indirect impact on food and feed safety. Regulation applies to all stages of production, processing and distribution of food and feed (farm to fork/stable to table principle). It establishes common principles and responsibilities, the means to provide a strong science base, efficient organisational arrangements and procedures to underpin decision-making in matters of food and feed safety at the EU as well as at national level.

With the adoption of Regulation 178/02, food safety became a horizontal issue, and such horizontal approach continued to be followed while adopting Community food safety legislation listed in Chapter 12 Food Safety – Veterinary and Phytosanitary Policy covering the areas of :

- Placing on the market of food and feed (so called „hygiene package")
    - Chapter 1 Hygiene rules
    - Chapter 2 Specific rules for animal products
    - Chapter 3 Control rules
    - Chapter 4 Specific control rules for animal products
- Food Safety Rules

Regarding the future enlargement of the Community, it is essential that the candidate countries have implemented the food safety legislation and control systems equivalent to those in place within the Community. Therefore, it represents a significant challenge to candidate countries, both in terms of adoption of the aforementioned legislation and consequently their implementation and official control arrangements.

The situation in Montenegro - Level of attainment of the relevant EU standards

In the area relevant to Food Safety, Montenegro is committed to international integrations, it is in the final stage of accession to the WTO and it is a member of FAO, (2007), OIE (2008), Codex Alimentarius (2008), and WHO (2007).

Montenegrin Strategy of Food Production and Rural Development (2006) has the goal of improving the food safety system within an adequate legislative framework that conforms to European and international standards. The strategy is drawn up according to the Action Plan for the European Partnership. Framework legal document - the Law on Food Safety (Official Gazette, MNE, No. 14/07) lays down the general food safety rules, requirements for placing on the market of food and feed and provides a basis for adoption of secondary legislation in this field.

In addition to the abovementioned law, the rules in the food safety sector are also laid down by a large number of secondary legislation from the former legal system (Federal Republic of Yugoslavia, Serbia and Montenegro). Adoption of new rulebooks, instructions and guides was planned in accordance with the EU legislation in this field by the year 2012. It is also necessary to set up a system for appointing food control laboratories (EC Regulation 882/2004) and National Reference Laboratories (whether in Montenegro or externally) to provide a co-coordinated and overarching approach to food safety testing (GTZ, 2007).

The Montenegrin Food Law is partially harmonized with the EU Regulation 178/2002 but still further alignment is required. In particular some aspects are still to be clarified, for instance the separation between risk management and risk assessment that is not fully in compliance with EU principles.

Legislation included in the so called "EU Food Hygiene Package" has been partially transposed to Montenegrin legislation and missing laws are under preparation. At the moment following rulebooks were adopted in 2008:

- Rulebook on Hygiene Requirements for Food of Animal or Plant Origin (Official Gazette, MNE, No. 14/09) transposed Regulations 852/2004;

– Rulebook on Special Hygiene Requirements for Food of Animal Origin (Official Gazette, MNE, No. 14/09) transposed Regulations 853/2004

A detailed schedule for the preparation of the secondary legislation is outlined in the National Programme for Integration 2008-2012 by the Montenegrin Government (2008).

The integration of data systems for food safety needs to be developed. There is, for example, no beef labelling and tracing system to link with the new animal identification system. There is no unified data information system linking border posts, laboratories, and the register of food processing and marketing establishments.

Due to the investments in recent years there are several advanced meat processing companies with state-of-the art equipment. But the Montenegrin meat processing industry includes also many small-scale meat processors. Their technology is generally not 'EU compliant'. Those companies are serving only the domestic market.

Several processing units are not in compliance with EU requirements concerning the premises, facilities, equipments or general management. One of the main reasons can be found in the high costs necessary for the renovation of the establishments, premises and equipment up to EU standards. In addition, the lack of infrastructure such as systems for the treatment of waste water is one of the biggest concerns.

A deadline of the 1st of January 2010. was declared by Government policy in order for food companies to become compliant with food law and HACCP. As not all meat processors were able to respect the deadline, the final term is being extended. However, a system for official control and monitoring on the implementation and use of HACCP is not in place. In

addition, there are no officially approved or recommended manuals or guides for good hygiene practice, good manufacture practice or HACCP in the country, apart from the guidelines developed for meat industry under GTZ comprising EU and international requirement and practice on self-control of the meat industry (GTZ, 2006).

There is a high number of constrains in the meat sector. Some of the most important ones are the lack of technical knowledge and adoption of improved technology and management practices in many meat processing enterprises, deficiencies in plants not having EU standards related to technical design, equipment, operation methods, professional staff and inadequate level of internal control systems, incomplete HACCP implementation, inadequate construction of buildings, older equipment, etc.

Fully approximation of Montenegrin and EU legislation will be a lengthy process as there is little specific depth to the current legislation; it lacks precise definition, is not in line with Codex standards and has multiple missing links.

One of the most critical issues for the primary and secondary processing is the safe disposal of ABPs (animal by-products) for the protection of environment and the health of humans and animals. EC Regulation 1774/2002 deals with ABP management in connection with Regulation 999/2001 on TSE control and eradication.

The area of animal welfare is governed by the Law on Animal Welfare (Official Gazette, MNE 17/08, 2008*)*. This Law regulates rights, obligations and responsibilities of persons and legal entities for animal welfare protection in relation to animal protection from torture, during keeping and breeding, killing and slaughter, performing of surgeries on animals,

transportation and carrying out of experiments, rules of animal treatment, as well as other issues relevant for animal welfare protection. The Law sets forth general provisions for transposition of the EU legislation into secondary legislation for the purpose of full harmonization of this field with the EU legislation.

Conclusion

Taking into consideration the overall situation, the future interventions in the sector of food safety should be oriented mainly to the support of the structural adjustments, further harmonization of the legal framework, increasing of the overall competitiveness and productivity through investments for application of modern production techniques and technologies and better management, improving the status of attainment of national and EU standards, improvement of the awareness, knowledge and skills by vocational training and improvement of the performance and offer of the service providers.

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European Aspect on Environmental Regulation

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Abstract

By providing energy in any forms or source, we affect our environment in many different ways. Greenhouse gasses being a topic widely discussed. Greenhouse gas emissions associated with the combustion of fossil fuels, deforestation, agriculture and other industrial processes are a form of global atmospheric pollution with a high probability of external costs of climate change in the future. Among economist, particularly in the past three decades, the relative merits of a system of tradable permits or tax as a market based and cost effective policy regulation to reduce pollution have been debated. "In principle, a tax set at the marginal external cost or a tradable permit with the quota set at the quantity equating marginal social benefits and costs would result in a net gain in economic efficiency"[8]

Keywords*:* energy, environment, climate change, tax, regulation

[8]"Carbon Taxes Vs Tradable Permits: Efficiency and Equity Effects for a Small Open Economy" - John Freebairn

1. Environmental Impact by Energy

In “The Limits to Growth”, the first report of the Club of Rome, future shortages for many resources have been reporteD (Meadows et al., 1972). Nowadays, apart from the concern on available reserves of fossil fuels, most attention is given to the effect of emissions on the environment or to the toxicity of such resources.

By providing energy in any forms or source we affect our environment in many different ways. Energy is lost to the environment during any energy transformation. Some energy sources have a greater impact than others.

What concerns us, then, is first their magnitude: energy consumption is growing at very high rates throughout the world, driven both by increases in population and in energy consumption per capita. Therefore, most of the environmental impact associated with energy is also growing rapidly. So, the dilemma is not whether these impacts exist or not. Impacts are a reality; they are inherent to all human activity. For us is more useful to asses a certain level of energy consumption which is required for subsistence and further development.

1.1. Economic valuation of environmental impact

Some production or consumption processes in energy industry cause impacts on other economic activities, and that these impacts are not accounted as costs or benefits. The existence of these external costs produces then an incorrect allocation of resources in the economy.

Are we able at this moment to always allocate all these externalities?

These externalities may be considered as generalized public goods. "*The fact that consumption of some goods or services cannot be refused (known as non-exclusion) and that their consumption by some citizens does not affect utility for all others (non-rivalry) generally results in less than an optimum output, because prices are too low to compensate for consumption by free-riders, who are unwilling to pay for the goods or services in question. One example would be national parks"* (Hakvort, 2012).

In order to set a policy forwarding environmental protection, we have to consider few steps:

- First step is identifying environmental damages;
- Second step is to quantify damages caused to the environment by energy consumption in physical terms;
- Third step is to transform these damages to monetary terms. But before we assign an economic value to different damages, we have to separate the real externalities from those impacts which might be already internalized and
- Fourth step is how to correct this market failure through regulation.

In order to correct these external costs, and hence achieve an optimal allocation, it is necessary to internalize them by incorporating them into the energy prices by different regulation mechanisms. The most prominent tools of these regulations are environmental taxes, carbon emission trading markets, or renewable energy policy support measures.

2. Environmental regulation in EU

In an increasingly environmentally conscious world, environmental regulation has rapidly become cornerstone of national policies and economies within EU.

During the past two decades the European Union has emerged as the global leader in international environmental politics. On issues ranging from climate change, to biodiversity, to trade in toxic wastes, to the regulation of persistent organic pollutants, the EU has taken on a leadership role in promoting multilateral environmental agreements. The policies pursued via the EU by the so-called environmental pioneers, notably Germany, the Netherlands, Denmark, Sweden and Finland have driven up standards across Europe as well as acted to prevent the weakening of environmental policies.

EU regulatory activities in environmental and energy policy have now become highly interwoven. Environmental concerns increasingly influence the formulation of the EU's energy policy, especially given the twofold challenge of securing sufficient energy supply whilst also addressing the necessity of combating climate change.

What types of policy instruments are used to shape the 'environmental dimension' of EU energy policy and how does this portfolio of instruments change over time? Are the types of instruments relied upon in this context different from those adopted by the EU in the field of environmental policy? What do they tell us about the policy patterns prevalent in the two policy fields as well as their level of integration?

In addressing these questions, it is interesting to analyze developments in those EU policy instruments that are used to affect air pollution control, as well as changes in the environmental objectives pursued in energy policy formulation, focusing first and foremost on the time between the 1970s until today.

Table 1: Environmental policy instruments

Type		Description/Examples
1.	Regulative instruments	Command and control, permits, technological prescription
2.	Market-based instruments	Taxes, tariffs, subsidies, tradable permits
3.	Procedural instruments	Auditing programmes, environmental impact assessment
4.	Co-operative instruments	Commitments and agreements, roundtables, action plans, harmonisation, research
5.	Persuasive instruments	Information , education, public campaigns, appeals, eco labels

Source: Böcher and Töller (2007).

Governments have available a number of policy instruments to achieve the desired shifts from business-as-usual quantities of products, production processes and pollution, to the socially efficient quantities. Broadly, these instruments include: establishing a system of property rights over the global atmosphere; regulations, for example renewable energy targets, subsidies and the market-based instruments of carbon or emissions tax and a tradable permits scheme. This paper will focus on the European view of problem solving – EU ETS.

2.1. EU Emission Trading Scheme

The EU emissions trading system (EU ETS) is a cornerstone of the European Union's policy to combat climate change and its key tool for reducing industrial greenhouse gas emissions cost-effectively.

The European Union imposed EU emissions trading scheme from the beginning of 2005. With this, EU sets a cap for CO_2 emissions for over the 11,500 emitters across the EU-27[9]. With the introduction of limits on CO_2 equivalent, EU climate policy is beginning to have a significant impact on energy markets. Installations have possibility to enlarge emissions over the caps provided that they acquire emission allowances to cover excess emissions. Those installations that have emissions below the cap, can sell any unused allowances. The CAP on emissions creates scarcity of allowances, and this creates a market and a market price. Allowances are designed as EUA (European Union Allowances) and issued under the EU ETS.

2.1.1. Rationale and effectiveness

The main issue that policy makers need to face in designing cap-and-trade system that affects electricity generation is its capability to provide a continuous decrease of emissions and providing adequate signals to investors. Its objective is to contribute to reducing the emissions to levels considered "scientifically necessary" in "a cost-effective and economically efficient" manner.

Cap and Trade system is designed as a cost effective mechanism which provides that cost of emissions should be treated as a marginal cost. Power generation that emits CO_2 competes with the ability to sell unused allowances. This so-called opportunity cost of CO_2 allowances, which is equal to the market price of CO_2, and therefore is incorporated in the decisions of the operator to generate electricity. Thus, the EUA was freely distributed (prior phase III) to the emitters. The economic rationale behind a “cap-and-trade” system is nonetheless that the price of emissions should

[9] http://ec.europa.eu/clima/policies/ets/ - “A cap and trade system”

be reflected in final prices, to stimulate lower consumption, and to stimulate cleaner generation through higher expected revenues. Only then can such a scheme activate an overall cost-effective response to the emission constraint.

With such mechanism the EU ETS has two objectives, short and long term objectives. The short term objective is to make emissions reductions rational and profitable; and secondly, to contribute to credible long-term expectations of future carbon scarcity.

Phases 1 and 2 have demonstrated that without political uncertainty, carbon prices adjust to market fundamentals to ensure that the emissions target is reached at minimal economic cost. But economic crisis brought an immediate reduction in emissions. Between 2005 and 2008 the EU cut its emissions from 7% to 10% below 1990 levels. In 2009, the EU emitted around 14% less GHGs than 1990[10]. But, of course, as production recovers in energy-intensive industries like steel, this rate of reduction cannot be simply extrapolated into the future.

The ETS is currently not functioning as originally envisaged[11]. Due to the economic recession and decreased industrial production, as well as an unprecedented inflow of international offset credits (coming from often questionable emission reduction projects outside of the EU), a massive surplus of emission allowances has flooded the carbon market.

[10] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52010DC0265:EN:NOT – "COM (2010) 265 Final"

[11] http://www.sandbag.org.uk/site_media/uploads/EU_ETS_at_a_crossroads_NGO_briefing_01.2013_FINAL.pdf
EU ETS at a crossroads: recalibrating an oversupplied market to spur investments and innovation

Besides the impact of the economic crisis, there is a widespread opinion that the EU Emission Trading Scheme is not performing quite well. Electricity price uncertainty and CO_2 price volatility have strengthened the need for more predictable electricity costs for industrial facilities. Emissions trading systems are only acceptable if they eventually deliver emission reductions, while still offering flexibility to capped sources.

European prices for CO_2 emission permits fell to the lowest level ever (mid 2013) recorded after the European Parliament refused to solve the problem of surplus allowances, which led to such low price of allowances. Such situation favours greater use of fossil fuels. At the Futures exchange in London, cost of metric tons of CO_2 fell to 2.63 €[12]. At the same time, German electricity prices (used to be a benchmark) for the next year, fell to the lowest level since 2007, to 36.5 €/MWh.

With the current low price, the ETS is probably not making a fully cost-effective contribution to emissions reductions, meaning that greater effort is required from other, more expensive policies. A policy mix seems to be indispensable, as the carbon price alone would not induce energy efficiency measures nor higher cost, low-carbon technologies, but the current low carbon price leads to a misbalance within the policy mix, raising the costs of climate policy.

2.2. National Consequences - Montenegro

Montenegro is most probably the next EU member state after Croatia. Thus the ETS process in Montenegro will be strongly driven by the EU negotiation process. A good GHG inventory (historical emissions) is an

[12] Fagerholm Torsten - http://www.bloomberg.com/news/2013-04-16/nordic-power-price-falls-after-eu-rejects-co2-market-fix.html (Apr 16, 2013)

important starting point. In fact, as soon as the process of European integration of Montenegro gets more intensive, it is expected that, first of all, a reliable database of historical emissions will be established and in advance be prepared for the obligations that only one power plant, TE "Pljevlja", have in the system of the EU ETS. Developing EU ETS is very resource consuming particularly for smaller countries. Insufficient capacity of the competent authority and executive bodies will cause (financial) risk for Montenegrin operators.

Harmonization of national legislation with the European Union in the field of climate change implies transposition of Climate and Energy Package of the European Union. Among the most demanding directives in this Package is the Directive on Emissions Trading System (EU ETS). Effective preparation and implementation of the Directive requires the preparation of both the legislative and institutional framework and strengthening the capacity of the industry to meet the requirements for monitoring and reporting.

2.3. Reforming the EU ETS

From hot debates regarding ETS, it could be concluded that the weakness of the ETS lies in three essential elements and therefore reform to the ETS must take into account these aspects.

Firstly, there is the current weak and volatile price signal, arising from the current oversupply of permits. Secondly, there is a lack of a clear and credible post 2020 framework. Thirdly, there is a lack of institutional processes and mechanisms to ensure the credible future management of adjustments to the ETS.

In addition to that, three points should be integrated into the current reflections on the EU ETS future design:

- Adopt post-2020 emissions objectives at the European level as soon as possible and clarify the contribution of the EU ETS sectors. This would reinforce confidence in the EU ETS and favour low-carbon investments.
- Improve trust in the EU ETS through better coordination of climate and energy policies. For instance, by setting more precise goals and expected timetables for the phasing out of overlapping policies, as well as the assessments of their combined effects on the EU ETS in the case of demand volatility.
- Clarify the governance of possible future short-term interventions. A permanent mechanism could be put in place to introduce flexibility in the current system. However, any such flexibility would need to be strictly constrained and subject to political approval to maintain the credibility of the long-term emissions cap, which would always need to be the precondition for any short-term flexibility.

Conclusion

Pan-European policy to reduce greenhouse gas emissions with the ETS scheme would result in imposing extra costs on production and consumption of products which include greenhouse gas emissions as a by-product. In effect the carbon tax or the cost of tradable permits represents an additional indirect tax levied on production. The cost increment reduces the international competitiveness of the trade exposed energy intensive industries over the interim period before other trading partner countries also introduce policies to place an explicit cost or price on their greenhouse gas emissions.

Europe is moving toward a future where the main role of gas and coal will be to support renewables. The European Union is working to "decarbonize" its energy supplies, a long-term goal, but there are continuing battles between ministries that emphasize economic growth and competitiveness and those that emphasize reducing carbon emissions. Increasingly, European politicians have argued that European energy and climate policy decreases the competitiveness of European enterprises and makes industry leave the EU.

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Geographical Information Systems (GIS) as a tool for adequate emergency response - a great challenge for Serbian society

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Abstract

Serbia is a country exposed to different risks and they jeopardize the economic development. Among all of those risks, extreme weather events are the most often and so far caused enormous loss to the Serbian economy. Every year, those consequences count millions of Euros of loss (hail and drought, floods, heavy snow followed with extreme cold temperature, heat waves and so on). Stakeholders in the area of emergency management were unable to handle this issue due to the numerous obstacles and permanent budget shortfalls. This paper addresses the need for greater use of ICT, especially GIS as a necessary tool in all phases of emergency management. Using research methodologies appropriate for the social science authors presented the Serbian need to move forward and apply the positive practice from many countries (ICT and GIS as a necessary part of daily activities in integral emergency sector). Since computer literacy in Serbia is not at a high level, there is a great need for further engagement in this area. In the future, Serbia has to follow the practice of developed countries in the use of information and communication technologies in emergency management.

Key words: emergency, emergency management, GIS, losses, economy

1. Introduction

Disasters are incidents that cause disruption of normal life, deviation from ordinary expectations of individuals and groups. Without questioning of their classification as natural, manmade, or even some newly recognized "Natural disaster – triggered technological disasters" (NATECH disasters, Technical report European Environment Agency, 2012), it is obvious that all of them cause great economic loss and human suffering. Therefore, the adequate response of stakeholders to the emergencies starts to be an issue of paramount importance for the development of every country, as well as in the global community.

Emergency management (disaster management) is a continuous activity, which should provide coordination of all public institutions, academic community and private sectors. The Government of the Republic of Serbia is aware of the numerous threats and serious impacts of disasters to our society. This attitude is confirmed by numerous activities and data about great economic losses in Serbia caused by extreme weather events and other emergencies. Within the framework of emergencies, the following was recorded in Serbia: heavy rains leading to floods and landslides, winter storms, extreme cold and heat, drought, dense fog, phenomena related to storm clouds and freezing and etc.

Activities of the Republic of Serbia in the area of the emergency protection are presented in this paper, as well as an urgent need for the emergency sector to apply innovative approach in these activities. During the current economic situation in Serbia it is hard to provide necessary financial means for the stakeholders in emergency sector. The Law of the national budget for the year 2014 is not encouraging. Previously the budget devoted to the activities of the Budget Fund for emergency was 1,7 billion Serbian dinars (14,898 million EUR). After the revision of fiscal policy for 2014, it was decreased to 400 million of dinars. Having in mind those circumstances, it

is obvious that stakeholders in emergencies sector should apply a new approach to make their actions more efficient with such limited budget. All the above mentioned initiated authors to address in this article urgent need to introduce ways in which Geographical Information Systems (GIS), as a part of the Information and Communication Technologies (ICT) could be used for emergency risk management. The article addresses the most important role of the Sector for emergency management in Serbia in implementation of these activities. Geographical Information System as a tool for adequate emergency response could have a great significance because information is an important key to emergency risk management. GIS is a useful and important tool for all types of users and organizations for improving the efficiency, speed, and accurate of responses.

2. The Sector for Emergency Management recognized its role in using GIS as a new tool

In Serbia, Sector for Emergency Management (SEM) is a part of the Ministry of Interior since in 2009. Law on Emergency Situations was passed, but the system is suffering due to lack of all necessary legal and organizational prerequisites for reaching the maximal efficiency. The activities of the Sector for Emergency Management in regional and international cooperation in the field of cooperation and mitigation of consequences of natural disasters are encouraging. By presenting results of the completed pilot project “Disaster Loss Database Establishment in the Republic of Serbia” Radović (2012) proved this statement. The UN Office for Disaster Risk Reduction and UNDP/SEESAC jointly launched a pilot project in February 2013. The officials from SEM stated that “after connected gained data with the GIS in the Sector for emergency managements the base will be available for all the interested parties in

Serbia and wider, in the similar way how it has been done in many other countries" (Marić, 2013).

DesInventar is a methodological and a conceptual tool for the construction of database of damage, loss and effects caused by disasters, designed to help governments to identify their disaster risk patterns at local and national levels. This tool permits the collection of historical records of disasters occurrences, their analysis, and graphic representation. DesInventar allows the creation of evidence, governmental investment planning in cost-effective Disaster Risk Reduction (DRR) and climate adaptation measures (http://www.seesac.org, 2013). Throughout the world, emergency services are using DesInventar as an input to their risk analysis and risk mitigation, formulation of early warning systems. DesInventar is a tool, which should aid monitoring of the success or evolution of their preparedness. Serbia is one of five European countries currently piloting DesInventar.

The Sector for Emergency Management (SEM) and the Statistical Office of the Republic of Serbia took on the leading role in the collection of the data. After about six months of the project duration and two months of intensive research, the project research team collected information on 1,485 disaster events during the 27-year period from 1986 to the present. The amount and quality of data thus collected is impressive and represents not only a great start for the database in Serbia but also a significant success at global level. DesInventar is one of activities implemented by UNDP/SEESAC, which support the efforts of the Serbian Government to strengthen the country's disaster risk reduction and recovery system.

Using this database connected by GIS will make response of SEM in emergencies more efficient in the future. The expectation is that it would be extremely useful for emergencies that occur on the micro-space of

multi-level structures (such as buildings) in urban areas. Hence, also GIS-based emergency management systems for earthquake, floods and other emergencies in Serbia have to be developed possibly using additional 2D GIS with 3D visualization systems. Additional technology is needed to handle emergency situations in micro-scale environments such as large public buildings, shopping centres, industrial facilities and other important part of critical infrastructures.

Response of stakeholders in emergency management area in every phase of emergency management depends on availability and reliability of data. The trouble starts when they get data from variety of resources, which are sometimes different in scope and content. Consequently, for policy makers it is important to have the appropriate data gathered, organized, and displayed from the beginning in a way which will allow them to determine the size and scope of emergency and decide the appropriate measures to mitigate its consequences. During an actual emergency, it is necessary to have the exact data, at the right time and from the competent source.

Emergencies can affect every part of the society: energy sector, traffic, health, education, water and sewage systems, and so forth. In numerous cases, the first responders need a lot of information about the site itself. By using GIS, stakeholders can share information through databases on computer maps in one location. Without this possibility, emergency workers must gain access to a number of department managers and their maps. In Serbia situation with upgrading of maps is lagging behind because of numerous reasons. In every emergency delay in response means more losses and therefore adequate information is a key priority for decision makers. If they do not have it, the cost is increasing, the resources are wasted, and the consequences could be very serious. Information and communication technologies and GIS provide a useful mechanism to centralize and visually display information during an emergency. GIS has developed substantially over the past decade with the advent of large-

volume data handling capabilities that facilitates synthesizing information from many different data sources. GIS software that is most frequently used in the world are Global Mapper, ESRI ArcView, MapInfo Prefessional, Quantum GIS etc.

The use of GIS is useful in all phases in emergency management process: planning, the preparedness and response phases. GIS can accurately support better response planning in areas such as determining evacuation routes or locating vulnerable infrastructure and vital lifelines, etc. It also supports logistical planning to be able to provide relief supplies by displaying previously available information on urban infrastructure. Most of the GIS software is covered with functions to store data, access data, implement queries and analyses, and create outputs.

In the SEM has recognized the importance of GIS, which lies in the possibility to represent the real world situation closely with layers of information (maps) that can be combined. For example, in the case of floods, the information is represented as water height and the flood duration distribution. Combining this information with population density helps identify the vulnerable populations, with traffic network available for evacuation and the public infrastructure available for protecting people (shelters, hospitals, collecting centers and other facilities needed in the relief action). It has become a tool for managing complex information related to societal and environmental functions in emergency.

3. The remaining Challenge-removing obstacles in future activities

In the area of the mitigation of the numerous emergencies, Serbia got the different kind of international help. One part of that help has been seen in few loans that Serbia took from The International Bank for Reconstruction and Development (IBRD) and Council of Europe Development Bank (CEB). Having in mind that the emergence management area is a factor of future

sustainable development Serbia accepted recommendation about wide usage of ICT and GIS in this area, but still its implementation could be evaluated as weak and insufficient. In reality, activities are far from the adequate implementation at national, regional and local levels, staying mainly sporadic, and mostly implemented through few projects without continuous sustainability. The recommendation is that the usage of GIS should be wider in future as a tool for mitigation of expected losses. This fact is clearer if we consider the predicted budget for Emergency fund in the SEM. Table 1 presents planned and approved budget for the current and the following two years. As the prediction of emergencies, especially in the area of the extreme weather events, are very serious, it is clear that the new models have to be sought as well as a greater efficiency of first responders.

Table 1 - Prediction of budget in period 2013-2015 (Project: Influence of Emergency Situations on Sustainable Development of Local Self-governments in Autonomous Province of Vojvodina, 2013)

THE PROJECTED BUDGET FOR THE EMERGENCY FUND OF THE REPUBLIC OF SERBIA		
Year	Planned budget	Approved budget
2013.	950.000.000,00	81.148.000,00
2014.	988.805.000,00	988.805.000,00
2015.	1.058.641.000,00	1.058.641.000,00

The use of GIS and similar tools could provide enormous help in these circumstances. One example of this is provided from the case of using Quantum GIS. It is a free software application that allows users to view, edit, and analyze geographic data. Quantum GIS is a cross-platform application and runs on various operating systems including Mac OS X,

Linux, UNIX, and Microsoft Windows. This software creates files smaller in size compared to other GIS's and requires less memory and CPU power, so it can be used on older hardware or running simultaneously with other hardware-intensive applications. This software is used in the process of analyze the flood which happened in the settlement of Jaša Tomić in 2005. The data that were necessary to visualize the damage and infrastructure vulnerabilities were obtained from the Municipal Assembly of Sečanj, the office that was responsible for civil protection and public relations. List of destroyed and damaged houses and list of the streets are the only data related to physical damage in Jaša Tomić (Milanov, 2011).

GIS could also be essential for establishing the historical records of emergencies and their consequences as the first step in providing the needed information for creation of the effective emergency management strategy for future events.

It is necessary to mention that GIS-based space technology solutions have become an integral part of disaster management activities in many countries. Some experts proposed that use of satellite communication could be useful to fill the communication and control gap created by the devastation of the terrestrial network. In future SEM and policy makers should consider a chance to become a part of the activities of the United Nation Office for Outer Space Affairs which have been implementing a Space Technology and disaster management programme to support developing countries in incorporation space-based solutions in disaster management activities.

4. Conclusion

This article is focused on the increasing use of GIS and ICT in the broader scope in emergency management activities in Serbia. Presented data confirmed the need of special attention which should be given to this recommendation. In the archive of the SEM activities in their website for last few years, there are no events devoted to this issue. Serbia promotes the development of information society as well as safe society in regional collaboration. Hence, we have to be aware of presented risk and their implications for own security and all available capacity. Therefore the role of information communication technologies, and GIS should be adequately recognized from all stakeholders. We should not neglect the fact that the lack of knowledge and skills of employees in emergency management sector could be an obstacle in a process of establishing procedure for use of GIS and ICT in future, but we have to overcome it. GIS has to be recognized as an important tool for all types of users in the emergency sector, for improving their efficiency and accuracy of responses, especially having in mind the state of economy. It could not be understood like an additional factor which makes some goals harder to achieve. It has to be included as a necessary part in all strategic documents from the beginning. In that case it will be useful in the process of protecting the wellbeing of the society in general. Understanding the role of GIS and ICT should be followed by the political commitment at all levels, if we want to achieve the change and implement all declared obligations in public and confirm our devotion to the building of a safe information society in practice.

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The past and the future of protected areas – global and Montenegrin perspectives

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Abstract

Protected areas are generally considered the best way to conserve biodiversity and ecosystem services. However, they are faced with numerous challenges, which arise from the need to find a balance between nature conservation and local economy, as well as from the fact that they are usually not integrated in the wider national and regional land-use plans and policies.

This paper gives a brief history of protected areas, in order to understand the challenges and issues that are embedded in the protected area concept, so that this can be used as a lesson for their future development. The overview of protected areas and the related issues in Montenegro is also given, with recomendations for the improvement of the current situation.

Keywords: protected areas, ecosystem services, nature protection, natural resources

Protected areas – a historic perspective

Protected areas present a form of land use where natural resources are set aside for protection through strict conservation and/or some form of sustainable use. As such, protected areas have a long history - their first forms can be encountered well into the past, as areas of land reserved either for resource use, such were the hunting grounds of royal families or the wealthy elite (for instance in India and England, respectively), or for cultural reasons, such were the sacred places of indigenous peoples in Australia, North America and elsewhere (Wright and Mattison 1996, Eagles *et al.* 2002).

The present day concept of protected areas starts to develop in the 19th century. At that time, the industrial revolution was drastically changing the way of life, the social and the natural landscapes, and with that the human attitudes towards the nature. Migration of people towards urban areas and the shift in human occupation from agriculture towards industry has detached the people from the nature, with which they previously had a much more intimate relationship. In that process, the social surroundings became far more important than the natural. Additionally, the unprecedented alteration of the landscape and the appearance of large-scale environmental degradation raised concerns, primarily of the educated and wealthy social circles and elites, who started to profess the idea that humans have a moral responsibility to protect the nature (Jepson and Whittaker 2002).

In such a context, the first "official" protected area in the world – the Yellowstone National Park in USA, was established in 1872, as "a public park or a pleasuring ground for the benefit and enjoyment of people" (from the Act establishing the Yellowstone park, source: National Park Service). The emphasis was on the "public" aspect, as this was the first time the protected area was not reserved for the elite to use as hunting or

recreational grounds, but was open for all to take aesthetic pleasure in it. Therefore, the visitation and enjoyment of aesthetic values of the protected landscape became embedded in the foundations of the protected areas concept.

The concept spread through other countries, and protected areas in the form of national parks and wilderness reserves started to be established in Canada, Australia, South Africa... Protected areas established in that period had several common features – they were large areas of relatively pristine and unpopulated landscapes, established by the central governments primarily on the basis of the aesthetic values of the area or its native biodiversity (Eagles *et al*. 2002, Phillips 2003).

The trend of PA establishment continued into the 20th century in a similar manner, in that they were established by central governments primarily on the basis of aesthetic values. However, as the surface under the protection increased, this started to create conflicts with indigenous communities that have traditionally used the area or the resources under the protection (for foraging, tree felling etc), due to which they were perceived by conservationists as pests and primary causes of environmental degradation. In numerous cases, indigenous communities were forced to abandon their use and property rights, and were evicted and relocated. The restriction of access, prevention of traditional rights to resource use and disrespect of property rights of native communities by park authorities caused conflicts, which became another integral part of the protected areas concept (West *et al.* 2006).

In the second half of the 20th century, new trends in the protected area establishment, management and governance started to emerge. They were inspired by several developments – emergence of the science of ecology, which brought improved understanding of ecological processes, especially ecosystem dynamics; improved understanding of resource use, planning

and management; and the strengthening and the evolution of the human rights movement. At the same time, the rise of the global population in the second half of the 20th century and the associated increase in resource use furthered the environmental degradation. As a consequence, the living standard and quality of life in communities around the globe started to deteriorate. In such a context, biodiversity started to be perceived not only as a source of aesthetic pleasure or something we have a moral obligation to protect, but as a provider of ecosystem services essential for human welfare.

All those development have caused a shift of approach in relation to land use and nature management, and the protected area concept continued to evolve. With that, protected areas started to be perceived as the best option to safeguard biodiversity and ecosystems services (Brandon and Wells 1992). In this new phase of the protected areas concept, ecological principles became the main guide for their establishment, and people and their modes of resource use started to be viewed as an integral part of ecosystems and their dynamics (Pauchard & Villarroel 2002). Consequently, the management approaches of protected areas shifted from the strict protection towards some forms of sustainable use (Phillips 2003).

The result of such an evolution of the protected area concept is that by 2008, there were around 120.000 protected areas globally, which cover 12.2% and 6% of surface of land and sea respectively (World Database on Protected Areas). They come in all shapes, sizes and with different management objectives, ranging from the strict protection, where the ecological processes are preserved without any intervention, to sustainable use and management of resources such are forests, fish stocks etc. They also differ in governance modes that range from the top-down central government management with no public involvement, to the bottom-up community management with wide stakeholder participation. and

anything in between. However, despite such differences, all of them have several common characteristics – their objective is the long term conservation of biodiversity and ecosystem services, they function under a certain management regime defined by a plan, and which is monitored and revised, and they need to be a part of the national and regional biodiversity protection strategies and conservation networks (Dudley 2008).

Protected areas are increasingly viewed as an economically viable form of land use that brings benefits on local, national, regional and global levels, through biodiversity conservation, tourism, and supplying of various ecosystem services, including provisioning (water, food, fuel, construction material), regulating (flood control, pollution mitigation…) and supporting (mitigation of climate change effects, nutrient cycling; Millennium Ecosystem Assessment 2005). In other words, the mission of protected areas has shifted from the biodiversity conservation towards improving the quality and standard of life.

Challenges of protected areas

Despite such an evolution in the protected area concept and the proven benefits they bring to communities and nations, they are still faced with numerous challenges and issues.

The establishment of a protected area is a process that in itself is challenging for several reasons. Firstly, the ecologic data on species and habitat status or ecosystem dynamics relevant for making properly informed conservation and/or development decisions, is often missing. Secondly, delineation of the area's boundaries is often in conflict with the land-property and users' rights, particularly when the area under conservation interest is not state property (West *et al.* 2006). Thirdly, a procedure for the establishment can be a long, bureaucratic affair that

depends more on the administrative procedures than on the actual conservation needs. Consequently, the location, shape and design of a protected area may end up not covering locations of conservation interest, or the establishment procedure takes up a long time in which human pressure causes environmental degradation and loss of the original ecological value. Marine protected areas are particularly problematic in this respect, since there is a generally limited knowledge of those ecosystems and their dynamics, and there are problems with delineation due to the lack of clear geographic and administrative borders (Eagles *et al.* 2002).

However, the designation of a protected area is just the first step of the process, and by itself it does not ensure conservation effectiveness. Once a protected area is established, it should be managed in order to ensure the conservation objectives, enforcement of rules and regulations and resolution of potential conflicts with various resource users. Protected area can be managed in diverse ways but whatever the way, there should be a designated body of some sort that is responsible for setting the conservation objectives and designing and implementing a management plan, whether it is central government, or a local grassroots organisation. However, this is often not the case for various reasons, most notably the lack of financial and human capacities. Protected areas are often designated but end up with no management of any sort, and it has been estimated that such "paper parks" comprise a significant proportion of protected areas around the world (Bonham *et al.* 2008).

Furthermore, even when the protected area has a designated management body and a defined management plan, the conservation objectives may still not be achieved due to the lack of staff (especially field staff like rangers who are responsible for the enforcement on the ground). Insufficient and/or incompetent management can also be an obstacle to

the implementation of the management plans and thus achievement of the set goals of the protected area (Lange & Muller 2009).

Financial resources are frequently the most limiting factor for protected area functioning. The main source of finances is most often the government, and in the majority of cases this is not sufficient, so managers are forced to find alternative sources of finances. Lack of finances often diverts managers' attention from conservation towards fund-raising, or forces them to make certain trade-offs between generating funds and biodiversity conservation, due to which conservation objectives can be compromised. Eco-tourism is one such example – it brings income, but on the other hand can cause disturbance of species and degradation of sensitive habitats (Ceballos-Lascuráin 1996).

Finally, one of the big issues in protected area management is the relation with the local population and resources users. As said above, the conflict between protected area and local resource users became embedded in the protected area concept, and if left unaddressed can cause revolts and negative attitudes towards the protected area management to the detriment of biodiversity. In addition to that, the general public's awareness and attitudes towards nature, its values and conservation are another big issue that has an effect on the protected area management and conservation success (Lewis 1996).

Protected area system of Montenegro – overview and challenges

The history of protected areas in Montenegro has followed the general global trends described above. The beginning of protected areas in Montenegro dates to 1878, when King Nikola set up a reserve in Biogradska Gora and presented it to the local communities for safeguarding. In 1952, this area formally became a national park, together

with Durmitor and Lovćen mountains. In the following decades, two more national parks were established – Skadar Lake in 1986 and Prokletije in 2009, as well as a number of protected areas of other categories, including one reserve, 41 monuments of nature, four special nature features (National Biodiversity Strategy with Action Plan 2010-2015). However, although there are fifty protected areas in Montenegro, which cover almost 10% of the territory, they are plagued with numerous problems, for which their effectiveness is under question.

Firstly, the current protected areas do not have a complete ecosystem representation, as some important and vulnerable ecosystems are not covered by it. Most notably there is still a lack of marine protected areas, despite the fact that the sea and the coast are among the country's most important natural resources that suffers considerable environmental pressure from tourism, urbanization and unsustainable fishing practices (Fifth annual review on the implementation of the National strategy of sustainable development of Montenegro 2012). The existing protected areas lack connectivity and operate largely in isolation, not only from each other, but from other unprotected but also ecologically important ecosystems. This is to a certain extent a consequence of the fact that the relevant ecologic data and recent research are lacking, so the design of the protected area system is thus deficient.

The protected areas of Montenegro are not managed as a system, and all except national parks, lack designated management bodies, management plans and financial resources for protection. Consequently, for some of them there is a clear indication that they have been degraded and lost the original ecological value for which they have been designated (Spatial plan of Montenegro until 2020). National parks, managed by a single body – the Public Enterprise for National Parks of Montenegro (PENP), are also facing the problem of human capacities, such as the shortage of staff, lack of

expertise, operative and/or managerial capacities necessary for reconciling the needs of conservation with those of development.

The financial resources for protected areas in Montenegro are very limited. National parks, again, are the only protected areas that do receive some state funding. Since that is not sufficient to cover all of the operational costs, the PENP is forced to undertake a range of activities in order to complement the budget, and in such a way make a compromise between use and protection. Some of these include issuing licenses and concessions for the exploitation of natural resources (primarily through ecotourism, fishing and mineral resource extraction) (Public Enterprise for National Parks of Montenegro 2013). This often creates conflict with the interests of conservation and puts additional pressure on the ecosystems.

Furthermore, general public awareness and attitudes towards nature protection in Montenegro are rather poor. Cases of uncontrolled resource use and habitat degradation are frequent, even within the designated protected areas, as a consequences of inappropriate waste disposal, pollution, urbanization, overharvesting of commercially valuable species (fish, game, medicinal plants) and activities such as tourism, forestry and fisheries (Spatial plan of Montenegro until 2020). This is accentuated by the lack of communication and cooperation within and among state, civil society, education, research and media institutions and organizations, which creates a rather incoherent approach towards nature and environmental protection in general, where there is no understanding nor a clearly defined role of protected areas in terms of conservation as well as development.

All this has an effect on nature protection - many Montenegrin protected areas have due to increased pressure lost their original ecologic value, and are being revised or even removed from the list. Within national parks conflicts of use persist, and illegal activities that are not adequately

suppressed are still present, to the detriment of the ecosystems (Second National Report on the Implementation of the National Biodiversity Strategy 2010-2015, for the period 2011-2012).

A way forward

The pressure on the natural resources continues to increase, and the global, regional and national policies propose the increase of the surface under protection, because, despite the aforementioned problems, protected areas are still considered the best way to conserve biodiversity and ecosystem services. Therefore, protected areas and their managers are under an increasing pressure to safeguard biodiversity and its services by finding novel, innovative and alternative ways to overcome all these challenges.

As far as Montenegro is concerned, the current plans envisage the expansion of the area under protection to some 25% of the territory by establishing new regional parks predicted by the national spatial plan, as well as a Natura 2000 ecological network, as a requirement of the EU accession process. At the same time, the pressure on the natural resources increases, while finances for the nature conservation shrink. If the current practices in protected area establishment and management continue, the effectiveness of the whole approach comes under question, and we can expect further environmental degradation and the loss of resources and services provided by the biodiversity. Therefore, Montenegrin nature protection sector is also under the pressure to design and implement different and innovative approaches in the protected area system in order to overcome the above challenges and meet various demands.

With such a situation, there are several things that have to be taken into consideration for the future of Montenegrin protected areas.

First, the establishment of the protected areas has to be based on the up-to-date ecologic data. This involves the knowledge of distribution, the state and dynamics of species populations and habitats, the modes of use and the intensity of human pressure. Recent gap analysis of the protected area system revealed some locations that are important from the conservation point of view, but which haven't been foreseen for protection by the spatial plan or other strategic documents (Mrdak *et al.* 2012). Implementing the requirements of Natura 2000 will probably facilitate this process, to make ecologically more representative network of protected areas. All of this will also require a designated central information system.

The management bodies of existing protected areas should be defined, and the new ones established where necessary. Due to deficiencies of finances and human capacities at the level of state and local government administrations, a range of management arrangements and governance options should be considered. Hybrid organizations between different institutions, NGOs, local communities, as well as private business or some forms of public-private partnerships, have all been demonstrated to be successful in protected area management elsewhere (Borrini-Feyerabend 2013), and some of these models should be evaluated and implemented in Montenegro as well. Managers should be constantly receiving relevant training in all aspects of management, such are fund raising business planning, monitoring, research, public relations, field skills, education, interpretation…

Management of the protected area needs to be flexible and adaptable, based on the results of the monitoring process and not just fixed on the long-term management plans. Additionally, some changes in the nature occur rapidly, or the proposed activities and measures do not achieve set objectives, so the protected area management needs to be flexible enough to change the course of action and try different approaches when needed.

Closing the financial gap is probably one of the major issues in the protected area system of Montenegro. With the current state of affairs, there is a clear need to find novel sources of financing that will be sustainable. Apart from traditional ways of generating own income (visitors' fees, concessions, licenses etc), managers should explore markets for ecosystem services and options to introduce the payment for ecosystem service schemes. Recent study by UNDP (Emerton 2011) has estimated that protected area system provides Montenegrin economy with some 68 million EUR annually in ecosystem services, so this can be an argument to improve the financing mechanisms of the system by finding ways to charge for some of those services.

Conflicts with local resource users is a common feature of Montenegrin protected area system. The attitude towards national parks management is usually hostile, and this creates frequent conflicts in and around the parks, to the detriment of biodiversity. Governance modes that are based on cooperation with local communities and other resource users should be promoted. In the case of future protected areas, public involvement needs to be from the very beginning, in order to ensure the local ownership of the idea and the design of management plans that provides a compromise that all stakeholders find acceptable. Communication and outreach activities should also be an essential part of the protected area management, in order to alter the current attitudes and improve the general awareness of the importance of biodiversity, services it provides and consequences of their loss. Such activities can also help promote public conservation effort, which is very important, and can also contribute to decreasing the gap in financing.

Conclusions

Protected area concept has undergone a transformation and it continues to evolve. Currently, protected areas are increasingly perceived as an economically viable form of multiple land-uses, where conservation of biodiversity meets the needs of development. In such a way, they are becoming important structures for preserving the ecosystem services, generating local income, increasing public awareness and improving attitudes towards nature, and are becoming drivers of the local economic progress, and sustainable development in general.

They are still facing numerous challenges, but the improvements in knowledge, networking between protected areas and the emergence of successful examples, are contributing to the improvements in governance, management and thus achievement of conservation as well as development goals.

Protected area system in Montenegro is currently also undergoing a transformation, and is increasingly adopting the new and proven approaches in protected area establishment and management. If Montenegro follows adequate examples of good practice, utilises lessons learned from other countries and approaches the protected areas system in a novel way so that they are properly and strategically integrated into the development plans, this may have significant positive impacts on the wellfare of the whole Montenegrin economy and society.

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The risk strategy in a future remediation activities - how to avoid the failure

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Abstract

One of the main tasks of the humanity is to preserve natural resources which have already been jeopardized. Remediation of contaminates sites represent priority for the stakeholders which among other tasks need to address this urgent issue. They have to create surroundings which are safe for the population with limited financial resources. Main issues that also need managing are extensive health risks, weak legal framework and cost effectiveness of the remediation. The Serbian National Programme for Environmental Protection defined the goals in the area of remediation of contaminated sites. Establishment of the priority list of contaminated sites in the Republic of Serbia is one of the priority goals for the year 2014. Also, it is set that 20% of those sites need to undergo remediation until year 2019. This strategy motivated authors of the paper to address what kind of risk strategy do policy makers need to create in order to achieve these goals and to avoid possible failures. Authors use research methods appropriate for social science. They present the background of overall risk strategy and addressed that the type of remediation has to be chosen carefully. The conclusion presents the need for developing a risk based strategy for remediation of contaminated sites as a regular activity for decision makers, risk managers, risk assessors and public. Their activities

have to be assessed by the competent body and in large cases even with international institutions which are involved in the process of remediation.

Key words: soil degradation, remediation, risk, risk strategy, contamination, ecological risk

Introduction

The world today is faced with numerous environmental and social problems. Therefore the question: How to protect and conserve natural resources, starts to be a question of paramount interest for future development of the global community. Jeffrey Sachs' in his book "Common Wealth: Economics for a Crowded Planet" addressed the central challenge of the 21st century: 'protecting the environment, stabilizing the world's population, narrowing the gaps between rich and poor and ending extreme poverty' (Sachs 2008). Another important issue is also self-interest of different companies which need to be concerned with the sustainability issues. The soil is a key component of natural ecosystems because environmental sustainability depends largely on a sustainable soil ecosystem. Soil is being increasingly degraded across the European Union, as well as in the Republic of Serbia. Soil is a non-renewable natural resource which performs crucial ecological, social and economic functions (Radović & Rakić 2013). Due to more than two hundred years of industrialization, Europe has a problem of contamination of soil due to the use and presence of dangerous substances in many production processes. It has been estimated that 3.5 million sites may be potentially contaminated, with 0.5 million sites being really contaminated and in

urgent need of remediation.[13] Costs of soil degradation due to contamination are still hard to estimate. Several studies demonstrate significant annual costs to society in the range of € 2.4 – 17.3 billion. Nevertheless, this estimate had a high degree of uncertainty; therefore the intermediate value of €17.3 billion per year was retained.[14]

Among all issues, the most important is to understand the purpose of supporting the soil policy. The possibilities for a common approach also need the development of adequate risk strategy in future remediation activities. The main objective of this paper is to highlight the issue of risk management strategy in the process of the remediation of numerous contaminated sites. From numerous reports and scientific papers it can be concluded that the inclusion of ecological risk assessment in soil quality standards shows an increasing interest in many EU Member States. Besides this statement, the ecological risk assessment is just one part of the process of defining the adequate risk strategy. Determination of the risk strategy is a wider process and it includes both political and scientific elements. It depends and originates sometimes from geographical or cultural condition in a country or region.

Every country needs to assess the economic feasibility of chosen soil remediation process for contaminated sites regarding their own needs

[13] Proposal for a Directive of the European Parliament and of the Council establishing a framework for the protection of soil and amending Directive 2004/35/EC/* COM/2006/0232 final - COD 2006/0086 */. Available on: http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52006PC0232:EN:NOT

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and possibilities, but also following useful examples from practice. The risk strategy has to examine the risk and to be included as a necessary part in the economic feasibility of any remediation project of contaminated sites. The estimated economic benefits include both direct benefits, resulting from the increase in the land value of the remediation site, and indirect benefits, arising from the increase in the nearby property values, etc. A cost-benefit analysis, for example performed in Israeli industrial sites, showed a cost benefit ratio of 1:14. The authors addressed in the paper the question of funding, which requires greater collaboration between government and private sector in the processes of remediation of contamination sites. The development of adequate risk strategies could provide intensive international cooperation, with the purpose of at least making the better choice in future remediation process, reduce different kinds of risks and avoid possible failure.

The brief analysis of Serbian remediation activities - current activities and future challenges

Serbia is on a path of seeking full membership in the EU, and it made considerable efforts in the context of environmental protection, especially in the area of harmonization of national legislation with the EU (Radović 2012). Even though Serbia made a lot of progress, it is far from a satisfactory level with respect to soil protection. 375 contaminated sites have been detected in the Republic of Serbia, mainly from industrial processes, mining activities, inadequate waste management and accidents etc. Serbia achieved small progress in the management of contaminated sites (Agency for the Environmental Protection 2010): remediation was done on 5,7% of identified and confirmed sites; detailed research is completed on 0,5% sites. Since the identification of sites, preliminary research has been done in 93,8% of sites. Serbia considered

implementation of legislative, scientific, and technological aspects of soil contamination and remediation in contaminated sites in Serbia. Soil management in Serbia is accomplished by planning the sustainable use and conservation of soil quality and diversity, in accordance with the environmental protection requirements and measures established by the various laws and sub-laws. The question that arises is that even in the case of financial resources for remediation purposes being provided, how are we to be sure that decision makers made the most appropriate choice and which factors have they considered?

Over the next few years, many of these sites in the Republic of Serbia will be cleaned up, and development of risk strategy has to be one tool to make decisions about remediation and future land use. In these processes, stakeholders have to understand the incorporation of the complete risk management processes despite of previous activities, based mainly on the human health risk as the major part of the decision. That approach has been seen in USA since the last decade of the 20th century (Carnegie Commission, 1993; National Research Council-NRC 1993). There are some experts like Jasanoff (1993), who suggested both of two cultures of risk analysis (soft approach), role of law, psychology, and sociology, and the (harder) approach of mathematics, biostatics, toxicology, and engineering.

In Serbia, in the largest number of activities, society has been seen through the glance of political benefit, which is acceptable having in mind a still undeveloped democratic capacity. Hence, the remediation activities are costly actions, and so the decision should be accurate and the most appropriate in the sense of gaining the best results. Therefore, policy makers have to accept few steps for determination of the remediation strategy and follow it through carefully. Those steps are:

- Determine remediation risk strategy options;
- Define risk strategy options;

- Develop a Strategy scoring method;
- Evaluate scoring criteria;
- Scale and compare each risk strategy and
- Choose the appropriate risk strategy.

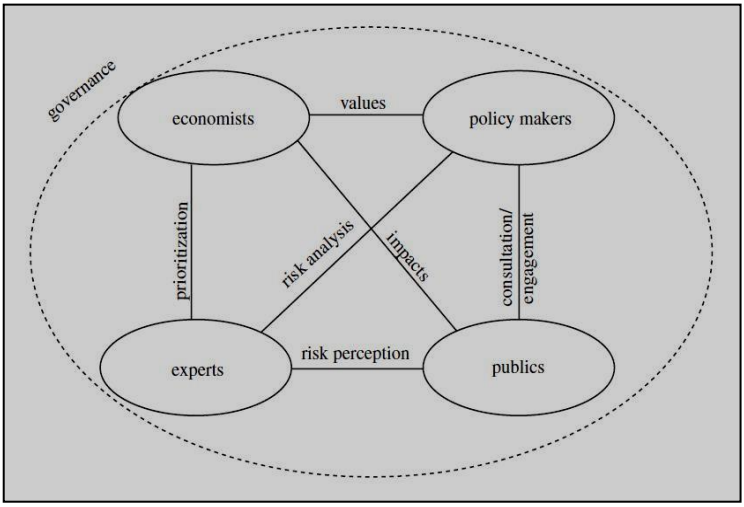
In the future remediation activities, all interested parties will have to consider risk strategy in decision making as an evolving process. Inside the risk strategy, the most important is that all involved parties have to assist and support the solution of a remediation strategy. The process of communication about the chosen strategy and its implications to the appropriate parties is another important issue, especially having in mind previous numerous failures in the area of the risk communication in Serbia regarding environmental issues (failing in implementation of waste management project in Serbia; also - example of export of radio-nuclear waste from Vinča, etc.). The last, but not least, is providing sufficient budget for remediation activities and for the chosen strategy. It is expected that in Serbia, this process will provide a wide discussion among risk assessors, risk managers, institutions, and other interested parties.

A proposal of overall risk strategy for stakeholders

There are a lot of stakeholders that are involved in remediation of the contaminated sites in Serbia. All of them have to be aware that their activities have to achieve decreased number of contaminated sites in every country. In Serbia, for example the list of contaminated sites is still missing, and so the list of future restoration priority sites is not available. So there is an urgent need for its establishment, and we hope that it would include all other factors because of the limited budget that should be divided among remediation programs and contaminated sites based on data on health risks, regulatory requirements, and cost-benefit analysis.

The stakeholders have to search for a method that can be easily used by all the interested parties. One of the interesting and useful tools was designed in USA and allows the participants to identify and address urgent risk. The developed tool named as risk data sheets gives and overviewes data available in seven categories: Public safety and health; site personal and health; environmental protection; compliance; mission impact; cost effectiveness and social, economic and cultural values (Burger 1999). It is important to point that this approach has to be applied in a broader concept which has to have in mind the protection of biodiversity in these contaminated sites. The risk strategy for future remediation activities should follow the well-known and widely accepted concept of integrated risk management. The elements included in risk management processes are broader than those that have been proposed by the NRC for the use in USA. The relationship of public, policy makers, and other interested parties is shown in figure 1. They will decide and set up the joint decision about remediation type and a degree of remediation.

Figure 1 - The relationship of publics, policy makers, economists and experts in risk management process



Conclusion

In the future remediation activities of contaminated sites, there are numerous challenges which will have to be addressed. The development of risk strategy is one of the necessary tools for achieving established goals of decreasing risks for humans as well as for ecosystems. This process has to integrate ecological risk assessment with the integral risk management. These will be continuing challenge for stakeholders in their efforts to remediate the contaminated sites and prevent unacceptable risks in society.

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The protection of the environment during armed conflict

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Abstract

The fact that the war causes extensive destruction of the natural resources and the environment raises very important legal questions. This article addresses the significant international legal instruments concerning the protection of the environment during armed conflicts. The paper will approach the issue from the aspect of two relevant law regimes: International Law of Environmental Protection and International Humanitarian Law or International Law of Armed Conflict. The aim of the article is to examine the main principle and the provisions related to the previously mentioned legal framework in order to identify the current weaknesses of this system. On this basis, the conclusion gives specific recommendations concerning the implementation and enforcement of a more effective legal framework related to environment protection in situations of armed conflict.

Key words: armed conflict, environment, protection, international treaties

I Introduction

Protection of the environment and conservation of the Earth's resources represent the hope and the future of every society. Destroying the environment undoubtedly means destroying the society itself (Malviya,

1999.). Modern armed conflicts are one of the most troubling causes of extensive degradation of the natural resources and the environment. Therefore, we cannot ignore the fact that endangerment of the environment, as one of the most disturbing aspects of armed conflict, raises very important legal questions.

International law seeks to limit environmental damage during the armed conflict through international legal instruments referring to two law regimes: International Law of Environmental Protection and International Law of Armed Conflict or International Humanitarian Law (IHL). The extent of environmental destruction in the ancient battlefield was limited to primitive acts, such as "salting the enemy's earth and polluting drinking wells with the carcasses of dead animals" (Rich, 2004). As the capabilities of industrial technology advance, the potential for environmental abuse in the name of war grows more alarming and the concerns do arise.

With these considerations in mind, this article will examine current legal protection of the environment during armed conflict according to the provisions of the relevant international treaties. After the analysis of existing rules and outlining their weaknesses, the author will give specific recommendations concerning the implementation and enforcement of a more effective legal framework related to the environment protection in situations of armed conflict.

II The Law on Armed Conflict

The International Law of Armed Conflict or IHL is referring to the set of laws that seek, for humanitarian reasons, to regulate war and armed conflict and "preserve humanity in the face of the reality of the war" (Blecken, 2010). IHL rules apply to international and non-international

armed conflicts. Since IHL was mainly developed in an era of international wars, the author will focus on the provisions that regulate this type of armed conflicts.

The relevant provisions of the International humanitarian treaty law dealing with the protection of the environment during armed conflict will be analyzed according to three international agreements: Additional Protocol I to the 1949 Geneva Conventions, the UN Convention on the Prohibition of Military or Any Other Use of Environmental Modification Techniques (ENMOD) and the Hague Convention IV. Additional Protocol I and ENMOD Convention directly address the subject issue, while the Hague Convention IV provides indirect protection of the environment in times of armed conflict (Radivojević, Raičević, 2012). General principles of IHL (Necessity, Proportionality, Discrimination, Humanity), as well as, Customary International Humanitarian Law, also include certain rules relevant for the topic of the paper. However, these sources of law will not be elaborated in this article.

1. Additional Protocol I to the 1949 Geneva Conventions

The provisions on the environment of the Additional Protocol I were singled out as "powerful constraints for all States having subscribed to them" (Schmitt, 2000). Two articles of Protocol I are specifically referring to the protection of the environment in the wartime. Article 35 of Protocol I states that the right to choose means of warfare is not unlimited and that it is prohibited to employ methods of warfare of a nature to cause widespread, long-term and severe damage to the natural environment, while Article 55 sets out specific protection for the environment according to the perspective of the protection granted to civilian objects. Concerning the scope of these provisions, attention should be drawn to the fact that

these rules are primarily directed to the decisions of national policymakers in the development of unconventional weaponry and their influence is less likely to reach the battlefield and "restrain the behaviour of those individuals actually engaged in hostile conflicts" (Hourcle, 2001).

2. ENMOD Convention

The ENMOD Convention prohibits the use of environmental modification techniques as a weapon during a conflict. This treaty was established as a result of the United States defoliation campaigns during the Vietnam War and the fear that technology was reaching a point where it has the ability to use the environmental changes as a weapon in a war (Reyhani, 2007). The most significant provision of the Convention for the purpose of this paper is the first article which prescribes that "each State Party to this Convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party".

Regarding the possible comparison with the Additional Protocol I, the main difference between the two treaties is that the protection of the environment provided by the Additional Protocol I is granted during the armed conflict, while in the ENMOD Convention the environmental protection is granted both in the war as well as in the peace time (Montini, Bogdanović, 2011). One criticism of ENMOD is that it considers harm related to environmental modification techniques, which is more an issue of methods used by villains in science fiction rather than in conventional war.

3. Hague Convention IV

Despite the fact that before the adoption of Additional Protocol I to the Geneva Conventions in 1977 the protection of the environment was not explicitly provided by IHL treaty law, two provisions of the Hague Convention IV of 1907 regulating the means and methods of warfare are relevant for the environment (Mrema, Bruch, Diamond, 2009). The first, Article 22, states that "the right of belligerents to adopt means of injuring the enemy is not unlimited". The second provision, included in the preamble of the Hague Convention IV, the Martens Clause, is referring to general principle of international law which provides the responsibility for the violation of customary international law, despite the fact that breached rule is not codified. Thus, it helps effectuate those customary norms on the subject of environmental damage.

III International Environmental Law

The basic dimension of environmental protection is related to the principle of limitation, which in the context of International Environmental Law (IEL) should be understood as the concept that the right of human beings to use the environment is not unlimited. There is no doubt that IEL includes various situations according to which we can establish responsibility and potential liability for environmental damage during the peace time. The extent to which legal rules based upon the limitation doctrine and the liability principle may apply for similar damages that are the result of war is uncertain. However, it seems that the view referring to the statement that there are some areas where IEL continues to apply during the times of armed conflict, has become widely accepted. In addition, this chapter

provides an overview of international environmental agreements that addresses the applicability of IEL during war.

1. Declaration on Environment and Development (Rio Declaration)

The Rio Declaration includes two provisions amplifying the words in the Stockholm Declaration and also placing the concepts more in the context of modern times (Hourcle, 2001). Principle 23 of the Declaration defines an absolute right to environmental protection in the following manner: "The environment and natural resources of people under oppression, domination and occupation shall be protected". An interesting part of the Principle 23 is the concept that establishes an environmental safeguard not only during times of traditional armed conflict, but also when people are dominated or oppressed. Furthermore, Principle 24 addresses the issue of war and sustainable development and imposes obligation to the states to respect international law providing protection for the environment during the war (Baker, 1993).

2. The United Nation Nations Convention on the Law of the Sea

The United Nation Nations Convention on the Law of the Sea (UNCLOS**)** forms the basis of the legal framework concerning the ocean governance designed to foster international peace (Nordquist, Nandan, 2011). Under the Article 192 of UNCLOS, the states have an obligation to protect and preserve the marine environment. Moreover, Article 194 imposes the requirement on states to take measures to prevent, reduce and control marine pollution. Similar obligations of states are included in articles 207, 208 and 212. The restriction concerning the applying these provisions is set out in Article 236, which states: "The provisions of this Convention regarding the protection and preservation of the marine environment do

not apply to any warship, naval auxiliary, other vessels or aircraft owned or operated by a State and used, for the time being, only on government non-commercial service".

In the light of all these provisions, we can conclude that UNCLOS environmental protection provisions do not refer to the times of armed conflict. However, it seems that an exemption clause for military devices may not entirely prevent UNCLOS from applying during the wartime according to the fact that there may be vessels involved in hostilities that are not included in the exemption (Mrema, Bruch, Diamond, 2009). Therefore, UNCLOS provisions related to the protection of marine remain valid during armed conflict. The extent to which this treaty offers protection during warfare is, on the other hand, uncertain.

IV Conclusion

The relationship between International Humanitarian Law and International Environmental Law is based on the growing concern of the international community related to the terrible environmental damage that is a part of almost every armed conflict. International law establishes numerous principles that prohibit most of the actions that cause war's devastation of the environment. However, there are certain weaknesses within this legal system.

First of all, one of the major tasks of the international community is to adopt precautionary principles and preventive measures concerning the effective environmental protection from the ravages of war. This will require a coherent normative framework devoted exclusively to the subject issue and addressing it systematically. Secondly, it is necessary to

adopt a general approach concerning the issue whether the provisions of international environmental treaties continue to apply in times of armed conflict. The widely accepted position in theory is that the rules of IEL should be regarded as continuing to apply during a war, unless it is specifically stipulated otherwise. Furthermore, there is a need to establish a permanent international mechanism whose duty will be to monitor legal violations and liability concerning the environmental damage sustained during war.

Realization of previously mentioned recommendations will be one of the greatest challenges that our society will meet in the future. Success will depend on internalizing environmental values and our ability to maintain the appropriate balance between the cruel reality of military necessity and the survival of the human race.

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Effects of climate change on Montenegrin agriculture

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Abstract

Climate conditions have a significant and extensive impact on natural systems. The living world has been developing in changing climatic conditions for millions of years already and obviously, most of the natural systems had the capacity to adapt to such conditions. Montenegro is a small country, but the effects of climate change as a global component certainly have an impact on tourism, public health, energy, and agriculture. This article will try to explain the effects of climate changes on agriculture in Montenegro. One big problem is the inability to make predictions due to the lack of instruments and data upon which the calculations are performed. The mere fact that Montenegro lacks the latest models to estimate the economic impacts of climate change does not mean that it is not possible to make some preliminary assessment of these impacts.

Keywords: agriculture, climate change, production, economic sector

Introduction

Air, soil and plants are the basis of agricultural production, which subsequently build the socio-economic factors. According to the World Meteorological Organization, global changes are changes in the inorganic and organic world and in people's activity in society at large, which occur as a consequence of climate change that were either strengthened or weakened depending on their intensity. Certainly, climate change is significantly affected by the emergence of new approaches in agricultural science and practice. This is the reason why the companies should, through their respective institutions, pay attention to the fundamental study of climate change and its related effects (global and regional climate change, the study of various climate change scenarios, changes in the concentration of "greenhouse gases", the state of the ozone layer, changes in the intensity of ultraviolet radiation, etc.).

Agriculture is by nature highly dependent on climate change. Different technological solutions are being developed and implemented with the aim to reduce the dependence of agricultural production on unpredictable climatic conditions, primarily in terms of protective measures from adverse weather conditions (greenhouses, hail suppression, anti-hail net), irrigation, development of animal breeds and plant varieties more resistant to unsteady conditions, use of artificial fertilizers and chemical protective agents. Despite all of this, agriculture is still very vulnerable to unsteady weather conditions, and thus to long-term climate changes. The exposure of agricultural systems to climate change differs from region to region. Almost all projections agree that poor and developing countries, especially those in the tropical and subtropical zones, will be most affected by climate change. Developed countries in moderate climatic areas will be less

affected, not only because of climate characteristics, but also because of their better adaptive possibilities. In certain regions of the world, even a production increase is expected due to the rising temperature and increase of carbon dioxide concentration.

Climate of Montenegro

The climate in Montenegro is affected by the Adriatic Sea and mountain relief. With an increasing distance from the sea, depending on the altitude, the climate varies from Mediterranean to Alpine. Precipitation is uneven, and most of it occurs in parts of coastal-mountain range (average of 4500mm per year), while the amount is smaller closer to the coast and, in particular, to the north and northeast. Southern part of Montenegro and Zeta-plain are areas of Mediterranean climate, characterized by long, hot and dry summers and relatively mild and rainy winters. Central and northern parts of the country have some of the characteristics of mountain climate, but are influenced by the Mediterranean Sea. North of Montenegro is characterized by continental climate, with only minor amounts of rainfall, evenly distributed throughout the months. In the mountain regions of the northern area, summers are relatively cool and humid, and winters are long and harsh, with frequent frosts and low temperatures, which rapidly decrease with altitude. Winds have a particular impact on the climate in Montenegro. Typical winds are *bura* and *jugo*.

In Montenegro, the year 2003 was the hottest, when Podgorica recorded 100 tropical days (days with a maximum temperature greater than or equal to 30°C) continuously. Highest daily temperature of 44.8°C was recorded in August of 2007 in Podgorica, the lowest daily temperature of -32°C was

recorded in Rozaje, eastern Montenegro, in January of 1985. Average annual number of days with precipitation is about 115-130 days on the coast and up to 172 days in the north. Rainiest month has 13-17 rainy days on average, and the driest month has only 4-10 on average. The number of days with somewhat more daily rainfall (over 10 mm) ranges from 25 (Piva) to 59 (Kolasin). The greatest number of days with heavy precipitation occurs in Cetinje and equals 74 days. On the slopes of Orjen in Crkvine (940m above sea level) in the recorded years the precipitation reaches as much as 7.000 mm, which makes it the rainiest place in Europe. Snow cover is formed at altitudes above 400m. At altitudes above 600m snow cover greater than 30 cm can be expected, and those above 800m record over 50cm of snow. Average number of days with snow cover over 50 cm in Zabljak is 76 days and 10 days in Kolasin. Annual rainfall is very uneven and ranges from about 800mm in the far north, to about 5.000mm in the southwest (Hydrometeorology Institute Montenegro, 2012).

Agriculture in Montenegro

Agriculture is a very important economic sector in Montenegro. Agricultural production makes up to 10% of the total Gross National Income, it employs 5.3% of labor, and it represents the additional source of income for about 60,000 (rural) households. According to the data from 2008, agriculture accounts for about 7.5% of the economy and represents an important source of income for a large proportion of the population living in rural areas of the country. According to the specific characteristics and requirements for the development of agriculture we identify 5 regions:

1. Coastal Region,
2. Region of Zeta Plain,

3. Region of rocks,
4. Northern mountain region and
5. Lim-Ibar rivers valleys region.

Region of Zeta plan covers 78.997 ha or 15.3% of the total area, it is the lowland region (up to 200m above sea level), which is suitable for farming, orchards and vineyards and livestock production. This region is particularly affected by floods. The region of rocks covers an area of 74.520ha or 14.3% the total area, which extends to 700-800m above sea level. This is predominantly arid district which is scarce in arable land. This area is conducive to livestock and beekeeping, but is threatened by droughts and wildfires. North Mountain area covers 184.528ha or 35% of the total country area, and is the plateau region which is suitable for production of cereals, potatoes and cabbages and livestock because of extensive pastures. This region is subject to extreme natural phenomena, such as snowfall, avalanches, hail, and drought. (INC – The Initial National Communication on Climate Change of Montenegro). Lim-Ibar rivers valleys region makes 129.804ha or 25% of the total area, and is rich in fertile soil. It is rich in springs and running water, and is suitable for all three agricultural sectors: farming and vegetable production, fruit and livestock. However, this region is threatened by various types of hazards, one of them being floods, and the fact that this area is in the zone of the high risk of earthquakes.

The agricultural sector in Montenegro consists mainly of small farms that produce for domestic purposes, the local market and national consumption. The classification of agricultural land use is shown in Figure1.

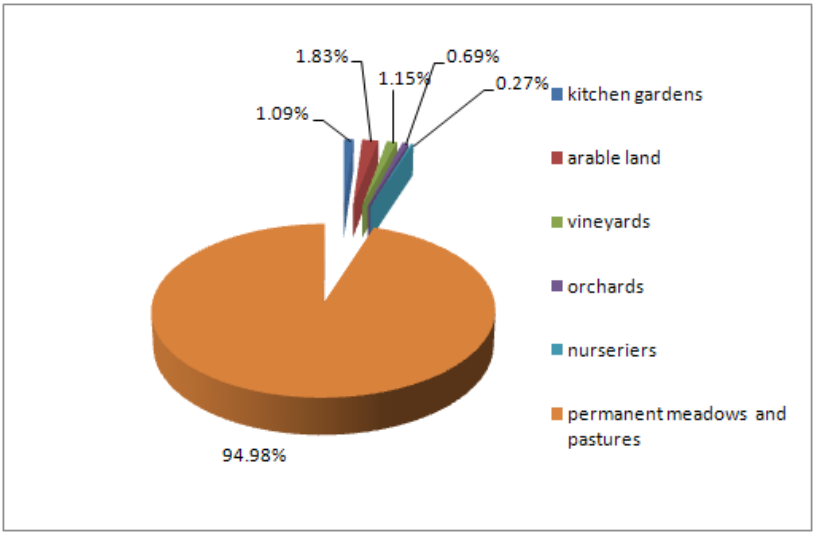

Figure 1 - Classification of agricultural land Montenegro (% ha; Source: Agricultural Census 2010, Monstat)

Effects of climate on agriculture

From the agricultural sector's point of view, the most important impacts of climate change are on net primary productivity (NPP) of crops and livestock, the change in mean values and spatial and temporal distribution of temperature, rainfall and availability of water for irrigation. Increased frequency and/or intensity of storms may result in greater damage to crops caused by strong winds, downpours and hail, increased crop losses due to flooding of coastal areas and cropland due to the increase of the upper limit of groundwater and poor soil drainage. Possible tendency towards more frequent and intense droughts that can last for longer periods of time, from three to five years would also have a negative impact on agricultural and livestock production.

At this point, almost the only available comprehensive source of information on climate change and its potential impact on agriculture is The Initial National Communication on Climate Change of Montenegro to the United Nations Framework Convention on Climate Change (UNFCC). This report shows that, in general, elevated temperatures may be expected throughout the year in all regions, except the evening rise of temperature that is registered in summer in the southern region of the country, between Podgorica and the coastal belt. Projected changes in rainfall are more unbalanced. However, it is generally expected that the amount of rainfall in the south of the country in the period from December to August will be reduced. These are not good news for Montenegro, as in this area, in the irrigated parts, almost all fruit production in the country is concentrated, which makes up the largest value of commercial production in the agricultural sector. The Initial National Communication provides sufficient information on how to preliminary predict the size of the economic impact of fruit producers which can be expected in the future due to the climate change. Virtually all of the physical effects of the accumulation of greenhouse gases in the atmosphere include changes in the agricultural sector, the productivity of agricultural land and livestock (IPCC-Intergovernmental Panel on Climate Change 1990, 1995, 2001 and 2007). Figure 2 shows in a simple manner the main effects and the build-up of CO_2 and climate change on the agricultural sector, which can occur in Montenegro. This estimate is based on the Third and Fourth report on the Assessment of the IPCC (IPCC 2001 and 2007) and the Initial National Communication submitted by Montenegro to UNFCCC (Ministry for Spatial Planning and Environment, Montenegro 2010).

Source	Impact
The increase in CO2 concentration	• Increase in long-term yields of certain crops • The faster growth of certain types of particularly noxious weeds • The growth of the tender of such weeds for download available resources
The increase in temperature	• Increase in crop yields (and land productivity), up to the maximum point, after which it declines • Increase in productivity of livestock, up to the maximum point after which productivity declines • Reduction in the amount of water available for irrigation • Increased demand for irrigation • Complex effects on weeds, insects • Negative impacts of heat-related stress on the health of animals
Reducing the amount of rainfall	• Reduction in crop yields (and land productivity) • Reduction in the amount of water available for irrigation • Increased demand for irrigation • Complex effects on weeds, insects, animal health
Increase in the volume and frequency of extreme events	• Increased damage caused to crops due to drought, flood, hail and gale force winds • Increase in crop losses due to floods • Increased losses of livestock due to droughts and floods
Interaction: increased CO_2 and the temperature of (1 -	• Northern Region: modest positive impact on soil productivity and yield

30˚C)	• Southern region: reduction of land productivity and yield • The near future - the distant future: the growth of negative impact on land productivity and yields.

Figure 2 - Overview of the potential physical impacts of climate change on agriculture in Montenegro (Source: The Initial National Communication on Climate Change of Montenegro, 2010)

Many studies have shown that increasing the concentration of CO_2 in the environment can result in a long-term increase in the yield of crops, but certainly also depends on other factors, as well as the characteristics of plant species itself (Ainsworth *et al.* 2004, 2005, 2004, Gifford, Long *et al.* 2004). Also, the individual effects of temperature and precipitation on crop yields variety with the change of each parameter.

There are at least three approaches that are used to assess the impacts of climate change on agriculture.

• Agricultural. This approach relies on the observed response of crop yields to different soil, climate conditions and management regimes, which stimulate changes in average annual yield of crops. Independent price projections of crops and field crops are used to convert these changes to economic value of yield.

• Agro - Economics. This approach combines agronomic approach in order to identify the impacts of climate change on crop yields using models of agricultural markets, to determine crop production, prices, profits and economic losses caused by climate change. These methods are frequently “normative" (based on optimization) and they correspond to agronomic "optimal" and economically efficient management.

• Ricardian. This approach relies on the observed reactions of food consumers, farmers and their suppliers, which is reflected in the price of agricultural land, to the different aspects of climate variability to determine how these groups will react to climate change.

One very important feature of these models is that, in addition to being well-designed for determining physical and economic impacts of climate change, they may also be used in a much broader framework for exploring the economic consequences of a wide range of environmental impacts on the sector, as well as the economic impact of foreign and national policies for agricultural and rural development.

At this point, there is no model that can be immediately used to simulate the effects of climate change in Montenegro to yield significant "raw" crops. However, it should be noted that this does not mean that such model cannot be estimated (empirical) or adjusted by the economic impacts of climate change in Montenegro (simulation) for about a year.

Nature of influence	The scenarios for climate changes		
	A1B near future	A1B distant future	A2B very distant future
Reduction of production of corn in %, not on the basis of a scenario (assuming the domestic price of corn = 60 €/MT)	0.016	0.043	0.81
Increase in the need for irrigation of crops (total irrigated land (new and planned) at € 0.15 / kWh)	0.074	4.33	4.41

Figure 3 - Preliminary estimates of average annual damage caused by the simulated climate change (Source: UNDP Montenegro, 2010)

We notice that the average damage from climate change due to the decrease in the yield of maize is small, as small as amounts of products of corn. However, the damage would be increased in the event of a significant increase in livestock in accordance with the plans for future development. Average annual damage caused by the increased watering crops were higher than expected as compared to the relatively small surface area. Certainly, if there was an increase in irrigated land than expected in the future, it would be a big problem.
So, both cases in the field of agriculture need better models, specific models that will take various factors into consideration.

Conclusion

Although the agricultural and forestry sector in Montenegro is relatively small, it does not mean that the impacts of climate change are not important for the country's economy in general. This is especially true concerning the agricultural sector.

From the point of view of food security, a large portion of domestic production is consumed domestically. Reduction in crop yield and productivity of domestic livestock due to climate change is likely to be balanced by the expansion of sown area, but the cost of expansion of cultivated land area, with reduced crop yields and livestock, will result in increased costs of processing new land. As a result, it could happen that most of the lost agricultural production gets replaced by imported products, which would cause a rapid increase in the rate of migration from the rural population than is desirable, for the whole economy.

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Doing business in a changing climate

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Abstract

Many would agree that the climate has significantly changed over the last few decades. We can feel the change and recognize it as extreme weather events, manifested as snow and storm surges or heat waves resulting in costly and damaging droughts and floods. Unfortunately, experts say that this is just the beginning. Given the interdependencies between climatic conditions and production processes and services, it is evident that these changes in climate patterns may affect many businesses.

Climate change can affect different aspects of business processes – core operations, value chain and broader network. In order to adapt, companies need to evaluate risks in each segment and integrate these when planning for further activities. On the other hand, climate change adaptation should not only be about vulnerability and risk. It is also about opportunities and benefits. However, we should not overlook the fact that both risks and responses vary according to sector. Those identified as the most vulnerable are agriculture, energy, tourism and forestry, coinciding with Montenegro's key strategic development areas.

Keywords: climate change, adaptation, business

Introduction

In the process of EU accession, Montenegro has ratified two important documents related to the emission of greenhouse gases as the main causes of climate change.[15] With the ratification of the UNFCCC and the Kyoto Protocol, Montenegro joined the countries that share the same concerns and play an active role in international efforts to tackle climate change. During the last decade of the last century Montenegro recognized the importance of the environment and ecological behavior. On the 20th of September 1991, the Assembly of the Republic of Montenegro adopted the Declaration on the Ecological State of Montenegro (Official Gazette no. 39/91). However, in the period from the announcement until now, little has been done to preserve and protect the environment.

Since Montenegro is a member of the Convention as a Non-Annex 1 country, it has no obligation to reduce emissions of greenhouse gases. However, with membership in the Convention, Montenegro has committed to periodically prepare an inventory of greenhouse gas emissions as part of the preparation of the National Report under the UNFCCC, as well as to prepare the report on the vulnerability of its natural resources and the economy as a result of climate change. First draft of the national greenhouse gases inventory for 1990 and 2003 was made in 2005 in the framework of the Memorandum of Understanding signed between the Ministry of Environment of the Republic of Italy and Montenegro.

[15] Montenegro has ratified the United Nations Framework Convention on Climate Change by succession in 2006, becoming the member of the Convention as a non-Annex 1 country on 27 January, 2007. The Kyoto Protocol was ratified on 27 March, 2007. (The Law on Ratification was published in the Official Gazette of RM no. 17/07), Montenegro became its member as Annex B country on 2 September 2007.

Table 1 - Emissions of greenhouse gases and participation by economic sectors in 1990 and 2003 (Source: INC Montenegro on Climate Change within United Nations Framework Convention on Climate Change, Ministry of Physical Planning and Environment, 2010)

Sector	Basic 1990.		2003.	
	CO_2e (Gg)	%	CO_2e (Gg)	%
Energy sector	2.540,28	50,1	2.656,60	49,9
Industrial processes	1.642,04	32,4	1.889,13	35,5
Agriculture	783,59	15,4	655,16	12,3
Waste	104,37	2,1	119,28	2,3
TOTAL	5.070,28	100	5.320,17	100

The emission of carbon dioxide from the energy and industry sectors in 2003 and in 1990 slightly decreased, as the volume of production of Thermal Power Plant Pljevlja and major industrial emitters of greenhouse gases is not significantly different for the observed years. Emissions of synthetic gases have increased compared to 1990 because of the increased production of aluminum in 2003. Reduction in CO_2 emissions between 1990 and 2003 was 118.37 Gg, or 2.58 % reduction.

The First National Report of Montenegro on climate change[16], provided the first estimates of the annual costs of climate change in Montenegro. Analysis included assessment of the following areas:

- Agriculture and Forests: Climate change impacts on reducing corn production at the national level, as well as the gross income from farming.

[16] The process of preparation of the Second National Report of Montenegro on Climate Change is ongoing.

- Agriculture and Forests: Climate impact of increasing water consumption for irrigation of crops and the cost of pumping and delivery of additional water for irrigation.
- Tourism and Recreation: climatic effects of rising temperatures on the visitation and the costs to foreign and domestic tourists in Montenegro.
- Water resources: climate impacts of decreased separation of gross revenue from the sale of electricity from hydropower plant Mratinje on the river Piva.
- Health: the impact of climate on the growth of the economic value due to additional costs of living- related to mortality in Montenegro, due to increased warming (Ministry for Spatial Planning and Environment and United Nations Development Programme in Montenegro 2010).

To estimate those costs three scenarios were applied: A1B BB The near future (2001-2030) , A1B DB: Far Future (2071-2100) and A2 DB: Far Future (2071-2100).

Table 2 - Preliminary estimates of the average annual damage from climate change, million € (Source: Ministry for Spatial Planning and Environment and UNDP Montenegro, 2010)

Nature of influence	Scenario for climate change		
	A1B BB	A1B DB	A2 DB
Reduced corn production	0,016	0,043	0,81
Increased need for irrigation of crops	0,074	4,44	4,41
The increase in temperature - Reducing the cost for tourists	(13,90)	33,20	33,50
The increase in temperature - Value of lost lives	-	-	4,60
Reduced surface runoff	6,60	12,80	-

Although there is a lack of data in certain sectors, the preliminary results obtained can serve as a good basis for further research and adoption of appropriate policies and measures. In the agricultural sector, average damages from climate change due to a decrease in corn yield were negligible, primarily because of low production. In the event of increased irrigation of crops on average annual losses are higher than expected compared to the relatively small area of land. In the tourism sector, for the A1B scenario BB, short-term climate change can be good for tourism because it generates revenues of 13.90 million. If the average and maximum temperatures rises the tourists will, even in summer months, visit the northern areas instead of beach, and there will be losses (Ministry for Spatial Planning and Environment and United Nations Development Programme in Montenegro 2010).

According to the TNA report[17] from 2012, it has been estimated that the changes in the amount and mode of precipitation reduce the potential for generating electricity from hydro sources up to 25%. Estimated costs of climate change only in the tourism sector can lead to a significant decrease in revenues in the range of 33 to 68 million per year. The negative effects will be manifested primarily in agricultural production by reducing yield, cultivated land and the quality of agricultural land.[18]

[17] Technology Needs Assessment - which aims to identify priorities for reducing emissions and for adaptation to climate change in a country.

[18] TNA for Montenegro was conducted through a project which was implemented by the Ministry of Sustainable Development and Tourism - Department for supporting the National Council for Sustainable Development, in the period May 2011 - October 2012. This project is funded through the Environment Fund of the G2G Dutch Government through NL agencies operating within the Dutch Ministry of Economic Affairs, Agriculture and Innovation.

Climate change and business in Montenegro

Many would agree that the climate has significantly changed over the last few decades. We can feel the change and recognize it as extreme weather events, manifested as snow and storm surges or heat waves resulting in costly and damaging droughts and floods. Unfortunately, experts say this is just the beginning. It is projected with a great deal of certainty that Montenegro will face even greater impacts of changing climate – the Mediterranean will be particularly affected, becoming hotter and drier, while Northern regions can expect higher levels of rainfall. Given the interdependencies between climatic conditions and production processes and services, it is evident that these changes in climate patterns may affect many businesses. With this in mind, business as usual should no longer be an option.

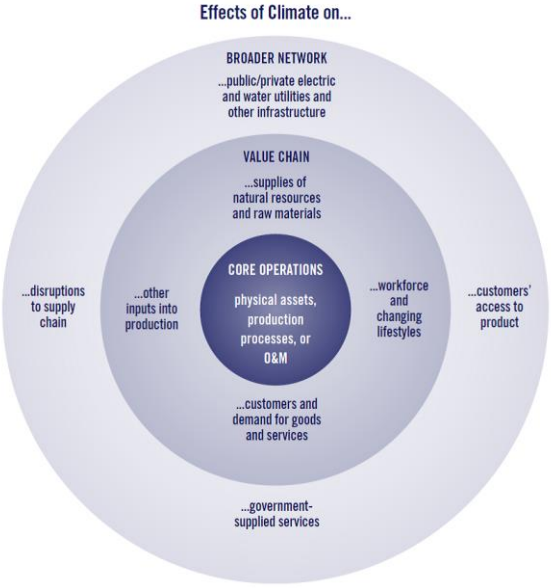

Figure 1 - The Risk Disk (Source: Pew Center on Global Climate Change)

The figure above demonstrates how climate change can affect different aspects of business processes – core operations, value chain and broader network. Therefore, in order to adapt, companies need to evaluate risks in each segment and integrate these when planning for further activities. It is also important not to forget that these risks can be diverse in their character. They can come from physical and operational changes in the environment, causing shortages in raw materials and damage to other assets. None the less, they may result from the regulatory framework for climate change mitigation that is a part of Montenegro's international legal commitment. This may trigger further financial, market, political and reputational risks (Montenegro Business Outlook, 2013).

On the other hand, climate change adaptation should not only be about vulnerability and risk. It is also about opportunities and benefits. Case studies that we examined demonstrated that it is cost effective, it helps avoid operational disruptions, but it can also bring expansion to new markets and services, reputational benefits and competitive advantage over companies in the same industry that fail to address the issue.

However, we should not overlook the fact that both risks and responses vary according to the sector. Those identified as the most vulnerable are agriculture, energy, tourism and forestry, coinciding with Montenegro's key strategic development areas. In practice, this means that businesses relying on water will be affected due to projected water scarcity. This will be reflected on energy supply and demand, a sector that is already susceptible to even minor disturbances. Thus, an exemplary adaptation response for some companies may be to consider including more solar sources in their energy mix. Fortunately, there are numerous other examples of good practice that can be a valuable lesson for Montenegrin companies.

One of the climate impacts Montenegro is likely to face, is the change of the precipitation pattern. According to the recent study Technology Needs Assessment for Climate Change Mitigation and Adaptation for Montenegro, it is estimated that potential revenue loss caused by climate change at the Hydropower plant Piva may amount to around 7 million Euros per year as of 2030. Although this may seem as a staggering figure, and it refers to a distant point in time, it makes a striking point allowing us to perceive the potential scale of the problem. Clearly, for operational systems that are not as big and complex, the damages are likely to be less costly, but at the same time, these smaller companies might have weaker adaptive capacity, if having less resources at their disposal. So, if we are to prevent these types of losses, we need to act immediately.
Alternatively, we will need to clean up after the damage has already been done. Governments and companies in developed countries invested substantial resources in technical advancements and research on this topic. Therefore, wise leaders should take from their experiences and learn valuable lessons that can be transferred and implemented in their respective sectors. Our focus in this issue will be at the sector that has been in the spotlight of Montenegro's development agenda - energy.

We mentioned potential variability of water resources and its implications for energy production, with particular emphasis on HPP Piva. Some of the world`s leading energy companies experienced this similar problem years ago. One of them is Hydro-Québec, Canadian utility company focused mainly on hydro source power generation. After an ice storm in 1998, they suffered $US 705 million in damages. This was a wakeup call for the company's management, who decided to allocate over a billion US dollars in infrastructural adjustments. They also invested in building a solid knowledge base enabling them to make better informed decisions in the future. One of the challenges they encountered is the difficulty of quantifying benefits from avoided climate change impacts, a problem

concerning world class economists for years. Still, despite all the difficulties, Hydro-Québec expresses a high level of satisfaction with the gains resulted from their climate change adaptation investment program (www.hydroquebec.com).

Taking our case back to HPP Piva, we acknowledge that a tremendous amount of resources are needed for a similar programme to be implemented there. On the other hand, its owners, Montenegrin Electricity Company (EPCG) and their Italian partner A2A, might need to consider integrated management of their resources, and before taking serious investments in the infrastructural domain, consider collaborating more tightly with research institutions and strengthening the data allowing them to plan more accurately. We showed that uncertainty in this area is significant, but in accordance with the precautionary principle, we suggest incorporating this issue seriously in your future operations, planning and design (Montenegro Business Outlook, 2013).

Similar recommendations can be made for other types of businesses potentially affected by climate change, such as those considering investing in mini and micro scale HPPs whose specific location and natural conditions of a site will determine whether they will succeed or fail in the years to come. Other opportunities will come from fast-changing regulations in the areas of climate and energy.

When looking into new regulatory obligations, one of them comes in the form of the EU Emissions Trading System. This is one of the main mechanisms that the EU uses in combating climate change. Under this scheme, trading with carbon credits is made available, in order to meet carbon dioxide reduction targets. It is important to emphasise its sector approach, encompassing power and heat generation, energy intensive sectors of industry and from 2013 onwards, commercial aviation.

As an EU candidate country, Montenegro adopted this system, which is now gradually being enforced. However, the upcoming implementation is costly, and very complicated. We now, therefore, present the case of Montenegro Airlines (MA), the Montenegrin national aviation operator, subjected to EU ETS and a pioneer in its implementation. As one of the companies responsible for complying with the EU ETS, Montenegro Airlines first needed to calculate its annual emissions (14300 t of CO_2 equivalent in 2012). In accordance with the ETS norms, the company was assigned a certain amount of emissions unit allowances (EUA) free of charge (13700 t of CO_2 equivalent). The difference must be met by purchasing carbon credits at the price determined by the market. Due to the fact that the aviation scheme was partially put on hold until October 2013, the obligations of MA decreased from cc. 120, 000 EUR to only 1,500 for 2013. However, it is expected that these expenses amount up to the original 120,000 EUR in 2014, once the emissions for flights all throughout Europe get embedded into the scheme. This levy can have significant consequences for MA's operations, resulting in transfer of these expenses to the end users, namely their passengers. As this is a doubtful solution, it is far more likely that MA will be supported by the Montenegrin government for a while. However, given the economic circumstances in the country, it is quite clear that this cannot be a long term solution, and above all, it is not sustainable.

Therefore, we learned that one of the possible answers lies in technological advancement of MA's fleet. Namely, by investing in new airplanes that emit less CO_2, Montenegro Airlines expenses towards ETS scheme will be less. This will surely involve a high amount of capital expenditure but is expected to pay-off in the long run, not to mention additional merits in terms of safety, public image of the company etc, which should jointly contribute to generating higher incomes. The key lies

in acting early, in order to maximise your possible profits. In times when we are witnessing success of the first solar powered plane, strategic planning, innovation and early adoption of new technologies are something that needs to be seriously considered.

Conclusion

On the level of the overall economy, climate change policy can be the driving force of development, in a way that it will contribute to the replacement and closing of inefficient industrial systems both from environmental and economic aspect.

Having in mind the fact that Montenegro is a developing country, where dominant technologies are large carbon-dioxide emitters, environmental protection and efficient solutions to environmental problems will become significant factors for future economic growth. The question is whether and to what extent the new terms, »green« economy experience will bring the change in economic strength and power of companies in relation to the current balance of powers?

In accordance with the current market trends, in the following period domestic companies will face the need to apply principles that would contribute to reducing harmful gas emissions and negative environmental impact. Various estimates say that in the first years, the financial investments will be required before companies actually start to achieve visible economic effects. This should be observed in the context of the current crisis, which may result in lower degree of practical implementation of planned activities. As one of the limiting factors of application, is the lack of professional competence of personnel, which may further hinder and delay the implementation of necessary measures.

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Climate change and its influence on Montenegrin economy

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Abstract

As it is said in the paper "Climate Change and International Security", climate change "is best viewed as a threat multiplier which exacerbates existing trends, tensions and instability. The core challenge is that climate change threatens to overburden states and regions which are already fragile and conflict prone" (High Representative and the European Commission, 2008).

However, climate change has a certain influence on the environment, as well as the economic life of a country, region and even the world. With environment affected by the climate change, it reflects on the economy overall. Production of goods and services also changes. In the markets, climate change affects the production and by that the market price of goods and services in some sectors of economy that are directly affected. In modern economies, markets are interconnected. By that it is meant on inter-industrial flow of goods and services. This flow could be a potential threat because it could spread the influence of the climate change throughout the entire economy, of the state or continent.

The economic impact of the climate change is very important. There are two types of climate change impacts. “First one affects people’s welfare and the second one affects main national indicators of economic activity” (UNDP, 2010, 6). The biggest influence when it comes to Montenegro could be on tourism and agriculture which will also be elaborated in the paper.

Keywords: climate change, economic activity, market

Introduction

The past couple of years were very successful for Montenegro as a country. Taking into account that we speak about a country that is in the transition process, it is on the way of building a democratic society. With 620.000 inhabitants, it could be considered one of the smallest countries in the Europe. At the end of 2008, Montenegro has applied for the EU membership and in the middle of 2012, the negotiations with EU have started. Having this in mind, Montenegro will have to be aligned with the EU in every possible way in order to access the EU in the future.

One of the first steps to achieve the goal is to make the efficient market economy. The country, at this point, is characterized by the population which is significantly poorer than it was previously, and one of the reasons is the recent crisis. This could not be considered as a trend, but when it comes to the age of the population, we could say that through years it has been increasing. Situation like this represents a burden for the country. Also, what should not be left out is the characteristic of Montenegrin ground of being susceptible to various natural hazards. By this, it is meant the following: “earthquakes, floods, droughts, landslides…, contributing to relatively frequent and “expensive” natural disasters” (Pavićević, 2012).

With official predictions of climate change in the world and by that in Montenegro, an increase of the average yearly temperature is expected. This implies that the droughts will follow and it could be an issue for a country which depends on agriculture and tourism. As it is already mentioned above, this could influence economic life in the country. First of all, it could affect the life quality. Besides that, what could be threatened is people's health, water resources, energy sector, agriculture, tourism, etc. All of this should push people to make a change (recognize the need to introduce certain measures for suppressing the influence) and adapt to the changing circumstances.

Climate change and Montenegrin economy

Integral parts of each market are its sectors. With climate change affecting some of the sectors, it could influence the goods and services provided by some of the market sectors. We could give some examples like changes in temperature. This is a worldwide recognized problem and many discussions were organized regarding this problem. This has a direct impact on precipitation and by that on the amount of water used by people or even industry. As it is said, Montenegro in large part depends on tourism and everything that follows could be considered as an example for possible future situation in Montenegro. Global warming could, directly or indirectly influence the environment of every country that attracts tourists. With very high temperature in the summer, or the winters without snow, we must admit that odds for good season are not very good. This is just one of the examples for the influence of climate change on economy.

When we speak about the damage caused by climate change, we could separate physical and financial damage. Everything that is already mentioned belongs to the first group of physical damage. Financial damage is something different because it is very difficult to measure it in some

cases. It is very hard to understand the economic impact of the climate change. Climate change may also affect the supply and demand for some of the goods and services. With higher temperatures and droughts, people need more water in order to keep healthy. In the same time, there is a lack of water and automatically price of the existing water supplies increases. This could be devastating in the long run. Besides this example, the area affected most with climate change is food. Sometimes, it reflects in reduction of supply and consumption of some goods. Considering that everything in economy is interconnected, we could make a situation: if it happens that the temperature in the country reaches the level at which the interest of foreign tourists starts to decrease drastically, they will turn to other destinations. The other side of rising temperature is reduction of agriculture products and as a result of that, the price goes up. Lower the supply, higher the price of the product. But, with less tourists, revenues, profit and consumption is smaller and that affects consumers' welfare, but also the producers of goods and services. This effect is called "The damage caused by climate change" (Callaway, 2004).

Assessment of the economic effects of climate change

In order to evaluate and make assessment of the climate change impact, some data and certain models must be used. As it is mentioned in one of the studies conducted in this area, evaluation of the damage caused by climate change has to be done for several sectors: "agriculture and forestry, tourism and recreation, water resources and human health in Montenegro" (UNDP, 2010).

We must say that in Montenegro there is no model based on collected data which could help in assessment of the economic effects of climate change. We can separate effects on two main areas which are important for understanding the climate change. First is related to the welfare of the

people (they are mostly related to the consumers and producers and change in their welfare as a result of influence of the market). The second is related to the influence of climate change on indicators of economic activity. When we talk about economic influence, it is evident that the indicators of economic activity are much more important than the welfare of the people. Main reason why this is significant is for the government policy in the future period. Influence on the indicators could be measured by change in gross domestic product of the country in the observed period. Besides that, three types of consumptions (personal, state and investments) are showing the country situation very clearly.

For making a good assessment of climate change influence on the country's economy, there has to be a good model. Since such a model does not exist in Montenegro, it is very hard to make a good assessment of the economic effects which is relevant and reliable, but it is not impossible. Of course that the assessment with good economic models could not be compared with an assessment without it, but the thing is that the rough assessment is sometimes enough in good decision-making process. For the making of decisions it is necessary to know the scope of the impacts that can be expected from the change. For example, we mentioned agriculture and forestry as one of the core sectors of Montenegrin economy. Perhaps the share of this sector is not as significant as the tourism and recreation, but it does not mean that the impacts of climate change are not valid for the country's economy as a whole. This is especially true for the agricultural sector. From the point of view of food safety, a large portion of domestic production is consumed domestically. For making a good prediction of what will happen after the climate change influence this particular sector, models have to be developed. As it is said often, "model is a simplified picture of reality, but not the simplified reality" (Vukotić, 2007). Good model can provide us with a good basis for making an analysis on which the future decisions will be made. It is certain that model is not

the perfect tool, but it is the best way of getting the solid information which is needed in order to reduce the wrong decisions to a minimum. Regarding this, these assessments can serve to point the critical parts of some sector, or the entire sector which could be affected the most. Conducted research in this field showed that the most affected sectors in Montenegro could be irrigation agriculture, tourism and recreation sector and potentially the production of hydropower. With a plan of future development of Montenegrin economy, the goal of accelerated development of two sectors has been set. Those two sectors are tourism and recreational sector and hydropower sector. This goal is aligned between private and public sector of economy in Montenegro. Considering the global warming and its influence on agriculture worldwide, it is expected that the irrigation in agriculture in Montenegro will be doubled 50 years from now. This could be a serious problem for the economy on a country level, not just one region.

We said something about data and the models needed for assessment of economic impact of climate change. At the end, after all that is said above, it comes to finding out which data can or cannot be used, which data is missing, which data is not correct or must be updated, which models are good or bad and are or are not applicable in a real life situations. Einstein said that he was not famous and respected because he found relativity formula, but because he proved the thousand other ways which are not good for getting the right formula. Having this in mind, we could say that from every failure we learn something new. Failure pushes us forward to create something new, something that has not existed before. “For example, in the case of the forestry sector, the planned methodology for assessing the impact of changes on the growth rate of trees in the first place should include the time required for the removal of trees and volume removal, and to establish order and diameter of trees in forest stands of the same or different ages that are subject to management; secondly is to

include the current net worth stands (based on the price of timber)" (UNDP, 2012). The problem with this kind of the approach is when you do not have some of the needed information about the situation. If we think about all these data, some of it has never been done in Montenegro. Maybe the data even exists, but it is very hard to come by. As a country with such a high biodiversity, Montenegro has recognized what is noted above and is trying to solve these issues through a project of forests register. That is one of the first stages of development of the system for proper analysis of economic impact of climate changes.

Energy and its potential to overcome the negative effects of climate change

Besides previously stated four sectors of economy which are considered most important, one is not mentioned but is very important for the whole world and it keeps the world spinning. We are talking about the energy sector. When it comes to the energy, it refers to a lot of different things: oil as energy, wind, water power, etc. Oil has been used as a main fuel in the world through many years, but it slowly begins to lose its primacy because of effects that are harmful for the environment. If we look at the auto industry, more and more of the hybrid or purely electrical vehicles are being produced and it is just a matter of time when they will exceed the number of vehicles powered with oil and its derivatives. On the other side, for the electricity production thermal power plants are the most common way of getting the electricity. On the figure below the distribution of electricity production is shown and that is the official data for 2011 by Eurostat.

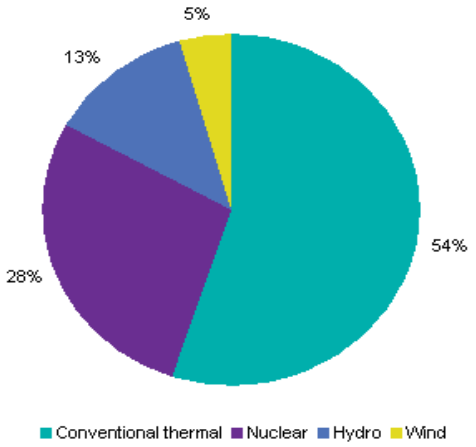

Figure 1 - Structure of electricity production in 2011 (Source: EUROSTAT, Electricity production and supply statistics)

Growth trend in energy demand is on the global level of 2.8% per year (Proceedings of the "VII Skup privrednika i naučnika", 2009, 445). If we look at the figure, renewable sources of energy have a share of under 20% in total production and that needs to be changed in the future. With Montenegro as an example, windmills for electricity production could take the place and maybe someday even a primacy over any other kind of electricity production source in the country. Basis for this statement can be found in good effects of combination of Mediterranean and mountainous terrain, especially in the central region of the country. Not only that this type of electricity production is not emitting any CO_2. The same is with the hydro power. Montenegro has a great potential for producing the electricity out of the hydro power but that is yet to develop, as well as the part related to the windmills.

Conclusion

In order to reduce the impact of climate change, governments of countries worldwide are doing everything to eliminate the negative effects of what is right now used for performing the regular daily activities. Before making any actions for achieving the goal, the first thing that should be done is raising the awareness of the situation in the world and that we will destroy everything done so far if we go further down this road.

After this, we need to develop macroeconomic models (as it is mentioned earlier above) so that we could use and develop them for the future situations related with climate change impacts. Except that, the data for the models is very important. With the data that is not to be trusted, model could be unusable. That is why it is needed for the data to be collected thoroughly for every segment of the economy so that it could be processed through the appropriate macroeconomic model for determining the economic effects of the climate change.

With the potential that Montenegro has in all of the fields that were the part of this paper, with a lot of commitment, the damage caused by climate change could be brought to the minimum.

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