

Chapter Four

**Outlook 2020:
Three Scenarios for
the Carpathian Region's
Future Development**



The purpose of this Outlook Chapter 4 is to help government policy-makers and other stakeholders identify the key environmental challenges faced by the Carpathian region, and to understand the economic and environmental impacts of the policies that could be used to address those challenges.

Environmental problems are often complex, interlinked and cross-cutting. For example, biodiversity loss is often the result of multiple pressures, such as loss of habitat through land-use change or habitat fragmentation and impacts from pollution. A mix of policy instruments may be needed to tackle the various causes of this loss. Policy packages need to be carefully designed in order to achieve desired environmental benefits at least-cost levels.

Many of the major environmental challenges that Carpathian countries face in the early 21st century are global or trans-boundary in nature, such as climate change, biodiversity loss, management of shared water resources, trans-boundary air pollution, trade in endangered species and waste disposal. As a result, there is an increasing need for countries to work together in partnerships to tackle these challenges.

Futures studies reflect on how today's changes, or lack thereof, become tomorrow's realities. They include attempts to analyse the sources and patterns of change and stability, and with foresight to be able to map alternative futures. The subjects and methods of futures studies

include the possible, probable and desirable variation, or alternative transformations of the present, both from a social and "natural" (i.e. independent of human impact) perspective. A broad field of inquiry, futures studies explore and represent what the present could become from multiple interdisciplinary perspectives (Slaughter 2005).

Chapter 4 introduces three main scenarios of anticipated environmental developments until 2020, and the underlying economic and social factors that drive these developments. The scenarios are based mainly on qualitative analyses of key economic, social and environmental trends and their impacts. In developing different scenarios, an explanatory (narrative) and qualitative approach was followed, consisting mainly of 'informed speculations' based on essential findings and key messages from the previous KEO chapters and the Regional Stakeholders Consultation (Banska Bystrica, Slovakia, October 2006).

The three scenarios of potential future development at the regional level are entitled "Business as Usual" (roughly analogous to "Markets First" in UNEP's GEOs-3/4), "EU policy first" (similar to "Policy First" in GEOs-3/4) and "Carpathian Dream" (which can be linked to "Sustainability First" in GEOs-3/4). The process of developing the three Carpathians scenarios was far more limited in time and scope than the one employed for the global (GEOs-3/4) scenarios (UNEP 2002 and UNEP in press).

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4.1 Methodological Approach

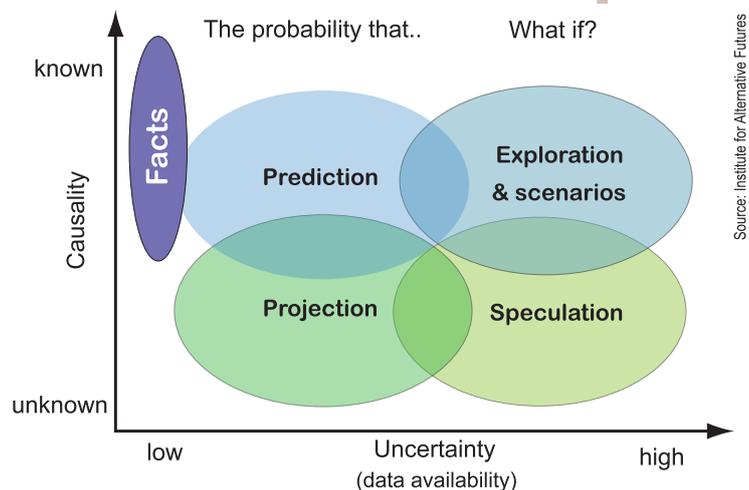
Why develop potential environmental futures? In many cases, the economic, political and/or social choices that are being made today will have effects on the environment far into the future. Full environmental impacts will often not be felt until long after such choices have been taken. This inertia makes policy decisions difficult: the costs of policy actions to change development paths will impact societies today, but the benefits in terms of improved environmental quality and/or negative effects avoided may only be realised and obtained in the future. However, decision-makers and politicians tend to reflect on the immediate needs of society today, not on future generations. This situation is exacerbated by uncertainty about the future; often the exact environmental impacts may be poorly understood or disputed, or both.

Futures studies take as one of their key points of departure the ongoing effort to analyse images of the future and distinguish possible, probable and preferred (normative) pathways. This includes collecting quantitative and qualitative data and information about the possibility, probability and desirability of change towards the emergence of alternative futures. Just as histori-

cal studies try to explain what happened in the past and why, the efforts of futures studies try to understand the 'latent potential of the present'. This requires the development of theories of present conditions and how conditions might change, and what their impacts may be.

Two factors usually distinguish futures studies from pure academic research. Firstly, futures studies often examine not only probable but also possible and preferable futures. Furthermore,

Figure 4.1 Futures development process



futures studies typically attempt to gain a holistic or systemic view based on insights from a range of different disciplines (see Figure 4.1).

The future cannot be predicted. The word “futures” in futures studies is plural because there is no one pre-ordained future that is fated to occur. Rather, there are many different possible alternative futures. Instead of predicting what the future will be, futurists use a wide range of meth-

odologies to engage in structured and thoughtful speculation about possible developments. This helps people prepare for whatever future comes, and positions them to be more able to create the kind of future they would actually prefer.

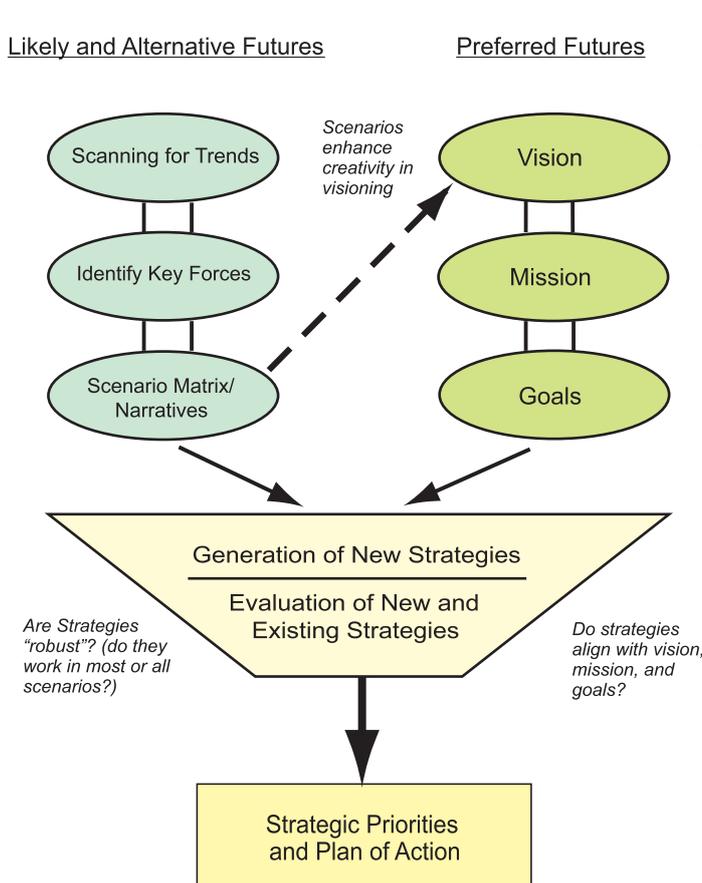
Scenario-building and storylines in this chapter are based on three main driver categories: economic driving forces, societal drivers and the environmental itself (see section 4.2 below).

Scenarios for the Carpathian Region

The timeframe covered by the three scenarios is from the current time to 2020. It was chosen because it is short enough for readers to imagine this near-future, and simultaneously long enough for changes to become apparent and for different policy responses on various issues to take effect.

In developing different scenarios, an explanatory and qualitative (narrative) approach was followed which mainly consists of ‘informed speculations’, based on essential findings and key messages from the previous chapters of KEO. Due to the lack of historically and regionally comparable data sets and time series across the Carpathians, quantitative modelling could not yet be carried out, but should be possible at a later stage.

Figure 4.2 Scenarios, predictions and projections



Scenarios are defined in this chapter as ‘plausible descriptions of how the future may develop, based on a coherent and internally consistent set of assumptions about key relationships and driving forces’ (see Leemans 2006, and below).

UNEP’s third GEO report (and the fourth to be published in 2007; GEOs-3/4) includes a description of four outlooks for the future at the global and broad (e.g. pan-European) regional levels. These four scenarios were given the following designations: “Markets First”, “Policy First”, “Security First” and “Sustainability First”. While it was not deemed either reasonable or possible to re-create all four of these scenarios for the Carpathians, due to factors explained below, three of them have been used as inspiration for potential futures of development and possible environmental impacts: “Business as usual” (roughly analogous to “Markets First” in GEOs-3/4), “EU policy first” (similar to “Policy First” in GEOs-3/4) and “Carpathian dream” (which can be linked to “Sustainability First” in GEOs-3/4) (UNEP 2002 and UNEP in press).



4.2 Driving Forces, Critical Uncertainties, Fundamental Assumptions and Challenges

This section explores the driving forces and fundamental assumptions that lie behind and distinguish the three KEO scenarios. It places the remainder of the chapter, including the scenarios themselves and the lessons drawn from them, in the context of the overall Conceptual Framework of KEO, which applies the well-known and widely accepted Driving Forces–Pressure–State–Impact–Response (DPSIR) model. **The driving forces** taken into consideration in KEO include governance and power (i.e. institutional and socio-political frameworks), demography, economic activity, human development and culture.

Three aspects of how driving forces manifest themselves were used for developing the Carpathian scenarios. The first provides the basic premises underlying and defining the three scenarios. For the KEO scenarios, these relate primarily to questions of governance and power (See Table 1). In effect, the scenarios explore different combinations of assumptions about **who** holds most of the power (i.e. public, private or civil sector); **how** governance is generally handled (i.e. top-down vs. bottom-up; focusing

on sub-national, national or supra-national scales); and **why** particular decisions are made, reflecting what is given primacy in defining and achieving human well-being (i.e. economic gain, social equity, environmental welfare or the security of particular sub-groups).

Scenario-building, and “storylines”, in this chapter are based on the differentiation of **three main driver categories**. These categories were described and assessed in Chapters 2 and 3 of this KEO report. Economic driving forces across the three scenarios include economic activities in the agriculture, energy and industry, transport, tourism and traditional livelihoods sectors. Social driving forces cover demographic processes, employment, household consumption and environmental democracy. Chapter 4 describes environment also as a driving force including biodiversity, forest resources, land resources, mineral resources, water resources, atmospheric processes, waste and hazardous chemicals, environment and security issues and the complex urban environment, because the environment itself influences future social and economic development.

Uncertainties across and within scenarios

With respect to scenarios, uncertainties deserve particular attention as they involve the use of multiple approaches. Having a set of scenarios intrinsically addresses certain aspects of uncertainty by varying specific assumptions, but there is also uncertainty within individual scenarios.

Uncertainty across the scenarios

In the development of each scenario, certain decisions were made for the sake of internal consistency over time and within the whole region. The basic premises were assumed to endure throughout the entire scenario period. Questions arose about the validity of holding these assumptions static across time and space. Developments in the scenarios could make one or more of the basic premises untenable at a certain point in time. For example, if there was to occur a backlash against the EU among the new Carpathian country members,

Source: UNEP, 2006a

adoption and application of the *acquis communautaire* would be invalidated or at least endangered in those countries affected.

Uncertainty within the scenarios

There are, obviously, other areas where our understanding of socio-ecological systems is incomplete, including the nature and strength of relationships between certain components. The individual scenarios reflect a particular representation of this understanding. Changes to specific assumptions could have dramatic effects on how a particular scenario unfolds. For example, using a different assumption about the sensitivity of the climate to anthropogenic emissions could lead to very different outcomes for agriculture, biodiversity and human well-being within the same scenario. These would not indicate a 'shift' to another scenario, but rather reveal the sensitivity of the scenario to particular assumptions.

Table 4.1 Basic assumptions made during the KEO scenario-building process

3 SCENARIOS:	<u>Business as usual</u>	<u>EU policy first</u>	<u>Carpathian dream</u>
Governance and Power Aspects			
Division of power	Dominance of multinational enterprises with active government support	Governments and EU machine; NGOs/public	Partnership relations between government, civil society and private sector
Governance patterns	Trans-national focus Weak or no government influence	Supra-national and national focus Strong governance Harmonisation with EU Acquis National Development Plans	Participatory activities at all levels Strong regional and local governance
Priorities and targets	Sustained economic growth Profit maximisation	Economic and social welfare Social cohesion Stability and prosperity Convergence	Social justice Regional equity Environmental sustainability Resource efficiency Social values and cultural diversity

Source: Pomázi, Szabó, 2007 (after UNEP 2006a)



4.3 Three Scenarios for the Carpathian Region

Setting the Scene: Recent Key Trends

The previous chapters of KEO have highlighted historical and recent trends, and key economic and social driving forces with regard to environmental changes and policy actions. Looking back over the years since 1975, it is clear that many dramatic changes have occurred in the Carpathian region. These developments and trends of the last three decades are explored herein, as they relate to and are used to help derive the future scenarios.

Recent policy reforms at the regional level have also seen a greater integration of policies, sectors and standards across groups of countries, for example with respect to water management and agricultural practices in the enlarged European Union. These developments suggest that government-led approaches have made some headway in tackling certain challenges.

Many citizens, governments and other stakeholders are encouraged by what they see as a continued shift in favour of a stronger social and envi-

ronmental agenda among both governments and citizenry. Concerted efforts to promote universal primary and secondary education and mainstreaming environmental and social adjustments into economic growth represent two steps in this direction. At the local level, growing grassroots and civil society engagement has directed attention towards livelihood issues with both local and regional relevance (UNEP 2006a).

Some stakeholders see the market economy as the dominant paradigm for fostering growth and well-being, with diverging opinions about its success. Proponents see the continued rise in oil consumption and prices as a basis for considerable growth, while sceptics focus on their negative societal and environmental consequences. The increasingly globalised nature of enterprises has created a more interlinked economic world. Some argue that the role of governments is tilted in favour of economic objectives, even while it may be shrinking overall in the face of increasing corporate influence in policy decisions and trade agreements.

These varied aspects of the recent situation exert very different pressures on human decisions and actions, with implications for human and environmental well-being. A continuation or change in any of these patterns could have a pivotal influence on major issues at local, regional and global levels. Government leadership, market incentives, protectionist motives or unconventional approaches could produce either marked improvement or steady declines for such pre-

vailing environmental concerns as freshwater quality and availability, land degradation, conservation of biodiversity and energy use with its associated climate and pollution effects. Socially, these different approaches could translate into radically different situations regarding equity and the distribution of wealth, peace and conflict, access to resources and health services and opportunities for political and economic engagement. (UNEP 2006a)

Business as Usual

“Business as usual” describes a future development/state in which no new policies or measures are implemented apart from those already adopted or agreed upon. ‘Normal’ socio-economic development continues without any particular constraints. The scenario below provides: an overview and storylines, potential development trends and policy implications within and across the sectors; a political, economic, social and environmental interface; and the most important regional highlights and future status images.

Under this scenario, most of the world’s development continues to be primarily driven by the global demand for goods and services. Privatisation, the production of specialised products and competition on the world market become key strategies for maximising economic growth. The world adopts the values and expectations prevailing in today’s industrialized societies. The exploitation of cheap natural resources, mass production and manufacturing efficiency are seen as the formula for lowering prices and competing in a global market where few inter-regional trade conditions exist. Economic development through better technology and management is given a high priority, as it is believed that this will lead to equity and social improvement in the shortest time. Governments are confident that the self-correcting market will yield a technological fix or solution of some kind to any problem that may arise, be it environmental or otherwise (UNEP 2006a).

Across the Carpathians, globalisation and liberalisation forces are also strong and widespread. Multi-national enterprises with active government support dominate the division of power, and GDP growth rates are high. Governance patterns focus on trans-national cooperation, but the actual capability and levels of government intervention are very weak. Government policies are driven by the promotion of steady economic growth, with profit maximisation as the only measurement tool.

Small businesses and local economies are threatened by trans-national corporations. Income inequalities are growing, and the so-called social security systems (“safety nets”) are greatly weakened. Regional disparities increase, and the depopulation of rural areas, especially of the most remote ones, accelerates. There is rapid migration from mountainous and rural areas toward cities and abroad. In general, quality of life as measured by the Human Development Index (HDI; UNDP 2006) stagnates or slowly improves at best.

Due to rapid globalisation, traditional values gradually disappear. Cultural, ethnic and linguistic diversity, and the integration of minorities such as the Roma population of the Carpathian region, are not acknowledged as important, and manifestations of unique local cultural differences diminish, due to cultural homogenisation.

The health care and education systems are underfunded, and the population rapidly ages, threatening inter-generational solidarity. Social cohesion weakens, and the unemployment rate, particularly among young people, may increase due to structural changes. Society as a whole ignores vulnerable groups. Increased immigration fills gaps in the workforce while creating social and ethnic tensions. The European integration process focuses only on the extension of the internal market, and the regulatory and watchdog functions of the European Commission are cut back. There is only limited and *ad hoc* dialogue and cooperation among different stakeholders, governments, business and civil society. This applies as well to the implementation of the recently approved Carpathian Framework Convention.

The share of agriculture both as a contribution to GDP and employment rapidly decreases, endangering food security and the viability of rural areas in the Carpathians. The concentration of land ownership continues in parallel with the collapse of small holdings.

In the forest sector, unsustainable practices of forest management prevail, for example clear-cutting and the introduction of non-indigenous species. Wood production exceeds the annual increment of forested areas. Reforestation and afforestation programmes are under-financed and thus languish. Due to weakened enforcement and inspection capacities, as well as increasing rural poverty, illegal logging and poaching reach high rates, and in some cases organised crime is involved. The most valuable tree species are cut at an accelerating pace.

The size of the total forested area decreases, and the structure and composition of tree species worsens. Unsustainable logging dominates overall forest management. Available land is rapidly exploited, built-up areas increase and developers favour green field investments. The private sector dominates the land ownership structure, followed by some state ownership.

Energy policies are guided by supply-side management and energy demand increases, while there is only a limited focus on energy efficiency and savings. The energy structure is still domi-

nated by fossil fuels, dependency on oil continues, the use of natural gas increases and renewable energy sources and nuclear energy become more important in the energy balance. The overall energy dependency on Russian sources and transit fees in the Carpathian region increases. The mining sector in the Carpathians creates local and trans-boundary conflicts.

Greenhouse gas emissions continue to rise, climate change impacts (e.g. storms, heavy rains, heat waves) become more apparent and weather extremes more frequent, causing huge economic and health damages. Flood risks and average temperatures increase. Winters become warmer and drier with less or no snow at all, with a strong impact on winter tourism. Epidemic events and vector and water-borne diseases occur more frequently.

Nearly all European regions are negatively affected by some future impacts of climate change and these pose challenges to many economic sectors. Climate change magnifies regional differences in Europe's natural resources and assets. Negative impacts include an increased risk of inland flash floods and increased erosion. The great majority of organisms and ecosystems have difficulties adapting to climate change. Mountainous areas face reduced snow cover and winter tourism, along with extensive species losses (in some areas up to 60 per cent under high emission scenarios by 2080).

In Central and Eastern Europe, summer precipitation decreases causing higher water stress. Health risks due to heat waves increase. Forest productivity declines and the frequency of peat land fires increases.

Adaptation to climate change benefits from past experiences gained in reaction to extreme climate events, specifically through the implementation of proactive climate change risk management adaptation plans.

Transport policies and infrastructural developments concentrate on highway construction with a limited focus on environmentally-sustainable transport modes. Public transport deteriorates further, mainly because of rising prices. Both traffic volumes and passenger cars per capita

strongly increase. Nature protection aspects are not integrated into transport development programmes, while freight transport also grows significantly.

Tourism is promoted with the development of large-scale investments (e.g. wellness centres, aquaparks). Mass tourism becomes a very common feature in the Carpathians. In contrast, rural and ecological activities are supported to a very limited extent. The management of tourist facilities does not consider environmental issues such as energy efficiency, water savings, the use of renewable energy and healthy food.

Uncontrolled and illegal movements of different kinds of waste, including hazardous and municipal, occur more frequently. The illegal trade of endangered species and transport of second-hand products (e.g. old cars, refrigerators, electronic equipment) becomes widespread. Control and enforcement capacities to stop illegal activities remain very weak, as does the related transboundary co-operation among regional and local governments.

Environmental democracy principles as enshrined in such multi-lateral environmental agreements as the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) are adopted, but their implementation is accompanied by many conflicts and a lack of any real competency. Public participation in decision-making is only formal, and access to environmental information is limited. Ecological awareness throughout society does not improve, since environmental education is incorporated into formal and informal education curricula only on a limited basis.

Overall household consumption increases, and there are no incentives to change social and individual behaviour. Some social groups regularly over-consume, while others have no access even to basic needs.

Consumption-driven waste generation increases and the share of final disposal dominates waste management. The use of hazardous chemicals

remains common. The occurrence of natural and man-made disasters becomes more frequent and, at the same time, more irregular.

Overall, urban environmental quality worsens. Generated wastewater is not, or only partially, treated. In most settlements, air quality endangers human health while respiratory diseases spread. The size of green areas decreases and they are poorly managed or untended. Unhealthy fast-food restaurants continue to spread, and obesity becomes the norm for many. There is no strict urban planning or regulation. Public transport systems deteriorate, as passenger cars eventually occupy all space. Households fail to follow environmentally-friendly behaviour; they do not save water and energy, nor collect waste separately.

Both habitat fragmentation and biodiversity loss continue. Landscape destruction increases, while invasive species spread and threaten biodiversity. The territory of protected areas decreases while the management of existing protected areas weakens. Nature conservation activities are under-funded when compared with their needs.

The over-exploitation of water resources continues, as does the discharge of pollutants into waters. Drinking water quality worsens as water prices increase without taking into account social consequences and affordability. Governments tend toward privatisation of the entire water sector. Drinking water pollution events and water use conflicts occur more frequently.

Air pollution increases mainly due to the large fleet of motor vehicles and transport volume. Air quality conditions worsen both in cities and in the countryside. The use of obsolete pesticides is not banned, while toxic substances are neither regulated nor controlled.

All in all, globalisation, liberalisation, privatisation and deregulation are the prevailing driving forces. The profit motive is everywhere dominant, while simultaneously, social and cultural homogenisation and the marginalisation of environmental values are widely spread.

EU Policy First

“EU policy first” is based on the GEO “Policy First” scenario which presumes the regional implementation of sustainable policy measures and strong collaboration between countries and citizens. It considers the successful implementation of EU environmental regulation procedures in the entire Carpathian region. Furthermore, the European Commission joins the Carpathian Framework Convention and its protocols.

Relevant EU-Wide Policies

Recently, there has been a wide range of policy developments that provide, to different degrees, relevant contexts for the assessments presented in this section. A few important developments merit particular consideration. These are: the Lisbon Strategy adopted in March 2000; EU Sustainable Development Strategy adopted in Göteborg in June 2001 and renewed in 2006; 6th Environment Action Programme (EAP) adopted in July 2002; and the enlargement of the EU to 25 Member States in May 2004 (including the Czech Republic, Hungary, Poland and Slovakia) and to 27 in January 2007 (including Romania and Bulgaria).

The previous EU enlargements added unique environmental assets to the EU, including rich biodiversity and landscapes and vast areas of relative wilderness. However, this positive development also represents an important challenge for EU environmental policy given the capacity building and financing needs required to support implementation of the *acquis communautaire*. The progressive adoption by the EU-12 Member States of the environmental “acquis” has already contributed to improving environmental quality in many areas, and there are opportunities for mutual learning about better policy design and implementation.

The 6th EAP sets out the EU’s environmental roadmap until 2012. It is the main vehicle to achieve the environmental goals of the EU’s Sustainable Development Strategy. It sets ambitious, long-term goals for environmental protection, and provides a stable framework within

which both the public and private sector actors in Europe and the rest of the world can take action. The programme focuses on four priority areas: 1) climate change, nature and biodiversity; 2) environment; 3) health and quality of life; and 4) natural resources and waste.

This updated EU Sustainable Development Strategy requires environmental objectives to be considered alongside their economic and social impacts (and vice-versa), so that integrated policies can be implemented for the benefit of the economy, employment and the environment. This strategy provides a longer-term perspective than either the 6th EAP or the Lisbon Strategy.

The Lisbon Strategy seeks to make the EU “the most dynamic and competitive knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion, and respect for the environment by 2010”. The strategy was reviewed in 2004 and re-launched in 2005 with a strengthened focus on economic growth, employment and “win-win environmental economic strategies through the development and use of eco-efficient technologies”. This new policy direction also offers new opportunities to take forward the development of cleaner environmental technologies. (EEA 2005)

Impacts on Carpathian Region

The above-mentioned recent EU policies and strategies have a great impact on the formulation and implementation of relevant policies and actions in the Carpathian region. In general, the application of these EU policies leads to short-term difficulties in adjustment, but longer-term benefits for the future development of the region.

Carpathian governments recognise the need for stronger coordination of policy efforts and structural reforms. The European currency (Euro) is adopted across the region. Most policies become harmonised with EU regulations and standards. All countries attempt to take serious efforts in

Policy-Guiding Principles in the Renewed EU Sustainable Development Strategy

Promotion and protection of fundamental rights

Place human beings at the centre of the European Union's policies, by promoting fundamental rights, combating all forms of discrimination and contributing to the reduction of poverty and the elimination of social exclusion worldwide.

Solidarity within and between generations

Address the needs of current generations without compromising the ability of future generations to meet their needs in the European Union and elsewhere.

Open and democratic society

Guarantee citizens' rights of access to information and ensure access to justice. Develop adequate consultation and participatory channels for all interested parties and associations.

Involvement of citizens

Enhance the participation of citizens in decision-making. Promote education and public awareness of sustainable development. Inform citizens about their impact on the environment and their options for making more sustainable choices.

Involvement of businesses and social partners

Enhance social dialogue, corporate social responsibility and private-public partnerships to foster cooperation and common responsibilities to achieve sustainable consumption and production.

Source: European Council, 2006

Policy coherence and governance

Promote coherence between all European Union policies and coherence between local, regional, national and global actions in order to enhance their contribution to sustainable development.

Policy integration

Promote the integration of economic, social and environmental considerations so that they are coherent and mutually reinforce each other by making full use of instruments for better regulation, such as balanced impact assessment and stakeholder consultations.

Use best available knowledge

Ensure that policies are developed, assessed and implemented on the basis of the best available knowledge and that they are economically sound and cost-effective.

Precautionary principle

Where there is scientific uncertainty, implement evaluation procedures and take appropriate preventive action in order to avoid damage to human health or to the environment.

Make polluters pay

Ensure that prices reflect the real costs to society of consumption and production activities and that polluters pay for the damage they cause to human health and the environment.

reforming their social security systems by reducing their financing. In the short run, this results in some political protests, and even social conflict, and a temporary decline in economic growth. Deepening social and regional inequality become major challenges. The five Carpathian EU member states experience post-accession political, economic, social and environmental challenges, culminating in a crisis of confidence in, and a sense of frustration with, the fact of EU membership.

There are strong governmental interventions in the marketplace. The political commitments and policy-guiding principles formulated in the renewed EU Sustainable Development Strategy in 2006 serve as an overarching document to enhance sustainable development in the Carpathian countries (See Box 2). These policy principles are taken into consideration while Carpathian countries, regions and local governments formulate their own sustainable development strategies and plans.

The overall aim of the renewed EU Sustainable Development Strategy is to identify and develop actions to enable the EU to achieve continuous improvements to the quality of life, both for current and future generations. This is done through the creation of sustainable communities that are able to efficiently manage and use resources, and to tap the ecological and social innovation potential of the economy, ensuring prosperity, environmental protection and social cohesion. However, there is a risk that these commitments are overwritten by economic and competitiveness fears and deepening social problems. Governance failures increase due to an inefficient coordination mechanism which threatens the implementation of common policies including environmental policy. At the same time, trans-regional and trans-local co-operation strengthen to compensate for supra-national and national failures and incompetencies. Carpathian members of the European Parliament are directly elected by their constituencies and become more accountable.

National development plans define overall economic and social development in the region. In the Carpathian countries there is a strong desire to enhance stability and prosperity, strengthen social cohesion and catch up with the quality of life existing in the former and richer EU Member States.

The share of agricultural output to GDP slightly decreases while the EU Common Agricultural Policy (CAP) guides the whole process of agricultural restructuring, moving it toward more environmentally-friendly practices. Agricultural subsidies are reduced and strictly tied to environmental standards which enhance extensive and labour-intensive agricultural methods. The share of ecologically-produced (bio-friendly) agricultural goods increases. The production of genetically modified organisms is encouraged by the European Commission and under negotiation within the Cartagena Protocol and WTO.

Forest cover stabilises or slightly increases as the share of unsustainable logging decreases. Most illegal logging is stopped due to serious inspection measures. The area of land withdrawn from agricultural cultivation increases because of the impacts from the CAP and decreasing subsidies.

Certification systems such as the Forest Stewardship Council for sustainable forest management are widely introduced and implemented throughout the Carpathians. Sustainable forest management is strengthened through the EU Forest Action Plan.

The energy intensity of the economy declines and converges towards the EU-15 average. Energy security is at the top of the agenda, making diversification of energy sources a key issue. The use of renewable energy sources is continuously supported by both EU and national government funds and through the taxation system. Energy security goes hand-in-hand with climate security, but this could easily be negatively affected from outside the region. Intelligent energy systems supported by the EU spread across the region. Trans-national corporations prevail in the productive and service sector; however, small and medium-size enterprises enjoy positive discrimination support.

Environmental management systems in enterprises become commonplace, while corporate social and environmental responsibility becomes stronger.

Energy diversification and energy mix are a great concern, and particular attention is given to renewables and biofuels. By 2020, greenhouse gas emissions are reduced by 30 per cent compared with the 1990 level. Climate-friendly economic activities and consumer behaviour are strongly supported through national governments' and EU budgets and other sources. Traditional air pollutant emissions are further reduced while some improvements occur in urban air quality.

A more balanced approach is followed among different transport modes than in the "Business as usual" scenario. However, the main focus still remains on road construction. The share of public transport is maintained or slightly increases. There are incentives to increase the use of biofuels in vehicles but these changes are outpaced by volume effects, as individual passenger transport continues to grow.

The Carpathian countries need to guarantee a balance between ensuring the satisfaction of tourist demands and the protection of the environment. The EU identifies best practices in sustainable tourism to be promoted for the benefit of Carpathian tourism. The Carpathian sustainable tourism network is supported by the European Commission.

An old connection, 'harmony between nature and man', continues to gradually disappear from everyday life. These links need to be reconstructed on a new level by applying new tools. The EU supports the preservation of language and cultural diversity in minority groups including the integration of Roma people. This provides a greater chance for the survival of traditional cultures and livelihoods.

EU policy aims at maintaining and strengthening regional and social cohesion for the budget period 2013 to 2020. Huge funds are made available for sustainable, rural and agricultural development in the Carpathians, helping to decrease the social divide between rich and poor people as well as regional disparities.

Taking into account the ageing of populations in all Carpathian countries, the sustainability and adequacy of pension systems remain an important issue for the coming decades. The EU continues to support the efforts of Carpathian states to modernise their social protection systems. Carpathian countries reduce their public debt to meet “Maastricht criteria”, raise employment rates and productivity and reform health care systems. Human populations stabilise or slightly increase while migration to cities weakens.

A moderate convergence occurs towards the EU-15's quality of life, with an increase in salaries and social benefits, while child poverty decreases due to strong social policies.

While current consumption levels continue, at the same time environmental awareness is on the rise. The demand for environmentally-friendly products and services increases, but most people cannot afford to buy them. Consumer consciousness increases, fair trade rules are better implemented and eco-labelling schemes for goods and services are provided with robust consumer protection efforts.

There are few border controls in the internal (or common) market of the EU. The movement of waste and illegal trade of endangered species thus takes place with greater ease and frequency. Inspection and enforcement capacities weaken due to a lack of consideration in public sector reforms.

However, trans-regional cooperation in environmental protection and nature conservation improves at all levels. There is a strong intention followed by actions to implement Aarhus Convention principles: participation in decision-making is ensured, environmental and sustainable development issues are incorporated into the education curricula and free access to information on the environment is facilitated. “State of the Environment (SoE) reports” are regularly prepared at many levels of government. Governance is a mixture of top-down and bottom-up methods, and the principle of subsidiarity gains its share in decision-making.

The Natura 2000 network and other protected areas grow in size. By 2020, biodiversity loss in

the Carpathians is fully halted, thanks to the application of the Birds Directive and Habitats Directive. People in the countryside are recognised as guardians of cultural and natural landscapes, and they receive the necessary moral and financial support to pursue their activities.

Huge infrastructure developments financed through the EU Cohesion Fund and Structural Fund threaten the conservation-rich natural values of the Carpathians, but their negative effects are minimised through careful planning, and by the application of strategic and project-based environmental assessments. Full compliance with the EU mining waste directive diminishes negative environmental effects of the mining sector in the Carpathians.

The Carpathian countries work toward improving their integrated water resources management. The rational use of water spreads among all users including households, businesses and farmers. There are tangible results in reaching the good ecological status of all water resources required by the EU Water Framework Directive's provisions.

The generation of municipal waste slightly increases. The efficient use of natural resources is enhanced by applying the concept of life-cycle thinking and promoting reuse and recycling. By applying strong economic incentives, recycling rates for paper, plastic and metals increase. A waste ‘prevention’ philosophy prevails over waste ‘management’ policy. In the management of chemicals, the EU's relatively new regulation on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) is strictly enforced, diminishing health risks for the general population.

Regarding climate change and related natural hazards, average precipitation and temperatures, and flood events increase. Winters become warmer and drier with less snow. Epidemic events and vector-borne diseases occur more and more frequently. The EU Solidarity Fund compensates for only a small part of economic and health impacts.

Man-made and technological accidents are prevented or efficiently managed by the implemen-

tation of the EU's Seveso 2 Directive. Citizens are well-informed and prepared to confront the effects of potentially harmful events.

Urban environmental quality improves overall. Most generated wastewater is treated by applying best available technologies with reference to the EU Urban Waste Water Directive. Clean air prevails in most settlements while respiratory diseases caused by air pollution decline. The share of green areas increases. The 'sustainable city' concept is applied by municipalities, with politicians, the public, scientists and

green NGOs working together to increase public transport, pedestrian zones, car-free streets, cycling routes and sustainable housing. The use of obsolete pesticides is totally banned, and highly toxic substances are strictly regulated and controlled.

In conclusion, the "EU policy first" scenario provides great opportunities and, at the same time, uncertain challenges in the future development of the Carpathian region. Most of the future policies and development are determined by EU integration and extension by 2020.

Carpathian Dream

The "Carpathian Dream" scenario focuses on key regional issues and policy differentiation and derives from the GEO "Sustainability First" scenario, assuming the implementation of pro-environment and anti-poverty policies having highest priority, at nearly unlimited cost.

Conducting futures workshops, where participants brainstorm about the future, is a means widely used as a participatory approach in formulating future scenarios. Box 3 represents the final result of "brainstorming" activities conducted among various Carpathian stakeholders during the KEO Regional Stakeholders Consultation (Banská Bystrica, Slovakia, Oct. 2006).

In this scenario, it is broadly agreed that the concept of environmental sustainability put forward by the Brundtland Commission is necessary and beneficial to humans, even though there are disagreements among decision-makers about how it should be implemented. In any event, policy-makers recognize that achieving environmental sustainability relies on a multitude of potential interventions undertaken by individuals, groups, organizations and institutions across different levels and sectors of society. Three broad categories of approaches to environmental sustainability are widely pursued: the implementation of technological innovations; changing the structure of government,

laws and/or the education system; and changing consumer behaviour.

The change of paradigm produces other benefits such as simplicity, tranquillity and community gradually displacing consumerism, competition and individualism as dominant values. Tolerance becomes a key aspect of culture. A new "environment for development" paradigm emerges in response to the challenge of sustainability, supported by new, more equitable values and institutions. A more visionary state of affairs prevails, where radical shifts in the way people interact with one another and with the world around them stimulates and supports sustainable policy measures and corporate responsibility. There is much fuller collaboration between governments, citizens and other stakeholder groups in decision-making on issues of close common concern. At the same time, this scenario runs the risk that lower human consumption may lead to a reduction of trade and overall economic growth with uncertain consequences (UNEP 2006a).

By 2020, the two Carpathian countries (Serbia and Ukraine) not yet in the EU, become full members of both the EU and North Atlantic Treaty Organisation (NATO). This development determines the overall geo-political framework in the Carpathians. The Carpathian region is defined by increased partnership among different

Participatory futures workshop – main findings

Carpathian Dream (Living countryside), process approach

Now we see problems such as nature protection and depopulation. The aim of international conventions will have to focus on raising environmental awareness. Policy-makers realise that they have to contribute to making people aware of their responsibilities, as the Carpathian region cannot be managed without people.

Actions are taken to: revitalise traditional cultures (with EU policy support and funding); support eco-tourism (e.g. local authority support, protocol on sustainable tourism); improve site-specific management and nature conservancy plans; enhance administrative capacity to protect ecologically valuable places; support small ecological planning and regional products (e.g. through CAP and LIFE funds); and to better regulate the waste disposal system. Spatial planning visions are designed for the region as a whole. High quality education services attract young people in the region.

The Carpathians become a 'living countryside' where traditional ways of life are preserved and transmitted through generations. Policy interests favour nature protection, a clean environment and a high quality of life.

Carpathian Dream, sectoral approach

Demography and households: immigration into the Carpathians.

- development of zero-energy houses and energy-efficient villages

Industry: no mining but the development of brownfield activities, handicrafts and forestry continues.

Energy: 20% increase in renewable energy use mainly through the development of small hydro, biomass and biofuels.

- no nuclear energy
- increased gas consumption, decreased coal and oil use
- market-driven energy savings

Agriculture: promotion of organic farming and small-scale ecological farming.

- traditional species, old varieties and products
- advanced marketing system

Transport: shift from road to rail transportation.

- promote public transportation vs. private cars
- promote soft mobility and hybrid cars

Tourism: strong development of summer tourism (e.g. cycling, hiking, horse riding, water tourism, speleology, cultural and agro-tourism, paragliding, fishing, hunting).

- winter tourism diversification (e.g. spas)

Protected areas and biodiversity: increase in the total area of protected areas.

- protection of green/migration corridors
- gene banks to preserve endangered species
- measures to decrease habitat fragmentation

Source: KEO Regional Stakeholders' Consultation meeting report; UNEP 2006.

stakeholders. There is a permanent dialogue between governments and civil society and continuous consensus building, which allows for the establishment of efficient mechanisms and tools to achieve a more sustainable path of development. The direct participation of citizens at all levels further strengthens regional and local governance based on the subsidiarity principle. There is a very strong and decisive decentralisation in parallel with central government interventions and redistribution. Local taxation is dominated by the revenue side of the budget, while the implementation of locally-determined priorities, plans and programmes receives only supplemental support from central government budgets.

Decisive central and local government initiatives attempt to achieve commonly agreed environmental and social goals. In general, environmental sustainability, social justice and strong anti-poverty policies are formulated as basic premises of development, taking into account

the main objectives and principles of the Carpathian Framework Convention.

The economy of the region is characterised by qualitative growth accompanied with regional convergence. The contribution of the service sector to GDP is dominant, meaning that environmental policies are mostly directed by sustainable consumption patterns. The share of health and education as well as research and development in GDP are significantly higher, which contributes to human and social capital and changing behaviours among the population. Resource efficiency gradually increases, and social values and cultural diversity override economic interest and profit maximisation.

Population also increases, with young people immigrating to the Carpathians from other regions, due to high-quality educational services. The region in general is characterised by full employment, equal opportunities for both genders

and minorities (e.g., the Roma population), vulnerable groups and disabled people. Poverty and homelessness diminish, while life expectancy increases especially for men. All in all, the quality of life in general converges towards average standards within the rest of the EU.

In the agricultural sector, organic farming and small-scale ecological and traditional agricultural methods are promoted, along with traditional/domesticated animal and plant species, old varieties and local products, and local branding and advanced marketing systems. The use of genetically modified organisms (GMOs) is excluded in the Carpathian region, despite the existence of the Cartagena Protocol.

In the forestry sector, the multi-functionality of forests is pursued in a balanced manner, especially through the use of biodiversity, recreation and carbon sequestration. The process of deforestation is gradually reversed thanks to effective and extensive reforestation and afforestation programs and funding. Sustainable forest management practices become common across the Carpathians and among owners and users. Illegal logging and clear-cutting become practically non-existent.

Under this scenario, to address climate change impacts in the post-Kyoto period, it is necessary to ensure a dominant use of renewable energy sources of up to 30 per cent in electricity generation. Maximum but careful use of local energy carriers is required. The overall aim of mitigating climate change requires the attainment of a carbon-neutral or carbon-free economy. Regional and local climate change strategies are fully implemented including mitigation and adaptation. Climate-friendly behaviour is followed by local governments, the private sector and citizens. Nuclear power use is limited to current reactor capacity, while small-scale hydropower, biomass and biofuel energy sources are promoted. Natural gas consumption increases while coal and oil use both decrease.

Behavioural changes lead to changed production and consumption patterns. The number of zero-energy houses and energy-efficient villages increases widely, as does the use of renewable energy sources (e.g. solar, heat pumps, wind, biomass).

The frequency and magnitude of floods decrease as a consequence of comprehensive flood protection policies including water management, forestry, land-use planning, climate change and innovative financing. Economic damage and human losses from floods are minimised. Man-made and technological accidents approach zero, while public participation and access to information in hazard prevention and disaster management are fully ensured.

No mining activities are developed in the Carpathians, but there is a strong incentive to develop activities in restored brownfield areas, such as local industries and handicrafts.

In the transport sector, support is given to public transportation versus the use of private cars and non-motorised modes of transport (e.g. walking, cycling and climbing). There is a strong shift in freight transport from road to rail and in some cases to inland waterways.

Summer tourism activities are strongly supported such as cycling, hiking, horse riding, canoeing/rafting, speleology, cultural and agro-tourism, para-gliding, fishing and hunting. Enhanced support is also given to the development of eco-tourism, especially through local authorities. The Protocol to the Carpathian Convention on Sustainable Tourism is fully implemented. To preserve and revitalize traditional livelihoods and cultural activities, various actions are taken with EU policy support and financial sources.

Trans-regional co-operation is enhanced among regional and local governments. The illegal movement of waste and illegal trade in endangered species is greatly reduced due to the strengthened enforcement and inspection capacities of regional and local authorities. The subsidiarity and partnership principles also prove to be a basis for strong cooperation.

Environmental democracy is characterised by strong local and cooperative initiatives and actions. Public participation is enhanced and embedded in day-to-day decision-making and implementation. Environmental education is practiced in curricula at all levels of formal and informal education, while life-long learning becomes widespread. Ecological awareness

among the population is high and determines everyday lifestyle choices. There are few limits in accessing environmental information, and knowledge about the local state of the environment is freely accessible from home computers.

Nature conservation is deeply integrated into agricultural sectoral policies. Formerly indigenous species are resettled or reintroduced with support from local NGOs and governments. The total extent of protected areas increases, with green/migration corridors being established and strongly protected. Gene banks are established and operate to preserve endangered species. Effective measures are taken to decrease habitat fragmentation. Habitat revitalisation and reconstruction programs are supported by local and EU sources. Maintaining landscape diversity is an important priority of nature conservation policies. Site-specific management and nature conservancy plans are in place, while the administrative and management capacity for nature conservation is enhanced to protect ecologically valuable places. The eventual goal is towards an overall concept that no protected areas are required, thus aiming for a fully sustainable society.

Spatial planning visions are designed for the region as a whole. Sustainable practices drive land-use management including spatial planning and strong control over different types of functions. Soil contamination originating from agrochemicals and industrial activities is eliminated, and soil erosion is strictly controlled. Large-scale traditional mosaics of landscapes are entirely recovered while mining sites are fully recultivated and rehabilitated. Rehabilitated areas are used for different purposes such as afforestation, vineyards, recreation, local industries and handicrafts.

The good-quality ecological status of surface waters and groundwater aquifers is achieved in the entire Carpathian region. Sustainable water management practices are widely employed by all users of water resources. There are no industrial and municipal discharges into rivers and lakes. Healthy drinking water is available across the Carpathians, including free access to, and the affordability of, water. All watercourses are suitable for bathing and fishing. Major dams are decommissioned to ensure the free movement of water animals, including the migration of fish in parallel with the renaturalisation of some watercourses.

The vision of the Carpathian Ecoregion Initiative

Based on information gathered through this process, the partners of the Carpathian Ecoregion Initiative (CERI) agreed on a short statement, representing their shared vision for the region as follows: "Our vision is to achieve the long-term conservation of the unique nature in the globally important Carpathian Mountains and, at the same time, support the economy and culture for the lasting benefit of people through international partnership."

This statement was expanded into a longer sign-up vision statement to which more than 100 organisations have committed themselves. As a result of the CERI's data-gathering process, a range of maps displaying biodiversity and socio-economic data were also developed. Most important are the two maps identifying the CERI 'Priority Areas' for conservation.

To achieve the vision, the CERI mission was split into three overarching themes, or medium-term aims:

1) *Strengthen institutional development*

The structures and organisations conserving Carpathian nature need to maintain or increase 'their capacity to act'. To achieve this, legislation protecting Car-

pathian nature must be harmonised and strengthened, programmes need to be adequately financed and stakeholders at all levels need to be co-operatively involved in the processes of nature conservation.

2) *Develop a Carpathian ecological network*

The protective area network should be strengthened to ensure that the biodiversity of the Carpathians is effectively conserved and restored where appropriate. The network should support viable populations of species and maintain natural processes and evolutionary phenomena; perhaps most importantly, management of the network should be enhanced and integrated with the conservation of the region as a whole.

3) *Generate sustainable economic benefits for the people in the region*

As the Carpathian countries adapt to a more market-oriented system, it is vital that sustainable use of the region's rich natural resources is promoted in a way that will benefit the people of the region. Initiatives such as eco-tourism programmes, renewable energy use and the marketing of local products should be developed to provide a truly sustainable future for the region.

Source: WWF, 2001

Overall, urban environmental quality is very good. All generated wastewater is fully treated through the application of advanced technologies. Households use recycled water for washing, gardening and street cleaning. Clean air in most settlements is achieved, and thus respiratory diseases caused by air pollution disappear. The percentage of green areas is very high, and they are well-managed and tended. Over-consumption and hedonism shrink to minimal levels in society. Biologically-grown foods and healthy eating habits become widespread, while heart disease and obesity practically disappear. The sustainable city concept is followed by politicians and citizens, including the very high use of public transport, pedestrian zones, car-free streets, cycling routes and sustainable housing.

'No waste is good waste' waste prevention practices are implemented as a daily practice. Sustainable materials management and material flow analyses are incorporated into decision-making and planning. Illegal waste dumping is stopped, waste disposal does not exist and the 'recycling society' concept is practiced. The use of obsolete pesticides is totally banned, and highly toxic substances are strictly regulated and controlled.

In summary, the "Carpathian Dream" scenario is based on and embedded in the concept of sustainability. The implementation of this well-known concept includes economic prosperity, social justice and gender equality, decreasing regional disparities and a cleaner and healthier environment for the whole Carpathian region by 2020.

Conclusions

Each of the three scenarios presents a possible future including environmental, economic and social trends. The "Business as usual" scenario highlights globalisation, liberalisation, privatisation and deregulation as the prevailing driving forces. The "EU policy first" scenario provides great opportunities and uncertain challenges as well. The "Carpathian dream" scenario follows the sustainability concept and the full implementation of the Carpathian Convention and its protocols, including economic prosperity, social justice, gender equality, decreasing regional disparities and a cleaner and healthier environment for the people of the Carpathian region.

The three scenarios intentionally paint highly distinct storylines about the future, in order to present clear views for the audience. While such "black-and-white pictures" can at times be contradictory and uncertain, they can also stimulate, and serve as a basis for further thought and discussion among different stakeholders. Consequently, these scenarios can and should be further discussed, revisited and refined in the future, because the entire process is a dynamic exercise, while each presentation of the storylines can only be static. Further development of the outlooks would benefit from a more quantitative approach and analysis, and possibly modelling work.

Summary Table of Selected Issues Across Three Scenarios

	Business as Usual	EU Policy First	Carpathian Dream
Economic Driving Forces/ Pressures			
Agriculture	Share of GDP decreases	Share of GDP slightly decreases Common Agricultural Policy	Promotion of organic farming and small-scale ecological farming Traditional species, old varieties and products, advanced marketing system
Forestry	Unsustainable use of forests Illegal logging continues	Forest Stewardship Council certification for sustainable forest management	Pursuing multi-functionality of forests (e.g. biodiversity, recreation, carbon sink)
Tourism (sport and recreation)	Support of mass tourism	Support of rural and eco-tourism	Strong development of summer tourism Support eco-tourism (by local authorities; protocol on sustainable tourism)
Traditional Livelihoods (e.g. hunting, fishing)	Rapid elimination of traditional values	Support to cultural and language diversity Greater chances for survival of traditional livelihoods	Actions are taken to revitalise traditional cultures (with EU policy support & funding)
Societal Driving Forces/ Pressures			
Population and demographic development (e.g. structure of population, migration)	Population is decreasing and ageing; rapid migration from mountainous and rural areas	Stabilisation of population, weaker migration to cities	Immigration into Carpathians
Household consumption	Consumption increases in general	Consumption increases but environmental awareness also increases Consumer consciousness Fair trade, eco-labelling	Development of zero-energy houses and energy-efficient villages Use of renewable energy sources
Transboundary Issues/ disputes	Uncontrolled and illegal movement of waste (hazardous and other) Illegal trade of endangered species Legal and illegal transport of second-hand products No control and enforcement capacity Weak transboundary co-operation	No border control for the movement of waste (hazardous and other) Illegal trade of endangered species Legal and illegal transport of second-hand products No or minimal control and enforcement capacity Stronger transboundary co-operation at all levels	Strong enforcement and control capacity Very strong and borderless co-operation Subsidiarity works
Atmospheric Processes			
Climate Change	GHG emissions continue Weather extremities are more frequent	By 2020, GHG emissions reduced by 30 per cent Climate-friendly activities and behaviours predominate	Dominance of renewable energy source up to 30 per cent share of total energy Maximum but careful use of local energy carriers Carbon-neutral economy
Atmospheric Emissions, Acidification	Increasing release of air pollutants	Reduced air pollutant emissions	Air emissions are kept at minimal levels possible
Air Quality	Worsening air quality condition in cities	Some improvements in air quality	Clean air in most settlements
Waste and Hazardous Chemicals			
Municipal and Industrial Wastes	Consumption-driven waste generation increases Share of waste disposal increases	Consumption-driven waste generation slightly increasing Recycling rate to be achieved is regulated Waste prevention	No over-consumption Sustainable materials management Improved regulation of the waste disposal system
Hazardous Chemicals and Obsolete Pesticides	Continuing use of hazardous chemicals	REACH regulation is enforced	Strong restrictions for using or banning of highly toxic substances

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