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ARANGE Deliverable D5.3

Policy Frameworks to secure the Multifunctionality of Mountain Forests

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Abstract:

Deliverable D5.3 is concerned with summarising the current policy framework for mountain forest management aimed at ensuring the provision of the key ecosystems services looked at by ARANGE project and to identify options for further policy changes and their implications for multifunctional forest management, both on European and regional levels. This work is based on two earlier reports: ARANGE Deliverable D3.1 – Policy Frameworks as related to multifunctional mountain forest management, and ARANGE Deliverable D3.3 – Analysis of governance systems applied in multifunctional forest management in selected European mountain regions. It is, amongst other things, argued that the current platforms and instruments affecting mountain areas in Europe do not provide an effective or clear solution to promote multifunctional forest management, despite the fact that multifunctional forest management is already practically being implemented in all ARANGE case study areas. From the summarised results, this deliverable presents a general suite of challenges that may be seen as generic for forest management, generic for rural areas or specific for mountain forest management. The underlying purpose of this has been to gain a better understanding of the best policy level to address mountain forest policy and make coordination effective, as well as to define a possible way ahead. Some of the key issues that have been noted concern the balancing of ecosystem services provision and the role of science; strengthening local stakeholder involvement; enhancing regional initiatives; and Payments for Ecosystem Services (PES), economic oriented market instruments and economic incentives.

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1 INTRODUCTION

European mountain areas and forests are diverse, with each region featuring a distinct set of environmental conditions, tree species, risks and uncertainties. Mountain areas are at the same time also subject to a multitude of challenges stemming, in part, from inherent limitations of current (and future) approaches to mountain forest management. Examples of these limitations are structural factors (e.g. topography) that restrict economic opportunities, while changing basic conditions (e.g. climate change and biodiversity) is undermining ecological and social stability in mountainous regions. These trends are moreover coupled with many European mountain areas being structurally weak regions as regards to policy support and public awareness, which has raised serious concerns for the future sustainability of mountain areas. While this paints a rather bleak picture, it is this contextual background that has set the stage for the ARANGE project, stressing the need for taking action, so that future mountain forest management can operate under rapidly changing environmental, regulatory, and socio-economic conditions. In some mountain areas, populations are increasing, while in others, they are decreasing. The topography also varies significantly, from high mountains, such as the Alps and Carpathians, to low mountains, such as the Scandinavian mountains. In addition to topographical and demographic diversity comes geographical and climatic variations as well, ranging from the cold north to the warm south. However, aside from all these differences, one commonality across the case study areas chosen in ARANGE is that high forest cover remains a dominant feature and that forestry (together with agricultural activities) plays an important role for urban and rural communities in terms of different forms of livelihoods: they represent these large areas where a long tradition of wood harvesting is declining because it is not profitable enough, and also questioned about its impact on other socio-ecological services.

Mountain regions and their inhabitants are currently facing a multitude of challenges (e.g. loss of profitability, climate change, increasing natural disasters, loss of biodiversity, degradation of ecosystems and migration) but the same mountain regions also offer significant opportunities in terms of providing key ecosystem services such as sustainable timber production (including the wood for energy purposes), protection against natural hazards, water, biodiversity conservation, just to mention a few.

The concept of ecosystem services has raised increasing attention in recent years (e.g. MEA, 2005), and might be a key to properly address and value what had formerly been known as forest functions, goods, or services. Following the Common International Classification of Ecosystem Services (CICES) for Europe (CICES, 2015), three main groups of ecosystem services are addressed: provisioning, regulation and maintenance, and cultural services.

Translated for mountain forests and forest management, a suite of most prominent ecosystem services has been selected in ARANGE. It contains:

- Provisioning services, such as timber, biomass for energy, non-wood forest products and drinking water.
- Regulation and Maintenance Services, such as carbon storage, protection against landslide, rockfall, avalanches, floods, and habitat & nature conservation.
- Cultural Services, such as recreation and hunting.

The ones that were selected as the most important for European mountain areas are as follows:



Timber production, as the most important ecosystem services amongst the so-called provisioning services. This ecosystem service (or forest function) has been recognised for a long time and it is generally considered profitable and thus not demanding political support). It is generally addressed through forestry legislation and strategic documents. Timber production is, however, sometimes perceived or framed negatively in terms of other ecosystem services.



Carbon sequestration was recognised as an ecosystem service only recently, even though it has been acknowledged for as long as ecosystems have been studied. Its importance and marketability are based on the Kyoto protocol and emission trading. Due to its novelty, this ecosystem service is usually not incorporated into forestry legislation, only into strategic documents or separate acts and regulations.



Nature conservation is recognised in all case study countries, but in various forms. It was originally considered as more of a restriction than as a marketable service. In the last decade various forms of payments have however been developed.



Protection against gravitational hazards represents a substantial part of recognised protective functions, which are traditionally divided into soil, water and infrastructure protection. Only some of the case studies deal separately with specific hazards, such as avalanche protection or rock fall.

The demand for ecosystem services, as well as landownership structures and management goals, vary significantly across regions. Given the range of functions and services that can be provided by mountain forests, it is, as noted, necessary to evaluate each ecosystem service properly, not only to make decisions as regards their management but also to consider future developments. It is within this broader scope that this final report falls. More specifically, the intent of this report has been to frame the above-noted ecosystem services within a wider policy framework that currently has an impact on how mountain forests are being managed. The underlying purpose of this has been to gain a better understanding of how current policy

frameworks can help to secure multiple services of forest ecosystems in the context of sustainable forest management in the future.

To reach this better understanding, one ARANGE work package started by looking into key terms associated with multifunctional forest management within the context of governance and multifunctional forest management. This work was principally done through two reports, namely, ARANGE Deliverable D3.1 (Policy Frameworks as related to multifunctional mountain forest management) and ARANGE Deliverable D3.3 (Analysis of governance systems applied in multifunctional forest management in selected European mountain regions). One element that came out of these reports, as a validation for the whole ARANGE project approach, was that the term “multifunctional forest management” makes sense for a large panel of stakeholders as “the management of forests focused on preserving or strengthening several forest functions and services”.

The main objective of this final report is to summarise the current policy framework for mountain forest management aimed at ensuring the provision of the key ecosystems services looked at by the ARANGE project (hereinafter referred to as multifunctional forest management) and to identify options for further policy changes and their implications for multifunctional forest management both on European and regional levels.

2 MOUNTAIN FOREST-RELATED POLICIES AND THEIR INSTRUMENTS

2.1 Capturing a moment in policy-making

ARANGE deliverable D.3.1 – Policy framework as related to multifunctional mountain forest management – identified and reviewed policy documents relevant to European forests in an effort to determine their relevance to the mountain landscape and the provision of key ecosystem services (timber production, carbon sequestration, nature conservation and the protection against gravitational hazards) in mountainous regions. It is also, in practice, this deliverable that should have provided the foundation for this section. However, while a large bulk of this work remains valid, the world of policy-making does not stand still, so to speak, it moves forward and it changes. This is in contrast to the more natural scientific aspects of ARANGE, as policy-making is not bound by natural laws but rather by factors such as social movements and political willingness, socio-cultural factors that can be harder to predict than other aspects of forest dynamic modelling.

With this in mind, and since ARANGE deliverable D.3.1 was finalised in 2013, there have been several changes at the EU level that will have an impact on how European mountain forests of the future are managed – both in the short and long term. To illustrate, we have a new European Parliament in place, we have a number of new legislative acts (in part connected to the new programming period) and we have new structural funds and strategies that may (or may not) support mountain areas. So, before engaging a discussion on mountain forestry within this new frame, it makes sense to analyse the key changes of this frame and the implications they may have for mountain forests.

A new climate change and energy framework...

One significant document that will certainly affect the mountain environment is the new 2030 Climate and Energy Policy Framework that was adopted in 2014 (Council, 2014). The new framework aims to make the EU's economy and energy system more competitive, secure and sustainable by setting targets for having at least 27% renewable energy and energy savings. It is also pushing for the reform of the EU emissions trading system (EUTS) as well as a reduction of GHG emissions by at least 40% below the 1990 level by 2030. The new framework essentially builds on the 2020 climate and energy package but takes into account the Energy Roadmap 2050 (European Commission, 2011a), the Roadmap for moving to a competitive low carbon economy in 2050 (European Commission, 2011b), and the white paper on transport (European Commission, 2011c), reflecting the goal to reduce GHG emission by 80-95% below 1990 levels by 2050. The framework furthermore proposes a new governance framework based on national plans to assess progress over time and binding targets to increase the share of renewable energy and energy efficiency (following a review of the Energy Efficiency Directive) by 2030.

Regardless of how the 2030 Climate and Energy Policy Framework will be transposed and taken up across EU Member States, it will influence forest management directly, whether high-land or low-land, in the coming years. For instance, one concrete difference in the new framework is that it addresses energy efficiency targets directly, which is complementary to the Energy Efficiency Plan, the Energy Efficiency Directive and Resource Efficiency Roadmap. While it may be too early to say what the concrete effects will be, the framework has been developed to expand the use of renewable energy, which implies land-use changes, including forestry (e.g. agro-forestry measures to remove CO₂ from the atmosphere).

A new cohesion policy...

Another notable development is the recently reformed cohesion policy that will make available around 350 billion Euros to be invested in European regions and cities (Regulation, 1300/2013). Basically it will be one of the main investment tools by which the EU tries to reach its 2020 goals, namely, to create growth and jobs, to mitigate or adapt to climate change and energy dependence as well as to reduce poverty and social exclusion. This will in part be achieved through the European Social Fund (ESF) and the European Regional Development Fund (ERDF) that, amongst other things, provided financial support for the implementation of the previous EU Forest Action Plan (Regulation, 1301/2013). In this regard, cross-border, transnational and interregional projects on mountain forests and forestry represent an added value of cohesion policy.

Within the context of the reformed cohesion policy, two new instruments have been introduced to promote territorial development (rural, urban and coastal). These are the Community-Led Local Development (CLLD) and Integrated Territorial Investments (ITI) that concern all the funds covered by the Common Strategic Framework (CSF), including the ESF, ERDF, European Maritime and Fisheries Fund and Cohesion Fund as part of the Common Provision Regulations (Regulation, 1303/2013). The CSF seeks to improve coordination and secure the more targeted use of the European Structural and Investment Funds (ESIF). It is expected to improve coordination by focusing national and regional authorities' activities on a limited set of common objectives. CLLD is a specific tool for use at sub-regional level. It is based on the LEADER experience on community-led local development put in place from the early 90s that has been an efficient instrument in the delivery of development policies. Given the focus of these investment priorities (e.g. strengthen synergies between local actors) it will most certainly provide opportunities for rural mountain communities.

In addition, the continued "greening" of the cohesion policy represents opportunities to invest in natural capital to contribute to the achievement of "smart, sustainable and inclusive" growth by 2020. For instance, it is foreseen that the new cohesion policy contributes to the implementation of EU environmental legislation (e.g. Natura 2000) and will therefore have direct implications on how forests are managed in protected mountain areas. Also the integration of climate and energy considerations is expected to generate opportunities within forestry. There are furthermore on-going consultations for a number of macro-regional strategies, as part of European territorial development. One significant example of this is the EU strategy for the Alpine region (EUSALP), foreseen to be adopted in June 2015, that aims to improve connectivity

between Alpine mountain regions, foster sustainable growth and innovation, and ensure sustainability in the Alps. This region specific strategy opens up some interesting possibilities for the future (European Commission, 2014).

A reformed Common Agricultural Policy...

Following the new programming period, the Common Agricultural Policy (CAP) was also reformed in December 2013, covering the period 2014 to 2020 (European Commission, 2013). This follows in line with the Agenda 2000 reform, where the CAP was divided into two pillars. This structure remains whereby pillar 1 covers 'Market and Income Support Measures' and Pillar 2 covers 'Rural Development'. However, as direct EU funding for forests is non-existent because of the lack of a specific legal basis, this means that financing for forests in the EU comes mainly from the Rural Development pillar. For example, fostering knowledge transfer and innovation in agriculture, forestry and rural areas is one of the six priorities proposed for Rural Development Programmes (RDPs) in the period 2014-2020. Some of the new features of the CAP 2014-2020 includes the joint provision of public and private goods (e.g. payments for public ecosystem services), increased flexibility for Member States in implementing instruments available under Pillar 1 (e.g. reflecting the wide diversity of socio-economic and environmental conditions across Europe), and trying to make the CAP more effective and coherent (e.g. reducing the red tape for small scale and young farmers).

One of the changes that will affect mountain forestry in particular is the introduction of a "Greening Payment" under Pillar 1. Green Direct Payments will cover 30% of the funding available and will relate directly to the provision of environmental public goods (e.g. sustainable farming practices and climate change mitigation). All rural development programmes (RDPs) under pillar 2 will also be obliged to spend 30% of their budget on measures that are beneficial for the environment and climate change (and at least 5% on the LEADER approach). These new features relate directly to forestry measures, areas of natural constraints and Natura 2000 and are as such expected to have an impact on mountain forests. The new rules for pillar 2 will also allow for more flexible approaches. Measures will no longer be classified at the EU level (with minimum spending requirements) but it will be up to Member States to decide which measures they apply in order to achieve the targets set out amongst its six priorities for rural development. Especially those priorities that are relevant for forests, such as priority 2 on enhancing competitiveness of all types of agriculture and the sustainable management of forests, and priority 4 on restoring, preserving and enhancing ecosystems.

The 2013 CAP reform leaves in place many of the key features of rural development policy from 2007-2013. In particular, as in the past, the CAP will be implemented through national or regional RDPs that run for seven years. It is also expected that ESIFs, such as the European Agricultural Fund for Rural Development (EAFRD) and the ERDF, will continue to offer funding for forestry measures, and that the EAFRD will remain the main instrument for implementing the new EU Forest Strategy. Also the LEADER approach, having become a promising instrument for rural development and forestry, is expected to become more relevant in rural mountain areas. However, as with the other policy developments, it is too soon to assess the impact the reformed CAP will have on mountain forests, especially as some Member States are still

developing their RDPs for implementation in 2015 and onwards. There is nonetheless a risk that the balance between goals established at the EU level and implementation at the national and/or regional level will not be in line, which was the case for the previous CAP and rural development policy.

What does the future have in store?

These recent EU policy developments makes it is clear that the picture presented in deliverable D.3.1 was only partial. It presented a glimpse of the policy environment as it was in 2013. While it is too early to speculate on how the above-noted developments will affect mountain areas and forest, it is clear that the future will bring change for many mountain regions throughout Europe. It is also clear that the findings presented by ARANGE project have to be contextualised within the boundaries of these new instruments and measures, taking into account the lessons we can bring from the past. For instance, despite the noted developments in specific policy areas (e.g. agriculture, climate and energy) the actions taken by different sectors still maintain a purely sectoral rather than integrated development. It is as such expected that most measures for the 2014-2020 period will not specifically address mountain areas, but rather address the needs of specific social groups and/or areas. In terms of rural development, this risk is seen as even higher now as the freedom to choose between different measures and budgets are more in the hands of the Member States than before. Funding for mountain forests may thus become increasingly dependent on national priorities, which may be for better or worse.

Even more, the policy fragmentation and incoherence affecting mountain areas and forests seemingly remain at the EU-level. The existing platforms and instruments do not provide an effective way or solution, and there is still no institution (at least at the EU-level) that can effectively coordinate or facilitate a discussion on key challenges for mountain regions. However, despite the maintenance of *status quo*, it is promising that some change seems to be at hand, an example of this being the EU strategy for the Alpine region. Macro regional strategies of this kind may actually help to bring regional and mountain-specific topics back on the political agenda as well as help to facilitate change.

2.2 Mountain Forest Policy at National level

Forest policy at the EU-level is characterized by a paradox. On the one hand, from a legal perspective, the EU does not provide a common forest policy. This is due to an exclusion of forest products, with the exception of cork and some forest-related fruits, from the existing EU laws on common policies. The formulation and implementation of forest policy is therefore subject to the principle of subsidiarity and under the competence of Member States. On the other hand, there is a long history of EU-level actions as regards to forestry and forest monitoring measures. The picture is even more complicated as several policy areas, such as agriculture, environment, climate and energy, affect forests. Keeping this complexity in mind, as regards to geographical and policy diversity, there is as such not only a wide range of EU policies but also many national and regional instruments and tools that influence mountain areas and forest management across Europe.

This vertical (e.g. transposition of EU policies) and horizontal complexity (e.g. sectoral conflicts) has been confirmed within the scope of the ARANGE project, in particular, as the importance and particularities of tools or instruments relating to multifunctional forest management vary significantly from case study to case study. There are, however, some interesting similarities (and dissimilarities) between different countries that we will now turn to. For instance, most of the noted instruments were not created with a special emphasis on mountain forests. The intent will therefore be to present some legislative and regulatory similarities as well as to cover some economic, communication and information instruments affecting mountain areas throughout the ARANGE case study countries.

Legislative and regulatory instruments

There are in principle two comparable groups of legislative and regulatory instruments (including binding and non-binding policy documents) across the ARANGE case studies. These relate to forestry and nature conservation (and similarly related areas of operation) addressed through sectoral acts that will henceforth be noted as Forest Acts (including National Forest Programmes and Management Plans) and Nature Conservation Acts throughout this section. It should be noted that there are nearly no legally binding or national policy documents addressing mountain areas as a whole through the cases.

National Forest Acts

- Across the seven case studies, the principal legally binding document that regulates forest management is commonly known as the Forest Act. This document is applied under various names in the different regions but they essentially serve the same function. In the past, these Act(s) primarily aimed to ensure sustainable timber production and to protect (or enhance) national forest resources. However, in more recent years, most of these Act(s) have incorporated a range of additional issues, including area of operation concerned with forest functions, provision of ecosystem services and nature conservation.
- Legislation and regulatory instruments are also applied to regions of different sizes and types within the case study areas themselves. Regional forestry policy is, in some case studies, applied on administrative division units of the country, geographical units, (e.g. specific mountain ranges), landscape types, protected areas and forest regions. In each

case, the existence of regional laws, acts or regulations, as well as, regional policy strategies or programmes was observed; however, the importance and details of these regional-level documents differ significantly between the cases. For example in Austria and Spain, each lower administrative unit (“state” or “autonomous community”) can have its own legal norms focusing on different details compared to national legislation, while in Slovakia, this kind of legislation is still lacking, making the national Acts superior.

- Particular protected areas (e.g. national parks, protected landscapes, etc.) are usually designated by legally binding documents, and their management may be based on different principles compared to the management of other protected areas of the same category. Some countries (e.g. Slovakia) do not utilise this possibility often and the management of their protected areas depends mainly on national legislation. In contrast, special “forest regions” have been created in several countries (e.g. France, Slovenia) for management, monitoring and planning purposes while some countries (e.g. Austria) have special legislation for their state forests that can be considered as a special type of region.

Nature Conservation Acts

- The most important type of legislation (binding and non-binding) underpinning biodiversity and nature conservation in the case studies is commonly known as the Nature Conservation Act (or its equivalent). The ratio between the number of issues covered by these Act(s) and by the related regulations or other Acts vary from country to country. For example, Slovenia has a separate Cave protection Act, while in other countries (e.g. Slovakia) the Nature Conservation Act covers this issue. The Nature Conservation Acts principally provide a framework for the establishment of protected areas, such as national parks and/or nature reserves as well as for biodiversity protection outside protected areas. Specific protected areas are usually designated by special acts or regulations, at times individually or sometimes through legislative packages.

National Forest Programmes and Management Plans

- Within the context of national forest policy, most case studies have also adopted strategic documents constituting the basis for National Forest Programmes (NFPs). These national programmes usually constitute a set of priorities meant to address main challenges as regards to the management of national forest resources. They are usually elaborated for a designated period of time and are often accompanied by strategic action plans. It should be noted that the legislative basis for NFPs are not legally binding, but this varies somewhat from country to country. Other types of similar programmes are related to rural development, climate change (e.g. bioenergy, afforestation programmes) or biological diversity. Some countries have regional programmes. For example in Spain, in the Castilla and León Autonomous Community, regional development programmes have been adopted. These programs consider issues such as the lower importance of firewood collection; the use of the edible stone pine nuts and mushroom harvest; the increasing demand of natural areas for recreation and sports, the increasing social conscience for the need of nature conservation and maintenance of biodiversity.
- Another common tool as regards to the implementation of forestry-related legislative and other strategic documents at the operational level (e.g. forest stand level or forest management unit level) are Forest Management Plans (FMPs). These plans usually contain prescriptions related to multifunctional forest management and are implemented as independent legal documents, compulsory technical guides or as optional documents. The general trend is that the legal nature of FMPs is changing towards becoming less legally binding. However, in some cases, FMPs are still obligatory (e.g. Bulgaria, Slovakia or Slovenia). In other cases they are needed if the forest is to be certified (e.g. Sweden) or if

the forest owner wants to gain access to public subsidies (e.g. France for forest estate over 25 ha and to some extent Austria and Spain). Some countries have more regional FMPs (e.g. Slovenia and Spain) that allows for a focus on sustainability issues within a larger framework.

Economic instruments

In comparison with legislative and regulatory tools, economic instruments are usually more complex and difficult to compare as they, in most cases, integrate several areas of operation, ranging from forestry to agriculture and rural development together with recreation and traditional uses of mountain areas. However, commonly, economic instruments include what is labelled here as positive and negative economic incentives.

Positive economic incentives

- The most frequent type of positive economic incentive supporting multifunctional forest management relates to subsidies. In some countries subsidies are intended for private forest owners as well as for state enterprises (e.g. Bulgaria, Slovakia), in other countries (e.g. Slovenia) they are eligible only in the case of private forests. Their sources and the subject of support vary significantly. For mountain areas, many subsidies are connected to the Common Agricultural Policy and Rural Development Policy focusing on disadvantaged areas (e.g. Bulgaria, Sweden, Slovakia). Besides this, in some countries, specific economic instruments were implemented. For example, in Sweden, specific instruments are focused based on the traditional use of forests - Sami culture (i.e. reindeer herding). In this case there exists compensation for losses due to hydro-electric power stations and dams supported from Sami foundation. In Austria, some specific instruments include forest fire subsidies, subsidies for climate-friendly technologies and research. In Slovenia subsidies can be realised also in nature (e.g. in the form of tree plants)
- Different forestry measures and activities are supported on project basis, notably inside development programmes (e.g. funded through EAFRD), which can be devoted to specific cross-regional mountain massifs (e.g. France).
- It should be noted that labelling an economic subsidy as positive is somewhat subjective as some subsidies also generate conflicts or competition for the same natural resource (e.g. subsidies for wood energy).
- Tax benefits constitute another common measure to support multifunctional forest management. In this case, many different types of indirect support instruments are applied on the national level. One examples of this is the exclusion from property tax for the protection of forests (e.g. special purpose forests) or other non-production ecosystem services (e.g. Slovakia and Slovenia). Another example is tax exemption for forest owners as a public economic instrument (e.g. Bulgaria), or for forest reserves and NATURA 2000 sites or productive forests during 30 years after reforestation or natural generation (e.g. France).

Negative economic incentives

- Some of the negative economic incentives include penalties for breaching multifunctional forest management. These penalties are generally imposed implicitly and are a result from national legislation. Their application and effectiveness depends on national laws, which vary significantly across the case study regions. Effective penalties were implemented in Slovakia and Spain. Penalties in place but not fully adequate have been applied in France. Penalties used in Bulgaria and Slovenia are inadequate or ineffective.

Communication and information instruments

Communication and information instruments are mainly oriented towards specific sectors and usually intended for an entire country's territory, not for mountain regions specifically. These types of instruments serve two goals. First, to inform the public about the activities and matters related to forestry, and second, as an important instrument for various organizations and professionals as regards to knowledge transfer and best practices. Communication and information instruments are in this case divided into two categories, general and specific.

General communication and information instruments

- General instruments correspond to measures on a national or regional basis. For example in France, there are several informational instruments at regional level in the form of plans to promote road networks, wood supply, grouped cuttings, certification, unmanaged forests network, etc.

Specific communication and information instruments

- Specific instruments refer to activities or products, such as, plans, information boards, tables, internet portals, information systems or brochures, public information meetings, local owners groups animation, territorial forest commissions animation, individual advice to owners, training sessions as an important role of extension service (e.g. in France). For example, Austria elaborates and communicates the risks from gravitational natural hazards and the planned use of forests in the form of maps. Information tables, boards and paper brochures are used in Slovakia, Slovenia and Spain to inform about forestry in the case study areas. The majority of these types of instruments are aimed towards specific communities, such as the public or foresters. Other examples are GIS portals providing information on nature conservation, detailed GIS of local communities, and a GIS viewer of public forest service (e.g. Slovenia) or Forestry Information Systems intended for forest managers and the public (e.g. Slovakia), or the Environmental Objectives Portal providing information about national environmental targets and progress towards achieving them in Sweden.

3 CHALLENGES IN MOUNTAIN FOREST POLICY

From the preceding sections it is clear that European mountain regions are not separate but rather woven into a fabric of interconnected institutions, policies and sectors, all of which are having an impact on mountain areas, forests and ecosystem services that are experiencing rapid change. In other words, mountain forests and ecosystem services are susceptible to all the environmental and societal processes of change currently going on in Europe. Even more, it is clear there is currently no common framework under which all of these issues can be addressed and coordinated effectively.

In addition to the inherent social, economic and environmental complexity that characterises mountain forests, there is no common definition of what we mean by multifunctional forest management. This is why ARANGE Deliverable D3.3 was designed to examine the varied governance systems in place across the case study areas and to try and figure out how the “multifunctional forest management” term has been conceptualised across Europe. In general terms what was found was that multifunctional forest management is understood in most case study areas as the management of forests focused on preserving or strengthening several forest functions and services. Most of the respondents from the respective case studies also understood that multifunctional forest management supports other specific forest functions besides timber production. This was however also contextualised in the sense that timber production should not be suppressed in favour of other forest functions, unless some forest functions are concurrent or not compatible with timber production. For some of the respondents, the term multifunctionality depends on the spatial scale that determines the applicable management decisions and strategies applied, while some other respondents had fundamentally different priorities in multifunctional forest management. As such, and similarly to the policy frameworks in place, there are significant variations between the case study areas as well as within them as regards to the understanding of how multifunctional forest management is being implemented in practice as well as distinguishing functional aggregation and segregation approaches.

3.1 Does the current policy framework promote or limit Mountain Forest Management?

The analysis of governance approaches in European mountain forests provided the background for addressing whether the current (case study specific) policy environment promote or limit mountain forest management aimed at ensuring selected ecosystem services provision in Europe. It also allowed the project to address the challenges and gaps for the multifunctionality of mountain forests. As demonstrated by ARANGE Deliverable 3.1, mountain forest policy at the micro and macro-level covers many different policy areas (e.g. agriculture, environment and energy). The EU has contradictory policy objectives that have a similar importance for mountain areas and forests coupled together with fuzzy priorities with a wide range of different impacts.

For instance, since different policy areas affect how mountain forests are being managed, there are conflicting objectives and targets at the EU-level. Different EU forest-related policies pursue distinct and in parts contradicting ideas of what mountains and forests actually are and how they need to be managed (e.g. conservation versus energy). There are consequently different objectives that compete with each other, resulting in policy fragmentation and incoherence. The situation at the micro-level, in the case study regions, is rather similar. There are almost no legally binding or national policy documents addressing the mountain areas as a whole. Forestry, nature conservation, and other related issues are addressed separately by sectoral acts (e.g. Forest Act, Nature Conservation Act) and related regulations. In addition, most of the ecosystem services addressed by ARANGE project have different names and are traditionally utilised differently across the case study areas. This means that they are included in legally binding documents as well as in strategic and economic documents. Carbon sequestration, climate change mitigation and bioenergy production represent an exception in this case, presumably as the climate change topic is newer and has been addressed by the European and international community as a whole. For this reason, ecosystem services associated with climate change are often not directly addressed in legally binding documents (e.g. forest acts) but are rather included in special programmes and strategic documents.

On the one hand, the implications of these variations, not only in terms of the legislative background but also in how multifunctional forest management is understood, is that the implementation of measures supporting multifunctional forest management is very sectorally oriented. Nature conservation, rural development, forestry, recreation, cultural heritage and all other sectors affecting mountain forests, focuses on their own goals frequently without considering the rest. These activities are furthermore delimited according to varying public utilisation and available financial resources and support mechanisms.

On the other hand, the analysis of forest governance in European mountain regions furthermore demonstrates that mountain forest management aimed at ensuring selected ecosystem service provision is being successfully practiced – implicitly or explicitly. Environmental monitoring is for instance ensured within forest management in all case study regions preventing unbalanced use of ecosystem services. Forest certification is another important voluntary governance instrument supporting multifunctional forest management. Most of the forests within the case study areas are certified by either PEFC or FSC. Nevertheless, conflicts between nature conservation and other sectorial policies regarding management of mountain forests still exist in some countries, which indicates deficiencies in intersectoral cooperation and governance failure. In essence, the main problem for forest governance in European mountain ranges is the unbalanced involvement of regional structures in decision-making (e.g. NGOs, interest associations, general public) that can be regarded as a limitation to successful multifunctional forest management implementation on the local and/or regional level.

In summary, the current platforms and instruments affecting mountain areas in Europe do not provide an effective or clear solution to promote multifunctional forest management, despite the fact that multifunctional forest management is already implemented in all case study areas in practice. One noted illustration of this is the, at times, contradictory forest policy environment

and governance systems that do not specifically address mountain areas but still provide a framework for applying the principles of multifunctional forest management (ARANGE deliverable D3.3). The end result of this situation is that we have multifunctional goals but the characteristic contradictions of managing a multifunctional resource limit its application.

3.2 Challenges for mountain forest policy

Based on the findings of ARANGE, we can generalise a suite of challenges that may be seen as generic for forest management, generic for rural areas or specific for mountain forest management. As regards policies and policy framework, the following categories require special attention.

Policy implementation affecting mountain areas, forests and ecosystem services is fragmented and incoherent.

Various authorities are involved in the implementation of policies, programmes or strategies regarding mountain forest management. The ministries of agriculture, forestry and/or rural development play a central role in these policies. Aside from the formal problems, there is a general lack of communication and coordination that represents the most crucial issue with respect to the horizontal, vertical or inter-sectoral collaboration. Various governmental and non-governmental organisations and institutions on national, regional and local levels are also involved in mountain forest management. Therefore horizontal and vertical integration need to be strengthened. In general it appears that the cooperation within horizontal structures is easier than across the vertical and inter-sectoral ones.

Policy affecting mountain areas, forests and ecosystem services, at the micro and macro-level, are cross-sectoral across Europe.

The sectors relevant for mountain forest management, such as agriculture, forestry, rural development, biodiversity and nature conservation, energy, tourism, follow their own policy goals. Some aspects are mentioned but do not provide a comprehensive solution. There is a need for coordination and engagement of all the sectoral actors with defined rights and duties, which could be a solution for optimal management of mountain forests at different scales.

The role of stakeholders and policy networks is important. Despite successful implementation of multifunctional forest management in European mountain ranges, conflicts between nature conservation and other sectorial policies regarding management of mountain forests were reported from most case study areas.

Inter-linkages between micro- and macro-level policy instruments is primarily based on sectoral principles.

One of the main problems in forest governance in European mountain ranges is the unbalanced involvement of regional structures in decision-making (NGOs, interest associations, general public). The issue becomes even more accurate because of the rising pressure on recreational mountain forest use (ARANGE deliverable D3.2). Local people are central actors in forest resource use; their needs must be considered in formulating policies and implementing activities, which aim at the sustainable use of mountain forests. The regional and local authorities should be given the ability to participate in the preparation and implementation process of policies and measures within their competences and within the existing institutional framework. Forest owners are important actors having a key role in forest resource management. Their management objectives are to a great extent economically oriented. The provision of other ecosystem services is ensured together with mountain forest management, but forest owners are not rewarded/compensated for their provision. The involvement of local actors in forest management, policy formulation and implementation is therefore crucial.

Policy instruments and measures implemented at the micro-level are principally not focused on multifunctional forest management in mountain regions.

There is a significant coincidence between mountain areas and areas of nature conservation interest. Balancing ecosystem services as timber production, nature conservation, recreation, etc. is very difficult due to the nature of mountain areas and the expectations of the population.

Some shifts can be seen in socio-economic development. In remote rural areas the general population is decreasing. Supporting the provision of ecosystem services, especially in economic terms can lead to better socioeconomic conditions for local population in terms of employment, tourism, recreation, etc. Potential land use under a new energy strategy can be in the use of mountain forests for biomass and energy wood.

From these aspects the main challenges of overcoming these institutional barriers lie in:

- i.** Efficient coordination and priority setting, including the question of the appropriate policy level for addressing mountain forest and ecosystem services.
- ii.** Finding a balance between the objectives of development, protection and conservation.
- iii.** Support for organisational and institutional cooperation at all levels (horizontally and vertically).
- iv.** Establishing more market-oriented economic instruments for mountain areas and forests.

4 WHAT ARE THE OPTIONS FOR POLICY MAKING? THE WAY AHEAD

4.1 Multi-level governance

Past and present policies recognized that manifold goods and services are being provided from forest ecosystems under active, targeted forest management. In almost all case study areas, the production of timber, biodiversity protection, and the protection of soil and water resources were reported to be sustained through active forest management (Sarvašová et al., 2014). This was also supported by the context analysis (ARANGE Milestone MS11). Forest management secures protection against natural hazards, carbon storage, nature conservation and biodiversity maintenance, due to existing EU legislation that has to be complied with. Balancing all ecosystem services, especially timber production with nature conservation and biodiversity maintenance seems to be a challenging task for all case study areas. The challenge is to organize this subsidiarity (efficient solidarity) through the organizational levels, in order to fill in the gap between the European/national level, with multifunctional principles and sectoral policies, and the local management plans having to deal with an effective multiple use.

Mountain forests belong to the most preserved ecosystems in Europe, and as such they are subject to nature conservation in many cases. However, timber production still remains the main ecosystem service provided, partly resulting from high forest cover in these regions where forests were preserved against deforestation for agricultural purposes due to sloping terrain and/or climatic conditions.

As indicated the policy mix applied in mountain forest management is diverse. Policy makers have different options how to promote mountain forest management on different levels. One is the use of legislation (policy reform) and the second one is the use of governance instruments. These principles require actions at different levels, and by different groups of stakeholders.

At the local level (community level not forest stand level) it is important to include local and regional stakeholders in policy making, incorporate their needs in policy instruments and promote bottom-up initiatives, as initiated for instance with the LEADER projects. However, local communities differ in economic, social, cultural characteristics and in the ability to use local resources. They should be encouraged to consider a variety of management options, not on only timber production, but also other ecosystem services provision as tourism, nature conservation, etc. But the question concerning who should take this action remains open. Active local actors addressing the local market problems and exploiting the full development potential of the region as well as the appropriate policy instruments at local level could be an option.

At national level sectoral policies should consider the specific features of mountain areas and their contribution to the economy. Besides timber production, mountain forests provide different non-timber forest products and services not only for local people but also for the whole society. Sectoral policies should therefore consider the specific nature of mountain areas and

reflect them in policy instruments. There is a need to promote a better cooperation and coordination among ministries and stakeholders and a more advanced and systematically structured collaboration. The principles of subsidiarity and decentralization should be applied. Where the protection or preservation of certain areas need to be prioritized, effective financial incentives have to be proposed either by the state or local communities or groups of stakeholders in order to compensate land owners for management restrictions, or at least to acknowledge their contribution to the society. Mountain Forest Management demands active support through incentive policies that contribute to shaping the local/regional actors' behaviour.

At EU level the question arises whether to develop common regulatory instruments for all mountain ranges or to keep at the Member States level? Would a joint strategy for Mountain Forest Management be appropriate? As regards the financial incentives there is a common understanding that continuing the support from Rural Development Programmes for mountain regions is vital for ensuring Mountain Forest Management. So, the question remains, which form should the financial support take? Should there be a common policy on ecosystem services provision or should Payment for Ecosystem Services (PES) or other market oriented economic instruments be introduced? The popularised concept of PES has been criticised, as a rent to organised owners and experts in link with the transaction costs induced by difficult ES evaluations: hence high costs and inefficiencies, and low synergies. At a conceptual level ecosystem services provision could be regarded either as a condition or counterpart of the solidarity for forest management. As stated above, multifunctional forest management ensures the provision of other ecosystem services besides timber production, so the solution could be not to pay the service but the maintenance of good practise of mountain forest management that is already implemented: that would then be designated by PPES (Payment for the *preservation* of ecosystem services), instead of PES.

At all levels the importance of informational policy instruments must not be underestimated. Policy briefs, factsheets on mountain forestry and its importance for the environment, and above all human contacts between extension services, forest owners, other stakeholders and decision makers can help to raise awareness of the complex issues of Mountain Forest Management.

4.2 Ways ahead

European mountain regions at present are not separate but rather woven into a fabric of interconnected institutions, policies and sectors, all of which are having an impact on mountain areas, forests and ecosystem services that are experiencing rapid change. In other words, mountain forests and ecosystem services are susceptible to all the environmental and societal processes of change currently going on across Europe. Even more, it is clear that there is currently no framework under which all of these issues can be addressed and coordinated effectively. The question remains what are the best policy levels, and their interconnections, to address mountain forest policy and make coordination effective.

The demands for ecosystem services provided by mountain forests continually increases, together with potential conflicts between forest management objectives and the interests of different stakeholders related to forestry. To balance the ecosystem services provision of European mountain ranges, and at the same time taking into account the cultural differences and traditions is a challenging task for policy making.

The multifunctionality of mountain forest management can be achieved by identifying key ecosystem services provided by mountain forests and relevant stakeholders with their individual preferences regarding forest management. This needs to be followed by an on-going process of involving local stakeholders – including forest owners, often absent – and communities in decision-making, developing various forms of partnerships, and deciding on forest management objectives and planning.

The trend towards more local-adapted measures has been visible in the LEADER projects, and the challenge is now to find a convergence between forestry and agriculture towards a rural local-adapted development policy. Forestry recognizes the concepts of socio-ecological services, understood as tools to organize an efficient solidarity (subsidiarity) aiming to maintain production in unfavorable areas as mountains. Rather than creating a market for ecosystem services, partnership opportunities should be sought in order to maintain the multifunctionality of mountain forests.

- **Balancing ecosystem services provision and the role of science**

Balancing all ecosystem services, especially timber production with nature conservation and biodiversity maintenance seems to be a challenging task in all participating countries. The balance cannot be decided only at national or regional scale: the fine regulations, and trade-offs happen close to the forest, at the case study areas (local territory) scale. This should be negotiated between the local areas and the regional/national scale, by the means of programmes. To understand these trade-offs and to learn about potential impact of management decisions the role of scientific inputs and tools shall be further explored. Such support must be applicable on different scales, it should incorporate actors preferences to secure a reliable balancing, and be accessible to local people in terms of reasonable complexity, access and communication.

- **Strengthening local stakeholder involvement**

Local people are central actors in forest resource use; their needs have to be considered in formulating policies and implementing activities, which aim at the sustainable use of mountain forests. This entails both participatory planning, but also improved forest management practices. The first entail a broadly accepted consensus on the use of natural resources, the priorities and objectives of mountain forest management, and the means for conflict resolution as an integral element of decision-making. The latter shall allow for more transparency in decision-making and quality control, and hence secure credibility of forest operations instead of scrutiny among sectors. Arenas, methods and tools have to be developed at the local scale to foster this involvement of all stakeholders, including forest owners and decision makers, around

territorial forest strategies and projects. The ARANGE project has worked about the information tools which could facilitate a common projection of the stakeholders in possible scenarios. Clearly the way is still long to get easy data and software for comprehensive simulations, but already now it is possible for any community to launch a common approach towards an adaptive management, with the available data (from management, remote sensing, plots networks notably from National Forest Inventories).

- **Enhancing regional initiatives**

One of the main problems in forest governance in European mountain ranges is the unbalanced involvement of regional structures in decision-making (NGOs, interest associations, general public). The issue becomes even more accurate because of the rising pressure on recreational mountain forest use (ARANGE Deliverable D3.3).

Nonetheless, Europe is currently also defined as a Europe of the regions, and as shown before, many policy instruments refer to the regional scale. In strongly focusing on the regional scale, it shall not be omitted that local initiatives need additional empowerment since they are the motors of implementation on the ground. And conversely the interactive construction of adapted projects and contracts between local communities and the regional level could require more skilled staff at this regional level, in close cooperation with the regional representation of the state.

- **Payments for (Preservation of) Ecosystem Services (P(P)ES), economic oriented market instruments and economic incentives**

Although multifunctional forest management is already implemented in all case study areas, taking into account all ecosystem services, the importance of economic instruments is evident due to increasing demands for payments in order to balance conflicting ecosystem services. Currently, the advances in economic oriented market instruments, e.g. payments for ecosystem services are scarce, although fiercely debated. As given from the Natura 2000 scheme, funds for the provision of ecosystem services have currently to be gathered via alternate routes (e.g. rural development programme). This hampers a coherent approach for PES or PPES (Payment for the Preservation of ecosystem services) alternatively, because it is slicing the issue of ecosystem services, and does not comprehensively address the multifunctional aspects of ecosystem services. Since mountain forests lay predominantly in economically marginal areas, a targeted economic mechanism that addresses explicitly the demands for multifunctional service provision is strongly needed.

5 REFERENCES

- ARANGE Deliverable D3.1. Policy framework as related to multifunctional mountain forest management. Available online http://www.arange-project.eu/wp-content/uploads/ARANGE-D3.1_PolicyFrameMFmountFM.pdf
- ARANGE Deliverable D3.2. Mountain Forests and Land Use Scenarios – a review and scenario development. Available online http://www.arange-project.eu/wp-content/uploads/ARANGE-D3.2_MFandLUScenarios.pdf
- ARANGE Deliverable D3.3. Analysis of governance systems applied in multifunctional forest management in selected European mountain regions.
- ARANGE Milestone MS11. Case study context analysis. Report in the frame of the ARANGE EU FP7 project 289437, 26 p.
- COUNCIL 2014. 2030 Climate and Energy Policy Framework EUCO 169/14. Brussels: COUNCIL OF THE EUROPEAN UNION.
- EUROPEAN COMMISSION 2011a. Energy Roadmap 2050. COM(2011) 885 final. Brussels: European Commission.
- EUROPEAN COMMISSION 2011b. A Roadmap for moving to a competitive low carbon economy in 2050. COM(2011) 112 final Brussels: European Commission.
- EUROPEAN COMMISSION 2011c. Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system COM(2011) 144 final. Brussels.
- EUROPEAN COMMISSION 2013. Overview of CAP Reform 2014-2020. Agricultural Policy Perspectives Brief N.5: European Commission.
- EUROPEAN COMMISSION 2014. Report from the Commission concerning the governance of macro-regional strategies Brussels.
- REGULATION 1300/2013. Cohesion Fund and repealing Council Regulation (EC) No 1084/2006 L 347/281. Official Journal of the European Union: European Parliament and Council.
- REGULATION 1301/2013. European Regional Development Fund and on specific provisions concerning the Investment for growth and jobs goal and repealing Regulation (EC) No 1080/2006. L 347/289. Official Journal of the European Union: European Parliament and Council.
- REGULATION 1303/2013. Laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006. L 347/320. Official Journal of the European Union: European Parliament and Council.
- Sarvašová Z., Cienciala E., Beranová J., Vančo M., Ficko A., Pardos M., 2014. Analysis of governance systems applied in multifunctional forest management in selected European mountain regions. Lesn. Cas. For. J. 60 (3) 159–167.