THE STUDY ON GOOD PRACTICE IN VET AND LLL IN SFM IN AUSTRIA, CROATIA AND SLOVENIA

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Foreword

Adaptive forest management is ideally a continuous process between practitioners and scientists where interventions in forest ecosystems are gradually improved based on scientific theory and feedback from case studies. Climate change is a new driver of forest ecosystem dynamics that is not yet fully reflected in forest management strategies. With production cycles of 90 years and longer forest managers are supposed to create a vision of forest stand dynamics and accordingly choose an appropriate trajectory of forest management in order to obtain the desired results. There are many sources of uncertainty. The forest products demanded at the end of the production cycle are not yet known. Moreover, many imponderabilities affect forest stands during their lifetime. The concept of sustainable management implies that forest managers are aware of ecological site conditions that are physically and chemically framing the potential protective. The competition of trees within a forest stand and the competitive power of tree species within a mixed-species stand are fairly well understood. A powerful factor of stand development is the effect of disturbances. Outbreaks of pests and pathogens and damages by storms and wildlife can greatly affect the development of forest stands. Forest sciences have developed strategies to cope with such singular events. Forest management usually operates with a wide safety margin in order to respond to upcoming challenges with a flexible operating space. Climate change is adding uncertainty. The extent of climate change greatly depends on counter-measures adopted in the future. The climate scenarios of the IPCC encompass a warming trend of 2° to more than 5° C within a forest generation, depending on the adopted strategies. Warmer temperatures are linked to a changing moisture regime. It is expected that the temporal and spatial patterns of extreme climate events such as droughts, heat waves and storms will be altered in the future. Forest sciences do not yet offer a widely accepted toolbox how to respond to the upcoming challenges. It is still controversial how the habitat of single tree species will change, how the competition between tree species will evolve and which pests and pathogens need to be taken into account.

Forests are fulfilling many societal demands for ecosystem services. There may be individual preferences for timber production, biodiversity, bio-energy or scenic beauty and more generally accepted demands for protection against natural hazards and the provision of drinking water. An overarching concept is sustainable management with the expectation that the desired ecosystem services can be provided continuously. National forest policies in Europe very well reflect the identified demand and supply of ecosystem services. However, particularly in countries with a high share of private forest owners the implementation of policies is difficult. Owners of large forest enterprises (i.e. managing >200 ha forest land) are often in a close dialogue with forest politicians and mutually influence and implement forest policies. Many educational programmes are established in order to convey the relevant knowledge to this group. There are institutions of higher education, the educational programmes of chambers and forest owner representations and well established channels of information. A more difficult group, yet increasing in numbers, are owners of small forest properties who in total are managing a considerable part of the forest area. These forest owners generate an insignificant (if any) income from forestry and are professionally not engaged in forestry affairs. In some cases they are not even familiar with the paradigm-concept of sustainable forest management. These forest owners often lack interest, knowledge, technical skills, and

technical infrastructure for forest management. Nevertheless, they are representing and managing a considerable share of the forest land. Training concepts for sustainable forest management need to offer training for all kind of forest owners. Vocational training on selected topics of forest management are expected to increase the awareness of forest owners on their role in landscape management, the provision of ecosystem services for the general public, and for the implementation of national forest policies.

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Executive summary

In 2013, the European Union (EU) established the Union programme for education, training, youth and sport, Erasmus+. It brings together seven previously existing EU programmes, i) The Lifelong Learning Programme, ii) The Youth in Action Programme, iii) The Erasmus Mundus Programme, iv) Tempus, v) Alfa, iv) Edulink, and vii) Programmes of cooperation with industrialised countries in the field of higher education, and provides, for the first time ever, support for sport. Erasmus+ is tailored towards the support of Programme countries' efforts to efficiently use the potential of "Europe's talent and social assets" in a lifelong learning perspective and additionally enhances opportunities for cooperation and mobility with Partner Countries, particularly addressing higher education and youth.

To get an overview of vocational education and training (VET) and lifelong learning (LLL) programmes in the study area (i.e. Austria, Croatia, Slovenia), with an emphasis on the identification of good practice examples in the field of sustainable forest management (SFM), a combined approach of literature studies and a survey amongst national experts was applied.

Survey results indicate that there is a broad interest in the study area to foster education in the forest-based sector within national VET and LLL programmes. Numerous SFM related training courses are offered in each of the countries, predominantly addressing an array of forestry stakeholder groups. There is broad portfolio of topics that are spread across national classrooms although the relative importance of focal points differs notably between countries. Various methods are applied in order to facilitate the uptake of knowledge by trainees (or learners) however, indoor ex-cathedra approaches are the dominant means to transfer state-of-the-art knowledge on forestry related issues. Nevertheless it could be recognized that there is an increasing interest to facilitate the practical understanding by fostering demonstrations in the field, organizing field trips or emphasizing practical work in most countries.

Even if focal points may relate to individual needs within national forestry sectors, SFM related VET and LLL programmes should be regularly screened and updated according to international agendas and emerging issues. In order to cope with increasing uncertainty and expanding risks forest ecosystems are facing, it is an important task to provide forestry stakeholders with the know-how to address the diverse challenges they are facing when managing their forests sustainably.

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Introduction

Education has ever since played a crucial role in the development of human communities and society in general. The Latin aphorism "scientia potentia est" that literally refers to the power of knowledge dates back to Sir Francis Bacon´s *Meditationes Sacrae* (1597). However education has for a long time been limited to privileged individuals as access to knowledge was restricted until the late 18th century, when the Age of Enlightenment fostered the spread of information across the bourgeoisie. At the same time, Adam Smith formulated the basis of what was later to become the science of human capital in "The Wealth of Nations" (1776), a concept that turned to one of the most influential economic theories of Western education (Fitzsimons, 1999). In the late 20th century, in a period of significant social, economic and political changes there was a shift in the role of knowledge – in how people see knowledge and how they use it. This period is now widely known as the beginning of the Knowledge Age and marks a new era in our global societies, putting knowledge into the centre of socio-economic development and growth.

Europe is facing an array of contemporary challenges like: i) restoring job creation and economic recovery, ii) achieving sustainable growth, iii) bridging the investment gap, iv) enhancing social cohesion or v) coordinating a response to the migration flow, and has to address long-term macro-level processes such as ageing, adjusting to the digital era and competing in the global, knowledge-based economy (EC, 2015). Thus the European Union (EU) is strengthening its efforts to increase the level of knowledge across its Member States with the aim to provide individuals with the knowledge, skills and competences that enable them to grow and to influence their personal situations as well as to promote inclusion, equity and equality. Lifelong Learning (LLL) as well as Vocational Education and Training (VET) represent the major concepts that aim to tackle the evolution of human capital and specifically address the further development of the Community as an advanced knowledge society in accordance with the objectives of the Lisbon strategy, the Community´s Strategy for Growth and Jobs that has been devised in the year 2000 to unlock the resources needed to meet Europe´s wider economic, social and environmental ambitions (EC, 2006). LLL includes the entire range of learning (i.e. formal, informal and non-formal) as well as skills, knowledge, attitudes and behaviours that people acquire in their everyday lives (Laal and Salamati, 2011). The European Centre for the Development of Vocational Training defines the following core concepts of different forms of learning as follows (Cedefop, 2014):

- *Formal learning* occurs in an organised and structured environment (e.g. in an education or training institution or on the job) and is explicitly designated as learning (in terms of objectives, time or resources). It is intentional from the learner's point of view and typically leads to certification.
- *Non-formal learning* is embedded in planned activities not explicitly designated as learning (in terms of learning objectives, learning time or learning support). It is intentional from the learner's point of view (non-formal learning outcomes may be validated and may lead to certification)
- *Informal learning* resulting from daily activities related to work, family or leisure. It is not organised or structured in terms of objectives, time or learning support and in most cases unintentional from the learner's perspective (informal learning outcomes may be validated and certified).

As we live in a world where people need to have the skills to understand, interpret and process different forms of information it is essential to recognize and value all forms of learning (Laal and Salamati, 2011).

VET and LLL in EU, national and other policies

The first phase of implementation of an education action programme started already in the 1970s. During the 1990s lifelong learning emerged as the main concept at the EU level supporting a knowledge-based society and fostering cooperation in education and training (Pépin, 2007). The White Paper on "Growth, Competitiveness and Employment" led by Jaques Delors is the first policy document that broke with the division between education and training and explicitly addressed that ensuring a permanent update of skills and competences of single individuals should be a top priority on the agenda of reforms of the European education and training systems. The European Commission adopted this two years later with the White Paper on the learning Society (EC, 1995) and significantly contributed to the awareness of the requirements of the knowledge-based and information society and their consequences (Pépin, 2007).

Throughout the 90s, the discourse on the development of education and training at both national and European levels changed progressively, calling for concrete action and coordination of policies at all levels and thus prepared the ground for the Lisbon Strategy. In March 2000 the European Council stated that "The rapid and accelerating pace of change means it is urgent for the Union to act now to harness the full benefits of the opportunities presented. Hence the need for the Union to set a clear strategic goal and agree a challenging programme for building knowledge infrastructures, enhancing innovation and economic reform and modernising social welfare and education systems" and expressed its interest to modernize the education systems. As a follow up to the Lisbon strategy, the Education and Training 2010 work programme was launched in 2002 which became the umbrella policy framework for all actions and processes in the field of education and training (Pepin, 2007).

In the same year the Copenhagen process was initiated (EC, 2006), fostering the partnership of the European Commission with national governments, employers' and workers' groups and countries outside the EU in order to: i) improve the quality of training (initial education, continuing development), ii) improve the quality of teachers, trainers and other professionals in the sector, and iii) make courses more relevant to the labour market. These objectives shall be achieved via:

- Work-based learning in Europe
- Sector Skills Alliances
- Skills competitions
- Improving national systems through the European quality assurance framework for vocational education and training (EQAVET)
- Agenda for new skills and jobs – the EU's strategy for having 75% of its working-age population in work by 2020
- Youth on the Move– an EU initiative to help young people to gain the knowledge, skills, and experience they need to make their first job a reality
- Toolkit - support for integrating ECVET (European credit system for Vocational Education & Training) into new or existing Mobility Practice.

The Commission's work on vocational education and training is supported by two agencies, the European Centre for the Development of Vocational Training (Cedefop) that provides information and analysis of education and training systems, policies, research and practice in the EU and the European Training Foundation (ETF) that works to develop education and training systems in the Western Balkans, neighbouring countries and Central Asia.

With the regulation No. 1288/2013 of the European Parliament and of the Council of 11 December 2013, the EU established the Union programme for education, training, youth and sport, Erasmus+. It brings together seven previously existing EU programmes, i) The Lifelong Learning Programme, ii) The Youth in Action Programme, iii) The Erasmus Mundus Programme, iv) Tempus, v) Alfa, iv) Edulink, and vii) Programmes of cooperation with industrialised countries in the field of higher education, and provides, for the first time ever, support for sport. The main aims of Erasmus+ are to (EP, 2013):

- allow young people to gain skills and knowledge abroad to improve their employability
- improve teaching quality, innovation excellence of education and training organisations
- complement member countries' policy efforts to modernise their education and vocational training systems
- increase the international dimension of education and training by means of partnerships between EU and partner-country higher education and vocational education and training (VET) institutions
- improve language teaching and learning
- support excellence in teaching and research in European integration among academics, students and citizens
- support organisations active in grass-roots sport (mainly public bodies and clubs) to exploit the potential of sport in promoting social inclusion and address the threats of doping, match-fixing, racism and intolerance.

Erasmus+ is tailored towards the support of Programme countries' efforts to efficiently use the potential of "Europe's talent and social assets" in a lifelong learning perspective, linking support to formal, non-formal and informal learning throughout the fields of education, training and youth. Additionally it enhances opportunities for cooperation and mobility with Partner Countries, particularly addressing higher education and youth. In order to achieve its objectives, the Erasmus+ Programme implements the following three Key Actions (EC, 2016):

- Mobility of Individuals (Key Action 1)
- Cooperation for Innovation and the exchange of good practices (Key Action 2)
- Support for Policy reform (Key Action 3)

This study is supported by Key Action 2 that strongly aims to foster a) Transnational Strategic Partnerships, b) Knowledge Alliances, c) Sector Skills Alliances, d) Capacity-building projects and e) eTwinning, the European Platform for Adult Learning (EPALE) and the European Youth Portal.

Methodology

To get an overview of VET and LLL in the target countries (i.e. Austria, Croatia, Slovenia) a combined approach of literature studies and a survey amongst national experts was applied. With the aim to depict the current state of SFM related training opportunities in the frame of VET and LLL programmes a suite of questions targeted at recent trends (i.e. from the year 2004 – 2016) and included the following aspects:

- Program theme and service provider
- Name and duration of the programme
- Year
- Target groups
- Topic and short content
- Specific learning outcomes
- Used methods
- Evaluation of the program (yes/no, how)
- Promotion (marketing) of program (how)
- Assessment of the progress of participants (using the knowledge and obtained skills)
- Number of training courses

National contact points were responsible for the completion of the survey and provided the data. In order to depict best practice examples of each country a set of criteria was defined and used for the analysis (see Table 1).

Table 1: Criteria for the identification of best practice examples of SFM trainings in the study area

Criterion	Rationale
Target groups	A multi-stakeholder approach, addressing several target groups at the same time, is valued high
Topic´s covered	Addressing cutting-edge SFM related content (e.g. emerging issues) is preferable
Specified learning outcomes	Mandatory (i.e. learning outcomes must be specified)
Method´s applied	A multi-method approach is preferable, particularly relevant are practical applications (e.g. training in the field)
Programme evaluation	Mandatory (although of minor relevance)
Programme marketing	Multiple marketing channels are preferable
Assessment of participants´ progress	Mandatory (although of minor relevance)

Due to data heterogeneity originating from the survey across participating countries a basic descriptive analysis is applied throughout the report.
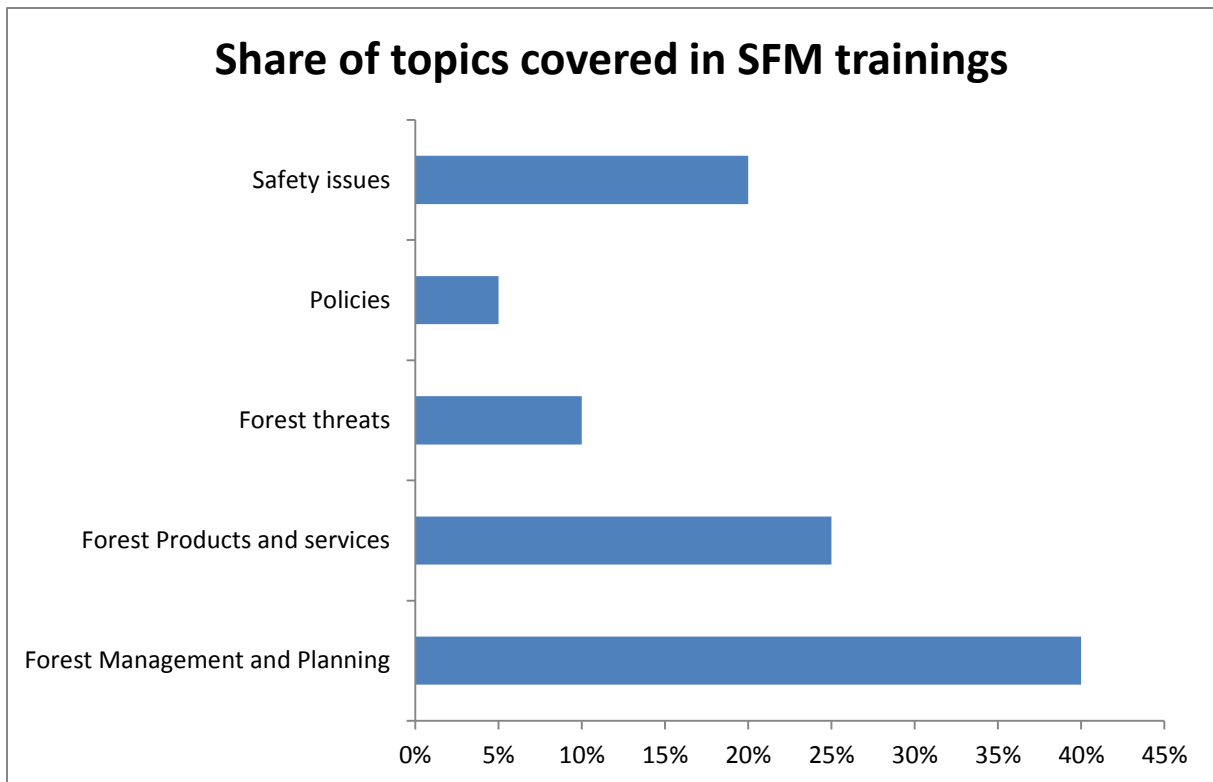
Results

The Education and Training Monitor (ETM, 2015a) is one of the flagship publications of the Directorate General for Education and Culture (DG EAC) and depicts the current state of VET and LLL in comparison with other Member States on an annual basis. It´s one of the main sources to come to grips with the state of the art of VET and LLL in Europe and used as a basis to pinpoint major strengths and weaknesses in the study area. Additionally, the results from the survey highlight the main results with regard to SFM related VET and LLL programmes in the target countries.

Austria (state of VET and LLL)

Based on the ETM (2015a) it can be recognized that the state of VET and LLL in Austria is well developed. Austria's early school leaving rate is below the EU average. The country's vocational education and training (VET) system is well adapted to the labour market, a factor that has contributed to it having one of the lowest youth unemployment rates in the EU. Nonetheless, foreign-born students are three times as likely to leave school early as native-born students and educational performance continues to be very dependent on parents' socio-economic status. Higher education lacks consistent strategic orientation and is underfunded. The drop-out rate from higher education remains high, and there is starting to be a lack of maths, science and technology graduates. The country-specific report (ETM, 2015b) elaborates in more detail on the current situation of VET in Austria highlighting that in 2013, 70.2% of upper secondary student were following VET programmes. This represents one of the highest rates in Europe, well above the EU average of 48.9%. Adult participation in lifelong learning has remained at around 13-14% over the last five years (in 2014, it was 14.2%, above the EU average of 10.7%).

VET and LLL programmes regarding SFM related courses are within the responsibility of several organisations who offer a range of trainings to various forestry stakeholders. In the survey relevant trainings have been reported back to the year 1975, whereas consistent data could be made available from 2004 onwards. Every year around 80 courses are conducted across Austria on average, depending on the interest and resources available as some of them are held only on demand. Of particular relevance in SFM specific VET and LLL are the National chambers of Agriculture, the Austrian Forest Research Center and three Forest Training Centers who are responsible for the major share of training courses offered. The topics addressed cover a wide range of issues in the context of SFM (see Figure 1).

Share of topics covered in SFM trainings

Topic	Share
Safety issues	20%
Policies	5%
Forest threats	10%
Forest Products and services	25%
Forest Management and Planning	40%

Figure 1: Focal points in SFM training courses in Austria (relative share)

It can be recognized that there is a good balance of courses addressing forest management and planning (including Silviculture), Forest Products and Services as well as Safety issues. There are also some trainings that are specifically tailored towards forest threats (10 %). Less attention in the current programmes is drawn to policies and their instruments (5 %). There are several methods how knowledge is transferred to VET and LLL learners in the national programmes (see Figure 2).

Share of methods applied
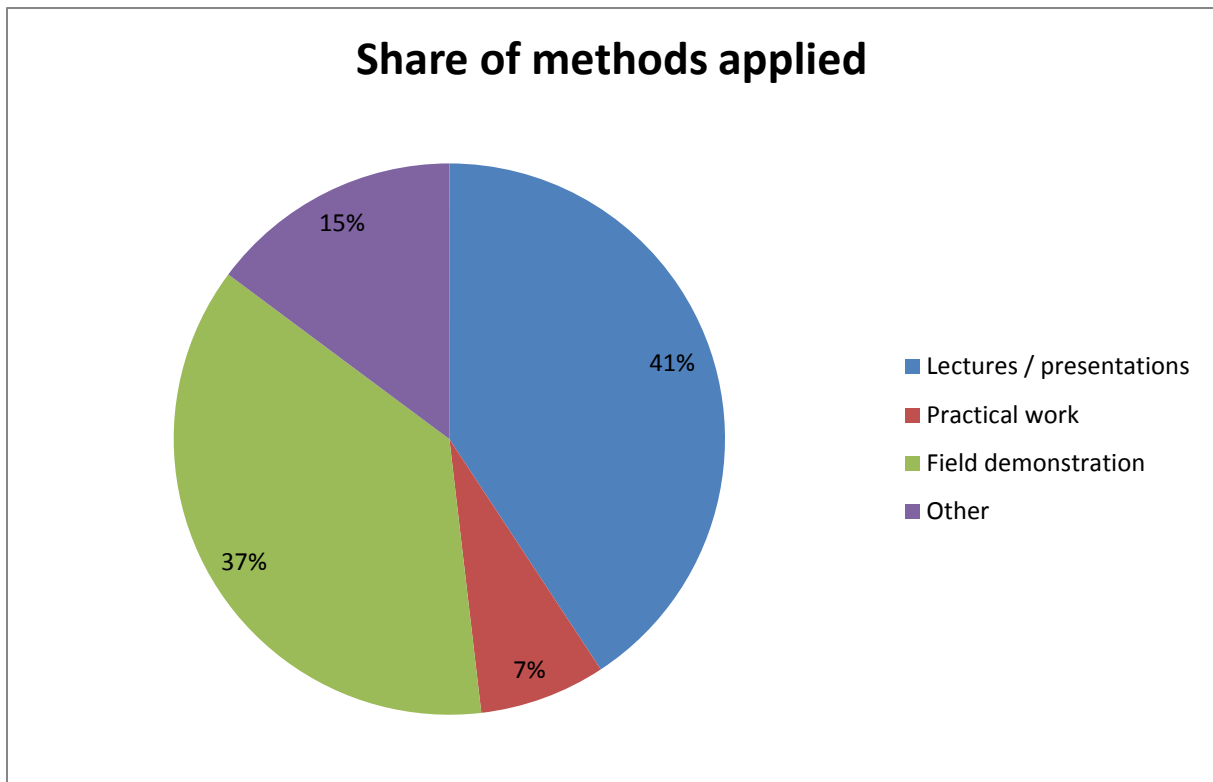
Figure 2: Relative importance of methods applied in SFM training courses in Austria

There is a broad portfolio of methods applied in order to educate people in SFM related topics in Austria. Although ex-cathedra teaching, i.e. lectures and presentations (41 %), represents a common way to distribute knowledge across classrooms it can be denoted that object teaching is very popular. The share of demonstrations in the field (37 %) and practical work (7 %) indicate that hands-on experiences are of high relevance. Moderated discussions (11 %) and tests (4 %) complement the indoor based teaching methods (i.e. "Other" 15 %).

Croatia (state of VET and LLL)

The main strengths of Croatia's education and training system are a low early school leaving rate and a high proportion of secondary vocational school graduates continuing into higher education. Positive developments in the country include the adoption of a comprehensive strategy for education, science and technology, which is expected to be the main driver of reform in the coming years. On the other hand, the Croatian education and training system faces a significant number of challenges, including improving education outcomes in mathematics in primary and secondary schools, modernising initial VET curricula in line with the needs of the labour market, and increasing access and completion rates in higher education. There are relatively low participation rates in both, early childhood education and care as well as adult learning. Croatia faces significant structural problems in the form of stretched capacities in pre-school centres and an under-regulated and under-funded system of adult learning (ETM, 2015a).

Croatia has one of the highest level of participation in VET at upper secondary level in the EU (i.e. 71.1%) however, the employment rate for recent upper secondary graduates is significantly dragging behind (i.e. 47.3% in 2014, compared to the EU average of 70.8%) representing the third lowest percentage in Europe. The employment gap between youth with upper secondary and tertiary

education is more significant than in other EU countries, especially 1-3 years after gaining a qualification since less than half of VET graduates end up employed in a job that matches their field of study. Adult education in Croatia faces weak governance. In 2014, only 2.5% of Croatian adults participated in education and training, compared to the EU average of 10.7%, and the percentage has been decreasing for the last two years (ETM, 2015b).

The number of training courses held in the frame of SFM reached 876 in between 2007 and 2015. The major share of these services is offered by the Advisory Service for Private Forest Owners (i.e. 577 courses) followed by the Croatian Chamber of Forestry and Wood Processing Engineers (CCFWPE) (i.e. 119 courses) and the Croatian Forests (i.e. 59 courses). Additionally the European Forest institute provided 6 courses through the FOPER project (Forest Policy and Economics Education and Research), with the aim to improve capacities in forest governance, policy and economics in the South-Eastern Europe region. Topics addressed include a wide range of SFM related issues (see Figure 3).
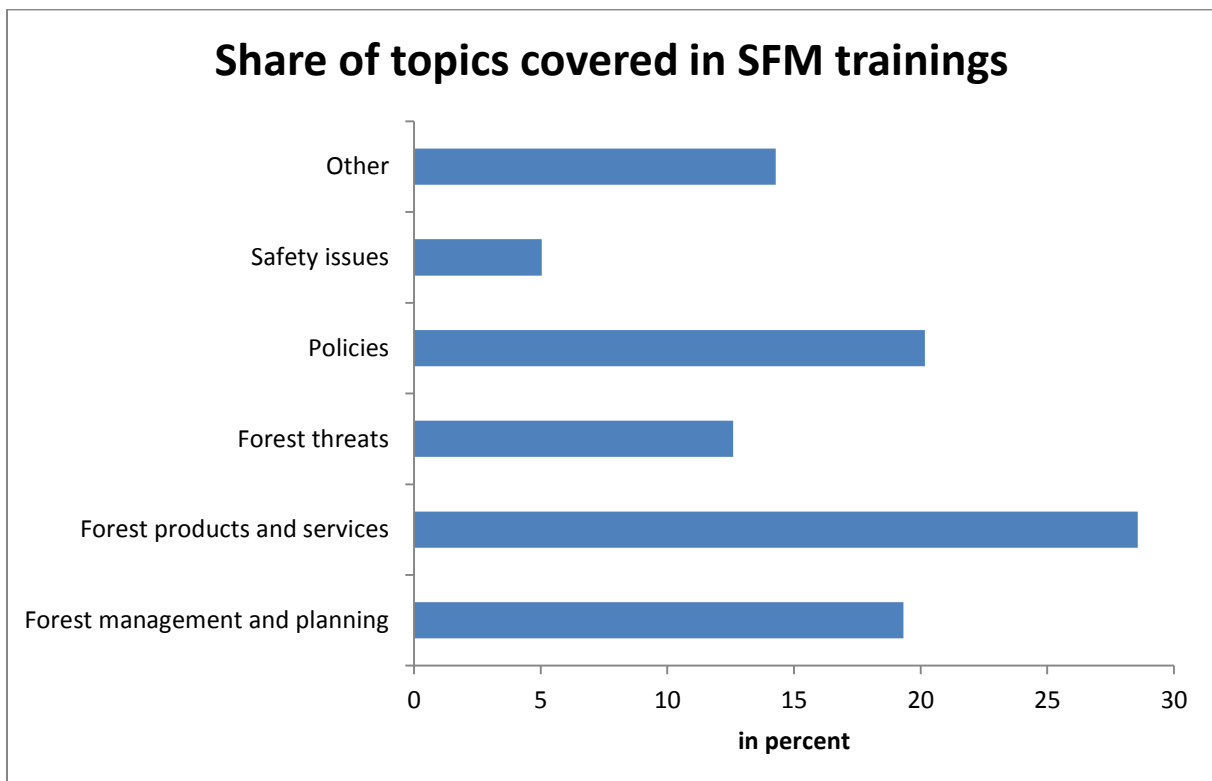
Figure 3: Focal points in SFM training courses in Croatia (relative share)

It can be denoted that forest products and services (~29%) appear to be most popular across training courses, strongly linked to forest management and planning (~19 %). Policies and policy instruments, norms or standards play an important role either (20 %) and so do forest threats (~13 %). Additionally there are safety issues (5%) and other topics (14 % i.e. Project management, Phytocoenology, LLL & VET, Nature conservation and environmental protection/NATURA 2000) addressed within Croatian SFM curricula. The methods applied to transfer knowledge to VET and LLL learners differ (see Figure 4).
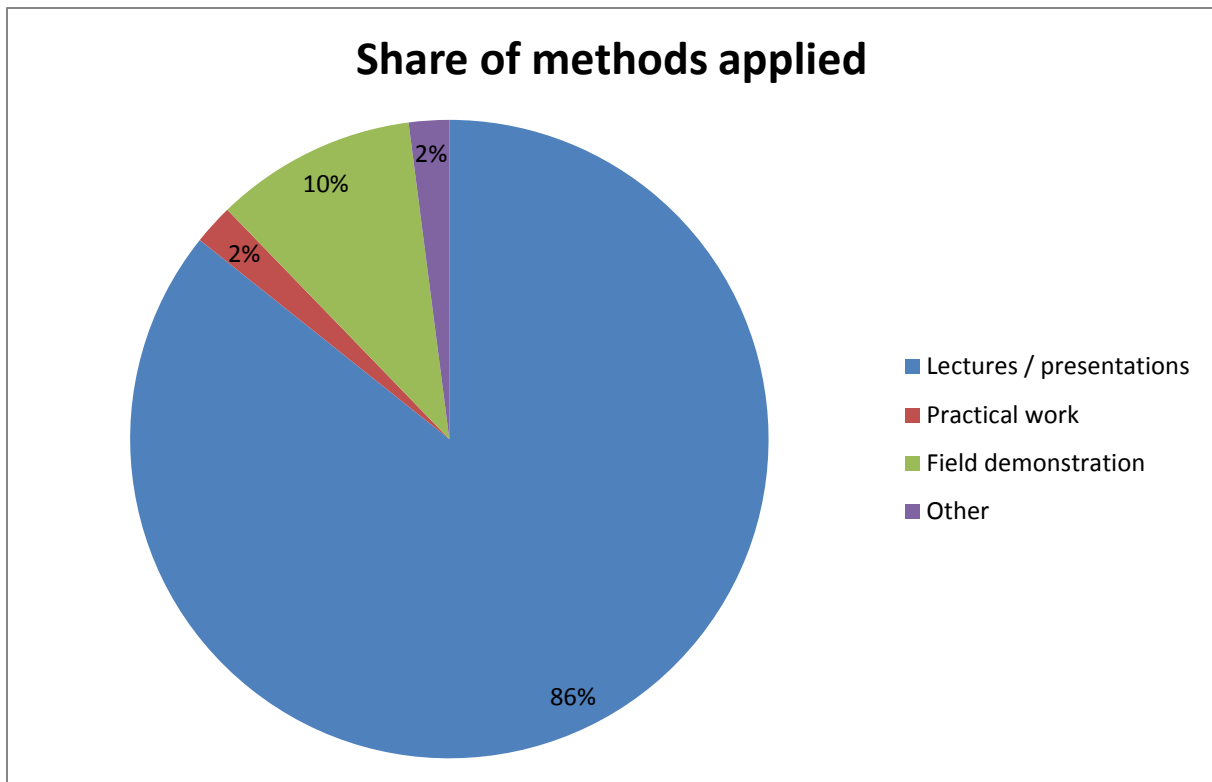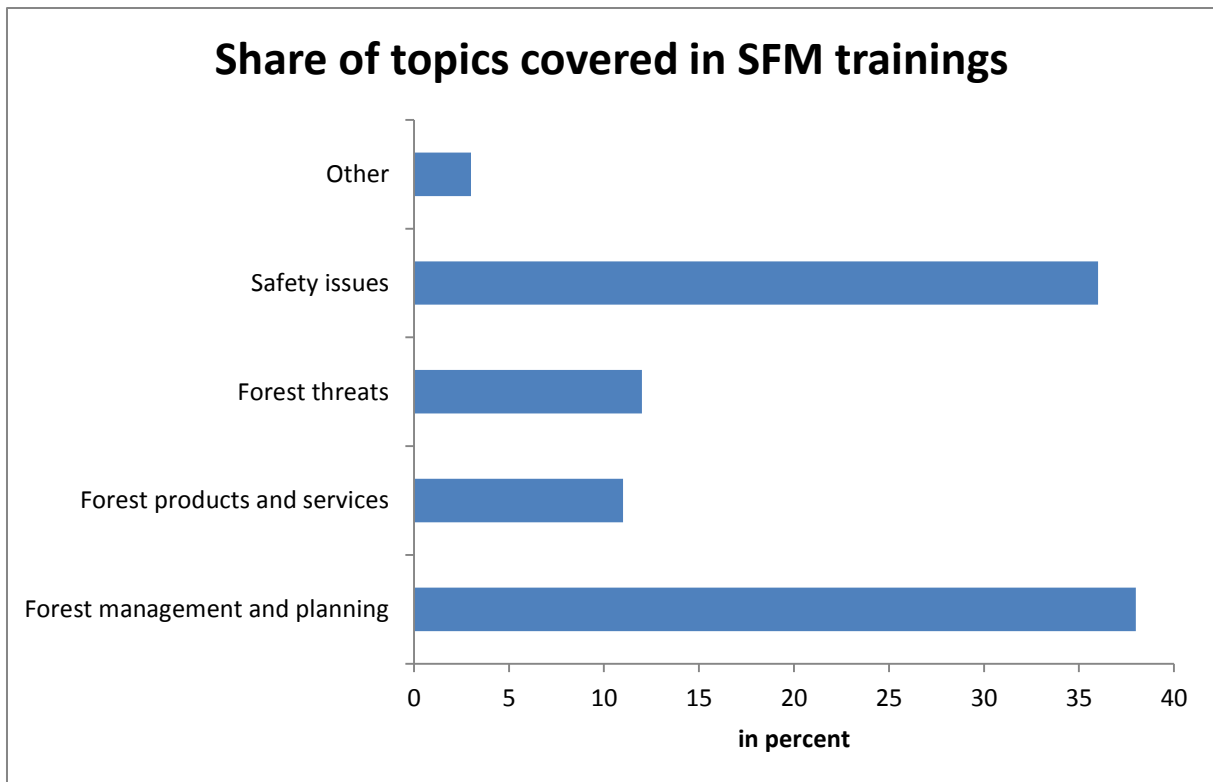
Figure 4: Relative importance of methods applied in SFM training courses in Croatia

There is a clear emphasis on classroom-like teaching approaches, as lectures and presentations build the main methods applied (86 %). Field demonstrations play a minor role in current curricula (10 %). Least relevant are practical work and seminars (both 2 %).

## Slovenia (state of VET and LLL)

Slovenia has the second lowest early school leaving rate in the EU and tertiary education attainment is above the EU average. Average basic skills proficiency is satisfactory, especially in mathematics and science. The proportion of upper secondary students in VET remains above the EU average. However, the higher education system is marked by a disproportionately high number of study programmes, a high drop-out rate and problems with fictitious enrolment. In addition, it is under-funded, and as a result, the quality of teaching and resources is unsustainable. In upper secondary education, the reversing demographic trends and the drop in student numbers have caused schools across the country to function below their capacity. Finally, there are very marked regional differences in national examinations, indicating that socioeconomic status has a strong effect on education achievement (ETM, 2015a).

Between 2008 and 2015 around 300 training courses were conducted in the context of SFM every year. Main service providers include the Biotechnical Faculty in Ljubljana, the Slovenian Forestry Institute, the Slovenia Forest Service, the Higher professional school Postojna, the Union of forestry associations of Slovenia and Secondary forestry and wood processing school Postojna. The trainings touch upon numerous SFM related topics (see Figure 5).

Share of topics covered in SFM trainings

Topic	in percent

(bar chart)
- Other: ~3
- Safety issues: ~36
- Forest threats: ~12
- Forest products and services: ~11
- Forest management and planning: ~38

x-axis: in percent (0, 5, 10, 15, 20, 25, 30, 35, 40)

Figure 5: Focal points in SFM training courses in Slovenia (relative share)

Such approach resulted in finding forest management and planning a highly relevant educational topic in Slovenia, with around 38 % of training courses conducted in that field of interest. Safety issues play an important role either (36 %). Apart Forest threats (12 %) as well as forest products and services (6,67 %) tend to be nearly equally promoted in SFM trainings. Education and training itself is also dealt with (3 %). These topics are taught in different ways (see Figure 6).
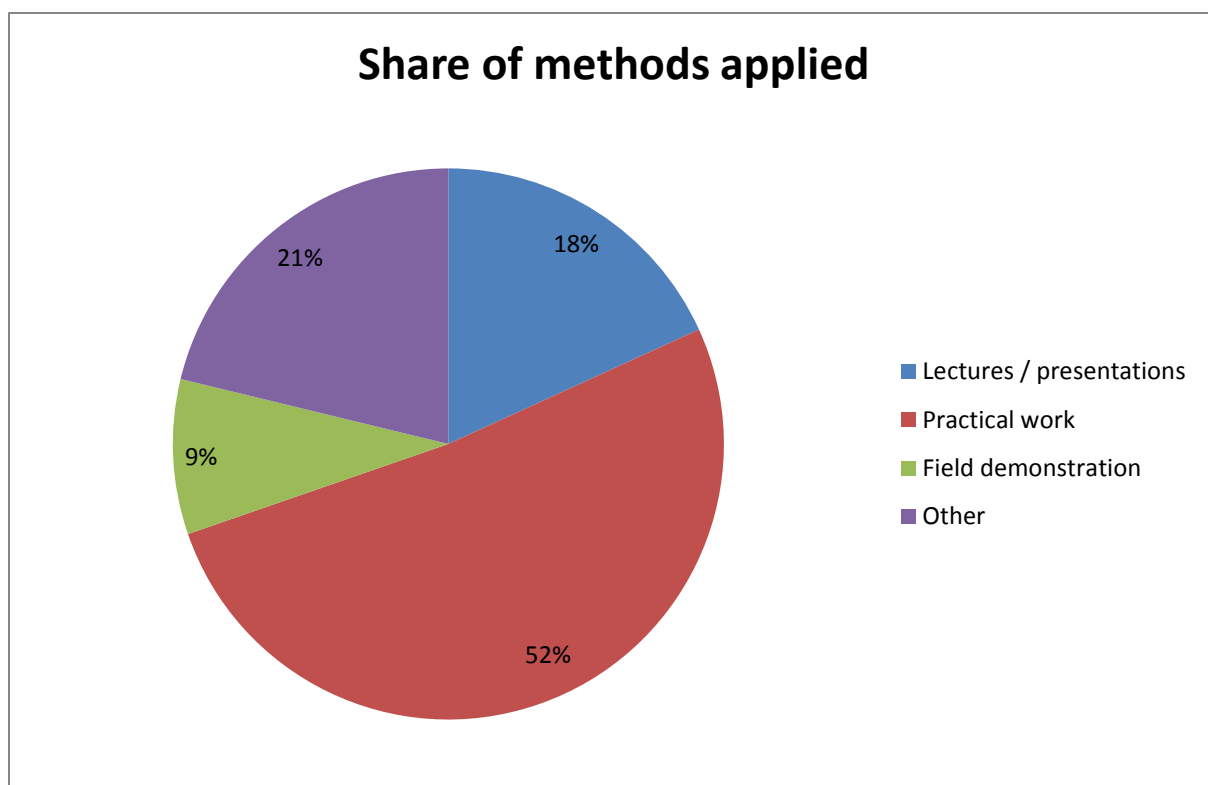
Figure 6: Relative importance of methods applied in SFM training courses in Slovenia

Practical work, particularly in workshop settings, dominates the means of knowledge transfer in Slovenia (52 %). In general it appears that there is a good mixture of indoor and outdoor teaching approaches applied in SFM training in Slovenia as seminars, study circles (21 %) and lectures / presentations (18 %). These methods constitute the main methodological approaches applied according to this project´s examination. Field trips (9 %) round up the entire portfolio of teaching methods.

Comparison between countries, identified gaps

Considering the above mentioned data analysis it becomes obvious that there is quite some heterogeneity across the countries covered in the study area as regards the current state-of-the-art of SFM related VET and LLL programmes. This holds true for both focal points (i.e. topics addressed) as well as means of knowledge transfer (i.e. methods applied). In the following Table 2 we aim to pinpoint at additional structural aspects addressing the cross-national divergence in education tackling SFM.

Table 2: Relative shares for selected VET and LLL performance indicators in the study area

Indicator	Austria	Croatia	Slovenia
	(in %)	(in %)	(in %)
Specified learning outcomes	87	36	91
Programme Evaluation	27	6	34
Assessment of participants´ progress	27	4	9

Slovenia is a good practice example regarding the definition of specified learning outcomes, as nearly all SFM related trainings specifically addressed the main competences VET or LLL learners should gain

after completion of individual courses. In Austria it is common practice to indicate the learning outcomes although it´s not applied to all trainings (87 %), while in Croatia it is mostly not defined (36 %). Programme evaluations as well as the Assessment of participants´ progress both appear to be rare practices in all three countries so far.

Considering the project target groups (i.e. Forestry professionals, Private forest owners, Forestry entrepreneurs, Employees of Institutions in charge of protected areas, Employees of project partners´ institutions) it was interesting to see how VET and LLL addresses these stakeholder groups in their programmes. There are many SFM related trainings specifically tailored towards Forestry professionals, Private forest owners as well as Forestry entrepreneurs in each of the countries in the study area. Although Employees have not been mentioned specifically as target groups, both protected area responsibles as well as scientific personnel are considered within national programmes except in Croatia.

Examples of good practice in Austria, Croatia and Slovenia

According to the criteria defined (see Table 1) the following good practice examples could be elicited from the survey in the study area. Beyond specified criteria additional information is highlighted in any case.

Austria

Table 3: Good practice examples in SFM related VET and LLL programmes in Austria

Programme theme	Forest Management Course	Forest Management Course	Forest Dialogue
Service provider	Forest Training Centers Ort & Ossiach		Austrian Ministry of Agriculture, Forestry, Water Management and Environment
Duration of the programme	4 days	2 days	1 day
Target groups	forest owners, forest workers; requirement for national forest worker exam	forest owners and general public	Forest owners, forestry professionals, forest owner associations, forest scientists, forest administration

Topic and short content	basic information on close-to-nature forestry	basic information on close-to-nature forestry	reconciliation of political objectives and forest owners.
Specific learning outcomes	site classification, needs of different tree species, natural regeneration and afforestation, forest protection	site classification, needs of different tree species, natural regeneration and afforestation, forest protection	mutually agreed concept for forest management under the pressures of climate change.
Used methods	lecture, demonstrations in the field	lecture, demonstrations in the field	lecture, presentation, moderated discussion
Evaluation of the programme	yes; exam taken by participants; certification	no	yes, feedback from participants; protocols
Promotion	printed lecture programme of the Training Centers	printed lecture programme of the Training Centers	personal invitation via open mailing list
Assessment of participant´s progress	yes; exam taken by participants; certification	no	no

Croatia

Table 4: Good practice examples in SFM related VET and LLL programmes in Croatia

Programme theme	Silvicultural work on biological regeneration			The course on forest preservation		Recreational functions of forests	
Service provider	Forest Advisory Service	Croatian Forests	Advisory Service	Forest Advisory Service	Croatian Forests	Forest Advisory Service	Advisory Service
Duration of the programme	2h			6 h		2h	
Target groups	Private Forest Owners			Private Forest Owners Associations		Private Forest Owners Associations	Private Forest Owners
Topic and short content	description of silvicultural work, way in which is performed and its purpose			basic concepts in forestry, forest community areas, protected species, legislation, conservation of forests, illegal acts and bodies that control them, the basics of cartography and forest marking		recreational functions of forests, forest resources use, legislative framework	
Specific learning outcomes	acquisition of information applicable in practice, knowledge on sustainable forest management			Knowledge of the laws and regulations relating to the case, the goal is self-organizing a guarding of forests among private forest owners		Preparation for the use of forests in different purposes, not only for the exploitation of timber	
Used methods	lecture, presentation, demonstration (in 10%)			lecture, discussion, exercise		lectures, practical examples	

Evaluation of the programme	no	yes, participants filled out a short questionnaire after the lecture	no	
Promotion	posters, notifications	posters, notifications	posters, notifications	notifications
Assessment of participant´s progress	Yes, among those forest owners who began to carry out works of biological renewal in their forests	One association organized guarding of forest of association members, the collection of evidence and contacting with the police	beginner experience of some members of the association in dealing with the forest tourism, preparation for EU funds	

Slovenia

Table 5: Good practice examples in SFM related VET and LLL programmes in Slovenia

Programme theme	Forest management and silvicultural measures after natural disasters	PAWS MED training course for forest pedagogy	The basic training for Study Circle leader and mentors
Service provider	Biotechnical faculty in Ljubljana, Slovenian Forestry Institute, Slovenia Forest Service	Slovenia Forest Service, PAWS _MED project group	Slovenian Institute for Adult Education
Duration of the programme	2 days	4 days	62 hours
Target groups	forestry professionals on the field, forestry students, researchers in forestry, forestry teachers, forestry authorities	foresters, students and teachers of forestry schools, forest owners who are experienced in forest management, hunters, conservationists, general public interested in environmental issues	adult educators, public institutions employees incl. SFS, forest owners, private enterprises, civil society (e.g. implementation among forest owners)

Topic and short content	Forest management approach after natural disasters in forests Management of forests floods affected forests in conditions of limited financial and human resources Effects on ice break on forests Ice break impact on ecological processes in forest stands Genetic diversity as the basis of the adaptation of forests to a changing environment Large herbivore wildlife and its impact on forests Analysis of the situation of seed production in Slovenia Comparison of different methods of rejuvenation Physical properties of beech after ice break Social and economic aspects of natural disasters in forests	Forest Pedagogy - Seminar for foresters The purpose of education Forest pedagogics in Europe Basics of pedagogy, the forms of forest pedagogy Target groups in forest pedagogy Presentation of products PAWS-MED Presentation of the Tour Planner for planning activities Activities in the forest	5 parts: 1. adult education principles and characteristics; 2. definition of a study circle; 3. phases of SC and how to actively engage/lead these phases, 4. monitoring of SC in Slovenian system, promotion of LLL, 5. meeting a practitioner
Specific learning outcomes	-To transfer of knowledge from research into practice, to define main problems of post-disaster management of forests, assessment of the ice break effects on the development of forests in the future; concrete presentation of the different silvicultural approaches to ensure the recovery of forests and reduce its vulnerability to future disruptions.	To increase the competence of foresters in the area of holistic pedagogics, psychology and communications skills –to enable foresters to improve the quality of their teaching –to teach foresters how to plan and prepare pedagogically appropriate and efficient tours or seminars for individual target groups	Seminary work has to be practically oriented - participants are encouraged to use their own (job or civil engagement) cases; This later turns into outcomes e.g. local projects and engagements. Integration of diverse competences. Active use of competences.

Used methods	Indoor presentations (half day) Outdoor presentation and discussion in groups Practical work on premeasured plot (in groups) Evaluation of groups results - discussion	Indoor presentations Practical demonstration in the forest Practical work Self learning period Evaluation and discussion	Lectures and presentations. Field work. Individual and team work. Discussion. Learning materials study.
Evaluation of the programme	Yes, written questionnaire	yes, questionnaire	Yes, more types of it (evaluation of the programme, its presenters, equipment and implementation); Regular questionnaires. Monitoring of activity after finishing training (only for active ones).
Promotion	Invitations, media cover, WWW,	Invitations, www, internal communication, intranet	Yes, systematically (websites, international projects marketing, annual events of SIAE, occasional publishing on different levels (research, information).
Assessment of participant´s progress	No	Yes, monitoring of utilization of knowledge	Yes, systematically reports are quantified and discussed.

Lessons learnt

Survey results indicate that there is a broad interest in the study area to foster education and training in the forest-based sector within national VET and LLL programmes. Numerous SFM related training courses are offered in each of the countries, in most cases addressing key target groups that have been identified to be relevant by the CIA2SFM project. There is also a broad portfolio of topics that are spread across national trainings although the relative importance differs notably between countries. Even if focal points may relate to national needs within forestry sectors, SFM related VET and LLL programmes should be regularly screened and updated according to international agendas and emerging issues. Although a variety of methods are applied in order to facilitate the uptake of knowledge by trainees (or learners) indoor ex-cathedra approaches are the dominant means to transfer state-of-the-art know-how on forestry related topics. Nevertheless it could be recognized that there is a strong interest to facilitate the practical understanding by fostering demonstrations in the field, field trips or a variety of practical approaches in most countries. This appears to be strongly linked to the topic and content taught as some of them are better suited for such approaches and others are not.

There are needs for action in the study area (i.e. Austria, Croatia, Slovenia), for example in upgrading educational approaches via following aspects:

  a. specified learning outcomes
  b. evaluation of the programme
  c. assessment of participants´ progress and
  d. promotion of the programme

Progress can be made in several directions, inter alia via learning from diversity of national approaches towards stakeholder engagement but also in harmonizing national practices with European strategies. If limited to the improvement of educational approaches only, each training offered should clearly indicate the main skills and competences trainees are supposed to obtain during a course. Evaluation is supposed be beneficial in order to receive feedback from the learners on the respective training as this may be taken up for the further development of the courses. Assessment of participants´ progress (e.g. via an exam, a short report, a practical work, certification) in order to secure the successful transfer of knowledge could be further developed in all countries. There is also a gap in the promotion of individual courses / programmes as some of them are announced within a limited number of potential participants for instance and this may be limiting the candidates that are aware of what is going on in VET and LLL in their region.

The way forward

Taking into account that needs and demands with regard to VET and LLL programmes fostering education in sustainable forest management tend to be heterogeneous among the three countries in the study area, the following outlook is meant to highlight some potential for improvement in general and applicable to different national frameworks. It is tailored towards the development of an innovative curriculum for both areas, VET and LLL, in the field of SFM trainings and education and was conceptualized at a workshop among national experts, held in Ljubljana from 9th to 13th May 2016.

Considering that lifelong learners interested in SFM represent a diverse range of target groups, from landowners over landscape enthusiasts interested in forest pedagogics to forestry professionals, there is no "one fits all" curriculum. However, the demands of different target groups may well be represented in a pyramid of needs, representing the level of knowledge that might be appropriate for a certain target group. Figure 7 highlights an approach to cluster individuals according to the level of knowledge they may need to obtain in order to gain a certain level of expertise.
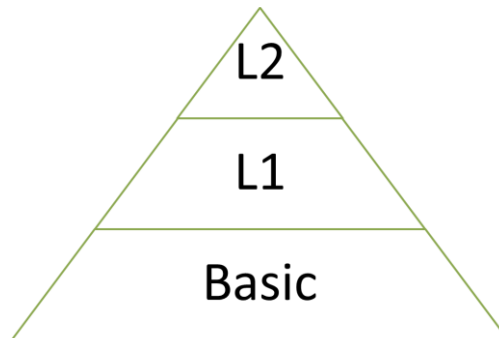
Figure 7: Generic scheme for clustering target groups towards VET and LLL trainings based on the level of knowledge

It is split into three categories and indicates the entry point of a lifelong learner into SFM related VET and LLL. *Basic* represents the lowest level of knowledge provided and offers learners a starting point in SFM. *L1* is meant to provide professional knowledge and skills on a broad portfolio of SFM topics, while *L2* pinpoints at the gain of expert level know-how in a certain domain of SFM. All levels consider all three pillars of SFM – ecological, social and economic. This approach emphasises a generic application among VET and LLL programmes in various countries as it allows for systematic screening and assignment of existing curricula to the needs of individual target groups. A harmonized approach for the identification and distribution of target groups can be expected as particularly relevant to institutions offering VET and LLL trainings and fosters the development of tailor-made programmes towards the needs of individuals.

There is additional potential to enhance the current state of SFM curricula via the integration of innovative means for knowledge transfer. Although not all topics may be suited the same way, the field of sustainable forest management offers a broad portfolio of themes to be addressed by a mix of methods. Among innovative approaches, besides methods applied throughout SFM classrooms as outlined in this study, are: i) study circles, and ii) e-learning

Study circles

Study circles (SC) represent non-individual learning approaches with an emphasis on dialogue. Their two aims are: i) to link educational or training messages with local needs and specifics, and ii) to empower by engagement in self-selected topics, usually representing the strengths of the target group (Bogataj, 2010). This method is widely applicable to any target group and has already been practiced for over two decades in Slovenia, inter alia addressing forest owners, forest professionals, public servants and civil society in general. Methodologically it roots in intentional learning and includes i) setting learning goals in a small group, ii) self-selected location, intensity and structure and iii) obligatory final public presentation of learning results and gains. Thus local needs are addressed directly, local people are engaged and results materialized (Bogataj et al, 2012). SC are particularly relevant for the Basic level of the general scheme (Figure 7) and for complex issues as for example SFM. Slovenian practice clearly shows that understanding the core idea of SFM has several local

implications and perspectives among different target groups, so gained or stimulated motivation and participation to learn in SC may foster higher and more demanding levels of education/training.

E-Learning

In general, e-Learning can be understood as a means of knowledge transfer by the application of electronic technologies. It involves the use of computers to access educational curriculums outside traditional classrooms. In recent years e-learning has become more diverse and evolved into a global change agent that represents the primary form of distance education. Major goals of e-learning include: i) improving access to education, ii) improving student choice over when, where and how to engage in learning processes, and iii) improving efficiency and effectiveness of education. Several models have emerged over time that provide a suite of methods to extend classroom lectures or other activities (e.g. experiments, study design) to students at remote sites. This ranges from synchronous distributed courses (i.e. classrooms are distributed in real time, for instance via streaming) to complete online courses where all of the course activities are done online. The latter one totally eliminates geography as a relationship factor between students and learning providers (Sener, 2015). Thus, e-learning might be applicable to a range of topics that can be specifically tailored towards target group specific requirements. Recent innovative developments within e-learning include "massive open online courses" (MOOCs), a method that aims to ensure that online learning is designed towards participants´ needs providing self-paced courses with maximum flexibility as regards time management. There is latent potential to integrate e-learning in trainings covering SFM topics.

To generate momentum towards SFM trainings and to attract interested individuals to participate in VET and LLL programmes, target group specific dissemination of respective information material is a prerequisite. Multiple channels exist and are already utilized in the study area. Beyond traditional marketing and PR, social media is becoming more popular nowadays and offering a diverse set of tools for communication beneficial to foster the broad distribution towards specific target audiences.

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