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How to improve landscape sustainability?

Abstract. Almost every professional sector has embarked on the move toward sustainability. European landscapes are facing rapid changes in land use, where understanding and management of this process is essential. Sustainability has become a widely acknowledged dimension of human actions, but still little stress is put on education in sustainability. This paper identifies focus of education, gives suggestions for improvements and presents a new tool for education and training in sustainable land use – "Route Planner". As results, it provides all users with new interesting facts on sustainability in the European Union and additional materials related to sustainable land use and Sustainability Impact Assessments (SIA). Users got the access to updated information regarding approximately 3000 courses on offer in this topic area throughout the European Union as well as case studies to compare sustainability practices in these countries in comparison to other parts of the world. Furthermore the end result of the information chain also leads the user to a collection of links such as interesting websites and further reading in the topic area.
Key words: sustainability, land use, Route Planner, sources, information

Introduction

The fundamental principle of sustainable development is well established and widely accepted – economic growth can, and should, be made compatible with stewardship of the planet for future generations. At EU and Member State levels, and within individual cities and regions, most policy-makers now appreciate the need to reconcile the triple objectives of wealth creation, social cohesion and environmental protection (Environmental Research themes - Sustainable Development Tools 2007). Many even understand that win-win solutions are possible. But how can they find these solutions? What combination of policies, support measures and technologies will optimise benefits in all three domains? And how should their decisions respond to the often-conflicting views of residents, businesses, public authorities and landowners? Without sophisticated decision-support tools, successfully implementing genuinely sustainable policies is virtually impossible.

At the present moment rapid land use change is occurring in the whole of Europe – it is not exaggerated to say that land use (the way in which land is used, especially in farming and city planning) is an increasingly dynamic characteristic of the European environment.. Management of this change is necessary but the education and training provision in sustainability for land use planning is fragmented and thus causes a major barrier to reach the EU sustainable development goal [A Sustainable... 2001; Proposal... 2004].

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Nevertheless, education has the most essential role in promoting sustainable development. Sustainability education involves studies of a variety of systems social, political, and economic in relation to real-life issues. Integrating sustainability in all levels of activity needs communication and cooperation between and involvement of different actors related to land use. Everybody should have a stake in the condition and future management of the environment. Sustainability ethic and values may be most successfully developed through education, awareness raising and training. It is important to have control over the processes of change in order to sustain and protect the quality of the environment and landscape. Without knowledge and information there is no sustainable management.

Sustainability and sustainable development, often used as synonyms, are widely used terms throughout the world. Brundtland's Commission (1987) defined sustainable development as development that "meets the needs of the present generation without compromising the ability of future generations to meet their needs". Sustainability relates to the continuity of economic, social and ecological aspects of human society and the environment. There is unlikely unanimity over the meaning of sustainable development [Filho 2000] but rather there are many different definitions depending on the approach used.

Urbanisation, EU common agricultural policy, pressures from global economic trends and climate change influence the land use development [A Sustainable... 2001]. Also the changing social perceptions of landscape (i.e. the ways people view nature and landscape) have a landscape altering effect. It is worthwhile to notice that the images of nature and landscape have changed throughout time and will continue to change, and thus so will also landscape [Buijs et al. 2006]. Sustainability of land use has been discussed broadly but a focused European policy approach has not been achieved yet. Reason to this lays in the complex nature of land use dynamics [A Sustainable... 2001].

It is important, and a clear EU challenge, to develop methodology to integrate sustainability aspects in profitable land use. Moreover, the need for the design of educational programs meeting the challenges posed by sustainability is confirmed by wider international initiatives (e.g. UNESCO Decade for sustainable education of 2003). Major efforts and investments under EU are now being directed at developing structured approaches to assess the sustainability of land use change (such as the EC Integrated Projects IP SENSOR and IP SEAMLESS). Nonetheless, education and training possibilities, especially for policy makers and practitioners, are scattered around Europe and are additionally largely uncoordinated [Proposal... 2004]. Coherent proficiency within European landscape and sustainable land use is needed to attain.

Multifunctional land use is an essential basis of the management of European landscapes. Involvement of diverse sectors, interaction as well as integration of many scientific disciplines into interdisciplinary research groups interacting with various supplemental methodological approaches are vital dimensions to enforce before multifunctional landscape can be fully achieved [Proposal... 2004].

Material and methods

Aims of the study based on "ATLAS project were to assess the status of educational and training provision in the area of land use, in order to develop an on-line data base for training possibilities and subsequently the 'Route Planner' as an interactive web-based

training tool for sustainability impact assessment primarily aimed at policy makers" [Proposal... 2004].

Understanding the meaning of sustainability is still problematic, and educators and others struggle with vague and inconsistent definitions. The question is how these constraints in teaching sustainability could be tackled? The first aim was to assess current educational and training possibilities with the perspective in the actual educational needs. Results formed the basis for SWOT Analysis. The amount of courses, location and availability to different users (such as policy makers, practitioners, professionals, and students) were examined in the areas of sustainability, sustainable land-use, and different assessment tools. Through this clarification was possible to make an analysis of the adequacy of present educational provision (see Table I) in the current fields, and identify the differences, gaps, weak points and opportunities between different countries. Finally, suggestions for improvements have been given.

SWOT analysis was introduced as a tool for business management in the 1970s. Nowadays, SWOT is widely spread and is often used as a qualitative tool to solve conflicts and identify features of the territory [Learning... 2004]. The SWOT analysis derives from the words 'Strengths and Weaknesses, Opportunities and Threats'. Strengths and weaknesses are internal factors, whereas opportunities and threats are considered as external factors. According to SWOT analysis results, the new tool as *Route Planner* was designed.

Results

The survey was undertaken in several EU countries (Denmark, Iceland, Norway, Sweden, Finland, Estonia, Latvia, Lithuania, Czech Republic, Slovenia, Slovakia, Hungary, Greece, Poland, Germany, Switzerland, Austria, Belgium, the Netherlands, the UK, Ireland, France, Luxemburg, Spain, Portugal, Italy, Cyprus, and Malta) surveying the country specific course supplies (offering institution, science field, level, teaching area, target groups).

The first objective was to assess the current user needs for training and education in sustainability and land use in Europe. The investigation was carried out through interviews with key persons in different organisations (universities, polytechnics, professional training organisations) and on different levels (students, academics, policy-makers, government official, practitioners and NGOs/business) throughout Europe. The results showed that more training is needed concerning impact assessment tools (EIA, SEA, SA and IA); information and guidelines are needed, as well as clearing out the terms and methodology, and general guidance in implementation. The relation between different assessment tools was found unclear and clarification to this was desired.

In Poland, despite a substantial rural-urban migration, 38.1 percent of the population still lives in the countryside. At present the rural population is increasing and the rate of natural increase (though falling) is higher than in the towns though the productive age group is smaller. However, these human resources are not being properly used and the results can be seen in terms of economic inefficiency, low living standards and a high level of state support. Poverty among the rural population is evident through a collapse of house building and considerable domestic overcrowding. However, conditions vary considerably

across the country and this must be reflected in the economic and social policies drawn up for the new administrative regions [Górz and Kurek 2000].

Table 1. The average provision (%) in ***sustainability*** related issues in European Union (amount of courses in: Environmental economy, Sustainable development, Sustainable management, Social impact, Sustainable planning and land use (Land-use impact, Land-use planning, Landscape planning, Planning for sustainability, Sustainable management) and in ***provision in interaction*** (practical training, practical communication, participation, and internationality) [Kovanen *et al.* 2006].

Country	Provision in sustainability	Provision in interaction
Austria	22,2	17,5
Belgium	23,4	16,8
Czech Republic	6,3	3,4
Denmark	30,4	39,1
Estonia	4,1	6,8
Finland	5,7	10,1
France	27,3	23,8
Germany	6,2	9,1
Greece	13,9	19,4
Hungary	2,4	3,2
Iceland	20,8	4,7
Ireland	2,6	3,5
Italy	15,0	6,4
Latvia	18,8	14,1
Lithuania	7,1	3,1
The Netherlands	30,7	18,8
Norway	15,5	29,1
Poland	0,0	47,3
Portugal	13,5	11,5
Slovakia	3,2	6,9
Slovenia	4,1	11,4
Spain	6,5	8,9
Sweden	22,9	27,6
Switzerland	12,1	13,6
UK	6,4	4,0

In the process of conducting the interviews it became clear that many people, although they were all familiar with a range of impact assessment (IA) tools, they (with the exception of a few researchers) did not know the term SIA. It was apparent that SIA is a relatively new concept and the term has had little exposure. As a result of these trials, the focus was often directed to asking questions relating to Impact Assessment (IA) or Strategic

Environmental Assessment (SEA), terms which were considered to be more familiar to the targeted study groups.

Apparently Government supports none of these procedures. For example Poland has courses only in EIA and would be placed considerably higher in the evaluation of sustainability provision than the real situation is. Also nearly 50 % of the courses have practical training as a part of teaching. Sustainability related issues are not well covered. In five countries (Austria, Estonia, Greece, Poland and Slovakia) sustainability related issues are not covered at all. An integrated approach is often missing. On the other hand, when evaluating the state of participation, communication, practical training and internationality, the provision is the best in Poland.

In Norway, Sweden, Denmark, the Netherlands, Belgium, France and the UK the situation in sustainability teaching seems to be better than in the other countries. Thus, one could say that these countries form the core of educational provision. The new EU countries, Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Slovakia and Slovenia are still struggling with the different assessment tools and basic issues related to sustainable development. On the whole, practical work and training should be offered more. Teaching sustainability should be carried out in cooperation of different academic disciplines of by professionals that are aware of the aspects of sustainability in their fields.

The second step in investigations was implementation of SWOT analysis [Kovanen et al. 2006].

Based on SWOT analysis, the Interactive ***Route Planner*** was designed in such a manner as to assist users in obtaining information regarding Sustainable Impact Assessment and land use that is tailor-made for their respective needs. The unique interactive tool was developed with a step-by-step approach and makes use of colourful and exciting photos as well as interesting pieces of information on a series of web pages.

The main idea behind this approach was to cater for a wide range of users and to keep each of these users interested to continue on the route through the web pages by means of an interactive interface. This was accomplished by building intelligence into the system and asking the user for specific personal information in each step. Then analysing the input to provide custom-made information in the next step that will be helpful to each specific web user.

With the help of information input from user interviews as well as the SWOT analysis, potential users were grouped into four main categories according to their profiles and needs. The first user group consists of *scientific researchers and scholars* who have an academic interest in the topic area. The second group consists of *professionals and the business community* such as individuals working for commercial companies. This user group will take an interest in the socio-economic aspects of the topic area. *Policy and decision makers* make up the third user group and their interests will lay mainly with legislative and legal matters. *Individuals interested in the topic area in general aspects* such as current state or new developments forms the last group.

Each user group is guided through the interactive Route Planner in a distinctive manner and in each case the initial entry point into the website dictates the route to be taken. Each new user input further dictates the type of information to be gathered by the user on his way through the Route Planner. From an architectural outlook, the database is therefore constructed in such a way as to provide various search paths through the information chain in order to obtain an end result.

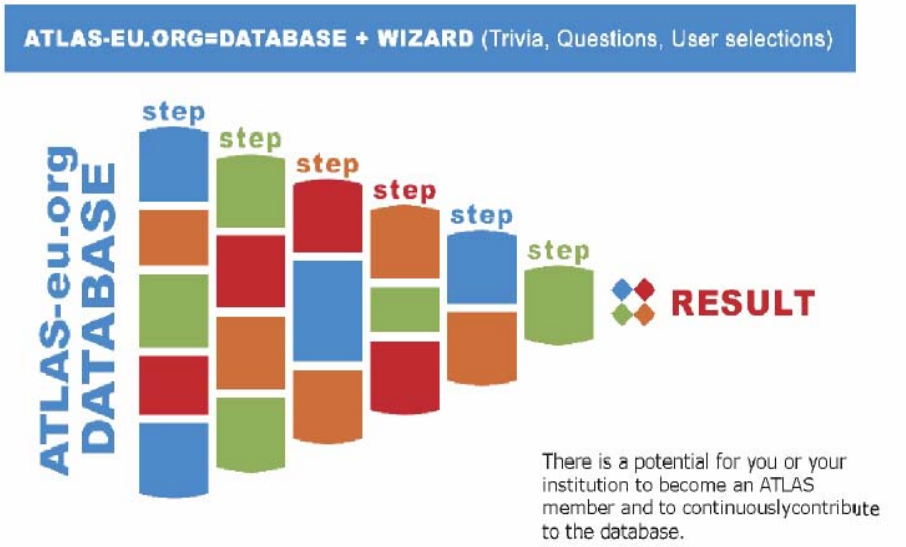

Figure 1. Route Planner Scheme

In this manner scientific researchers or scholars might enter the Route Planner by making choices about countries where- or languages in which they would like to study. Professionals and individuals with commercial backgrounds might wish to find information regarding case studies or shorter training programs such as new e-courses. Policy and decision makers could search for information regarding European legislation in the member countries while someone with an interest in ecology and sustainability could find new additional information on landscapes, land use change and Sustainability Impact Assessments (SIA).

Users Benefit

As previously mentioned the user benefits are varied and tailor-made to suit individual user needs according to the user group categories. The main benefit is to provide all users with new interesting facts on sustainability in the European Union and additional materials related to Sustainability Impact Assessments (SIA). Users will have access to updated information regarding approximately 3000 courses on offer in this topic area throughout the European Union as well as case studies to compare sustainability practices in these countries in comparison to other parts of the world. Furthermore the end result of the information chain will also lead the user to a collection of links such as interesting websites and further reading in the topic area.

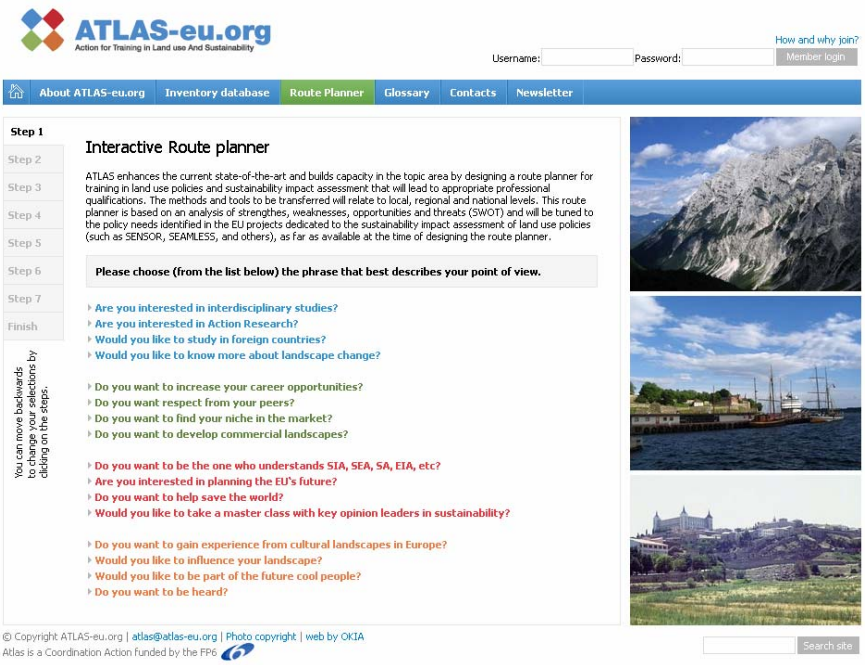

Figure 2. Print screen of the Route Planner interactive tool

Summary

The study enhanced the current state-of-the-art and built capacity in the topic area by designing an online and user-interactive "Route Planner" for training in land use policies and sustainability impact assessment that will lead to appropriate professional qualifications. The methods and tools were related to local, regional and national levels. The Route Planner is based on an analysis of strengths, weaknesses, opportunities and threats (SWOT) in the available educational resources for sustainability and environmental impact assessments and is tuned to the policy needs identified in the EU projects dedicated to the sustainability impact assessment of land use policies. New tool is available at http://www.atlas-eu.org/.

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