RESEARCH ON TRAINING NEEDS IDENTIFICATION. LEADESHIP IN SUSTAINABILITY

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Abstract:
The aim of this paper is to present the results of a marketing survey on training needs identification in the case of leadership in sustainability (in order to provide a well structured training program for sustainable manager and management). In order to develop the research, a questionnaire was developed and it was distributed on-line (http://leadsus.bicero.com/market-analysis) but a number of subjects (employees in the field of sustainable development, managers of different levels in companies and academic staff) were target, mainly from Romania, Slovenia, France and Austria. The aim of this research was to discover and measure the need of different topics related to sustainability and to provide a preliminary structure of a training program in the field that could help managers to become leaders in sustainability. The items selected for the analysis (included in the questionnaire) were: (1) Foundation - Understanding Sustainability Management; (2) Technical concepts - Resource Management; (3) Social Sustainability; (4) Product/Service Sustainability; (5) Management for Sustainability. According to the statistical data processing results, globally, there is a strong – very strong training need for all the analyzed topics (21 questioning items) related to a potential structure of a leadership in sustainability (sustainable manager) training program. In addition, the most adequate training method that was suggested by most of the respondents is (Theoretical knowledge + best practices examples + exercises + individual projects). The expected research results consist of the Leadership in Sustainability (LeadSUS) certification and qualification program preliminary structure (units and element of teaching and learning).

Keywords: management, leadership, sustainability, training needs, matrix

1. INTRODUCTION

It has been recognized that sustainable development is one of the main concerns of today's organization's managers. Resources scarcity (resource efficiency), pressures of actual regulations and standards on quality, environment protection, safety at work, eco-products, eco-technologies (cleaner production), carbon footprint reduction etc., together with important initiatives on corporate social responsibility, mainly developed by big companies (multinational or national) have pushed managers in re-thinking their business processes and activities by considering the content meaning of the three dimensions of sustainability (Figure 1) (Metcalf & Benn, 2013; Carroll & Buchholtz, 2014).

Figure 1: The triple bottom-line model of sustainability (similar to the 3P model)
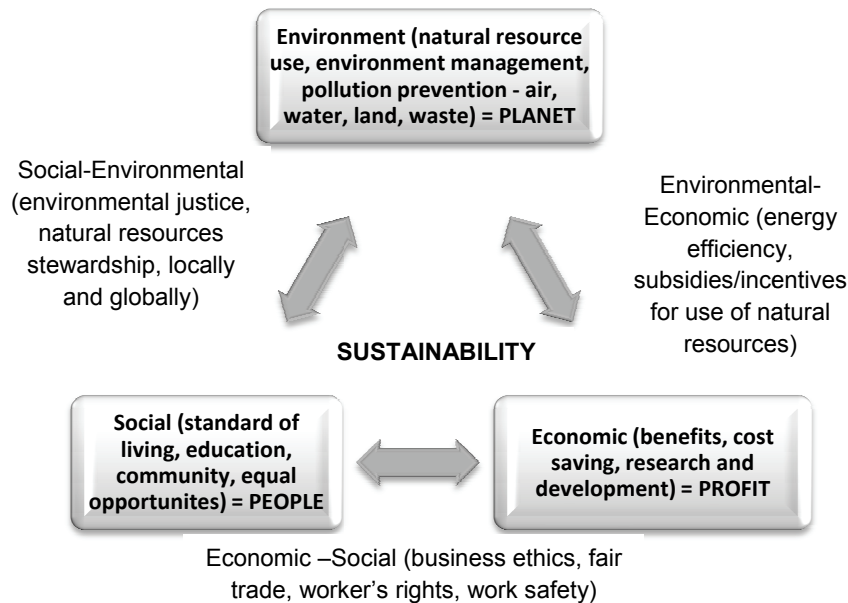
Since *Our Common Future,* Brundtland report, the sustainable development concept has evolved not only from the alternative definitions that were given to the approach, but also, from the business perspective and implementation. Updates and extends of the initial concept definition and perception on sustainable development are still embedded within key business guidelines or codes most commonly associated with global business-focused sustainability initiatives. The most important guidelines or codes in the field of sustainable development and sustainability are: the United Nation Global Compact, the OECD Guidelines for Multinational Enterprises, the ICC Business Charter for Sustainable Development, the CAUX Principles, the Global Sullivan Principles and the CERES Principles. Guidelines and codes put pressure on companies and their management to adopt and implement sustainability as a core value to their business and organizational culture, but these business guidelines tend to emphasize environmental rather than social aspects of sustainable development, in particular to the detriment of the original Brundtland prioritization of the needs of the poorest. In addition, "the attention to environmental aspects stresses win–win situations and has a clear managerial focus; whereas more conceptual environmental issues concerning systems interdependencies, critical thresholds or systemic limits to growth find little attention" (Barkemeyer et al., 2014). These considerations underline that attention has to be given more to the social aspects (including here organizations' practices and education in the field); both environmental and social components are expected to create economic benefits, simultaneously for companies and communities.

The importance of sustainability transformations (as a MUST for all type of organization) has been recognized by practitioners, policy makers, consulting companies and scientists, but also, by universities staff. They started to launch educational programs in the field, programs of all types (bachelor, master programs, post-graduate program, as discussed by (Cruickshank & Fenner 2012); (O'Byrne et al., 2015)). Furthermore, universities and consulting companies have started to develop online and blending learning support for education and most, for the human resources (employees of all categories) professional development (Eneroth, 2000); (Wilson, et al., 2011); (Pretorius, 2004);

(Sibbel, 2014). The main problems of these tools are: accessibility and their geographical disperse. These conduct to less accessibility of potential trainees to the courses, and to a certification in the field. Furthermore, in the field of education strategies and techniques there is still space for developments, especially for complete MOOC programs (Massive Online Open Courses) and cloud applications (as the assessment tools for energy consumption, carbon footprint, industrial processes impact, lifecycle, costs etc., are).

In the same time, managers and leaders could be great example and support for their employees' skills and competencies development in the field of sustainable development. The learning by doing process, combine with learning based on experience techniques could accelerate the transfer of the knowledge gained by the employees into the companies practice (Metcalf & Benn, 2013).

The education in the field of sustainability (environmental education, education for sustainability) has been recognized as an interdisciplinary one (Vincent & Focht, 2011), and its effectiveness and efficiency has been proof in the case of master or post-graduate degree programs or consulting companies training programs. Environmental and sustainable development education are also developed as vocational education training (VET) (Cullingford & Blewitt, 2013); (Dillon et al., 20130; (Sterling & Huckle, 2014); (O'Byrne et al., 2015). More difficult seems to be the knowledge transfer from the theoretical concept presentation (included in the courses or training materials) and the practical situation related to particular context of problem solving approach in companies or institutions. Thus, education in the field of sustainability in generally, and for managers and leaders in particular, has to combine theoretical aspects, with case studies and problem solving (projects, case based reasoning, problems solving etc.).

In this context, the present article describes an education approach for future leaders in sustainability training and certification (at the European level), developed with the financial support of a Lifelong Learning Project, "Leadership in Sustainability – Sustainable Manager" (LeadSUS). In order to define the program's structure (the learning units and elements) there have been conducted a survey based on a questionnaire for the training needs identification. The research results, presented in the article, have underlined the great need for sustainable leaders training and also, the respondents' acceptance for a VET program in the field.

2. RESEARCH METHODOLOGY

2.1. The research context

Since November 2013, an international partnership of universities and consulting companies from Romania, Slovenia, Austria and France has started to work together in order to build up a feasible schema for training and certification in the field of leadership in sustainability (acronym LeadSUS, www.LeadSUS.eu). The project's goal is to develop and provide a training program which is certified by a prestigious European organization (European Certification and Qualification Association, ECQA www.ecqa.org) that will be validated on particular markets (Romania, Slovenia, France). The consortium members agree on having a collaborative work and development of the training materials and also, of the examination pool of questions that were validated by ECQA in order to agree the guidelines for European certification of the professional competencies. Individuals (potential trainees as employees, specialists, managers of different organizations), included in the target group of the project, are able to attain the broad range of experience, skills and knowledge needed to transform them into successful Leaders in Sustainability. In addition, they will be able to certify their competence (and get a European certificate as recognition of their acquired professional competencies in the field). The general objective of LeadSUS project is to transfer and integrate a new skill at the level of European industry and institutions.

LeadSUS projects' objectives and activities will be developed in an international consortium consisting six partners, all vocational education training (VET) organizations (of public or private nature, see Table 1). Due to their exceptionally wide spectrum of contacts in different sectors and levels of education due to their status of VET organizations, the partners will have a major impact in the dissemination process and the exploitation of the project's results. LeadSUS professional trainers in the field of sustainability management will positively affect companies and institutions managers and specialists on a long term. LeadSUS project impact will be in three countries (Romania, Slovenia, and France) and four corresponding regions as West and Bucharest Region in Romania, North-Eastern

Slovenia, and South – Eastern France. Long term impact of the LeadSUS project (and its sustainability) at the European level will be assure by the new ECQA certified job role in a new profession (green competencies recognition, too), available for the European citizens and other more.

Table 1: LeadSUS project partners – the international consortium

#	Partner name (acronym)	Country	Role in the project
1	Denkstatt - Sustainable Thinking, Romania (DSRO)	Romania	Coordinator (contractor) http://denkstatt.ro/
2	Politehnica University of Timisoara, (UPT)	Romania	Partner www.upt.ro
3	Institute National Polytechnique de Grenoble (INPG)	France	Partner http://www.grenoble-inp.fr/
4	Business Informatics Center Rozman Ltd. (BICERO)	Slovenia	Partner http://www.bicero.com/
5	International Software Consulting Network Ltd. Graz, (ISCN)	Austria	Partner https://www.iscn.com/
6	European Manufacturing and Innovation Research Association, a cluster leading excellence (EMIRAcle)	Belgium	Partner http://www.emiracle.eu/

In the context of the LeadSUS project there have been adopted a coherent working methodology in order to attend the planed objectives. Figure 2 shows the main steps adopted to develop the on-line and multimedia training materials together with the examination pool of questions for the certification. The core of the LeadSUS training is the skill card, which clearly fit the competencies required for becoming a real leader in sustainability. This represents the structure of the training program and the definition of the learning units and elements. The preliminary skill card was developed by partners' inputs (according to their competencies, expertise and recent research results in the field of sustainability) and was refine by the coordinator of the project. This preliminary work has been considered as the basis for the questionnaire development in order to collect potential trainees feed-back about the training needs and pedagogical methods to be used during the training sessions (in class and on-line).
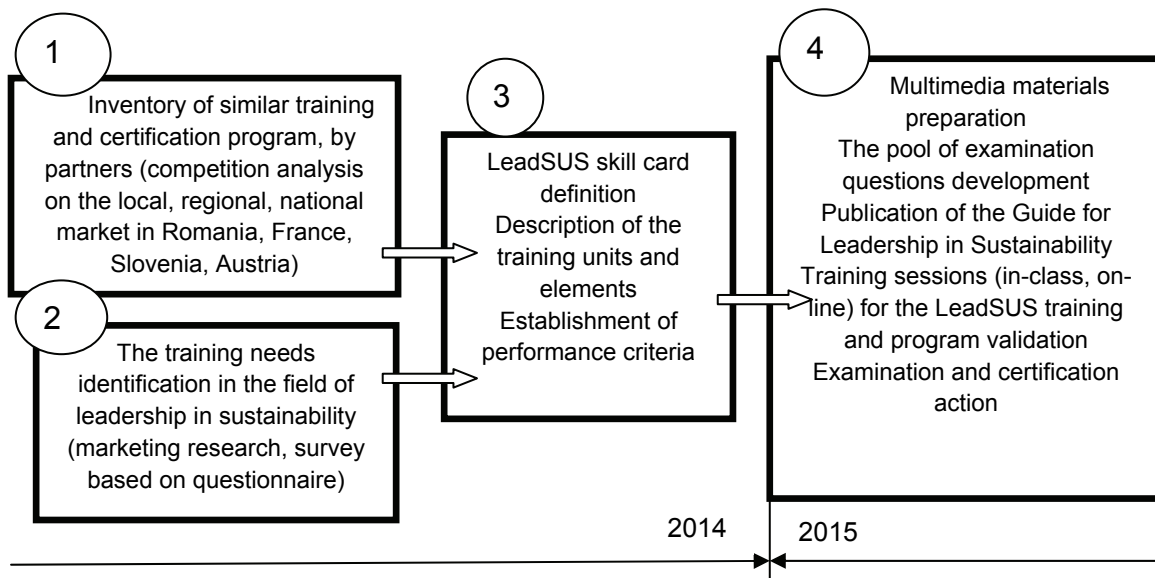

Figure 2: The adopted methodology for the LeadSUS training and certification program development

2.2. The survey development (for the training needs identification)

For the training need identification in the field of leadership in sustainability there have been developed a survey based on questionnaire combine with a collection of observations and informal discussions with potential trainees (investigated subjects included in the target group) which have been better refine the conclusions. The research sample has been defined as a a database with

potential persons of the projects target group (name, address, phone, e-mail) from companies/institutions, that was updated in the period November 2013 – November 2014 and that have a positive impact upon the Transfer of Innovation activities in Romania, France and Slovenia. Subjects in the data base have registered themselves on-line using the LeadSUS project web page facilities (http://leadsus.bicero.com/ on the left side). Snow ball principle has been applied in order to enlarge the research sample and to get more participants from different companies in the project target group. In addition, a series of News Letters were send to individuals in the target group (http://leadsus.bicero.com/news-1) and they were asked to disseminate these information in their organizations. Social network facilities as project partners personal LikedIn was also used to touch potential trainees and subjects of the research. Finally the sample (demography shown in Figure 3), consists of 306 subjects mainly from Romania, France, Austria and Slovenia.

Figure 3: The research sample demography
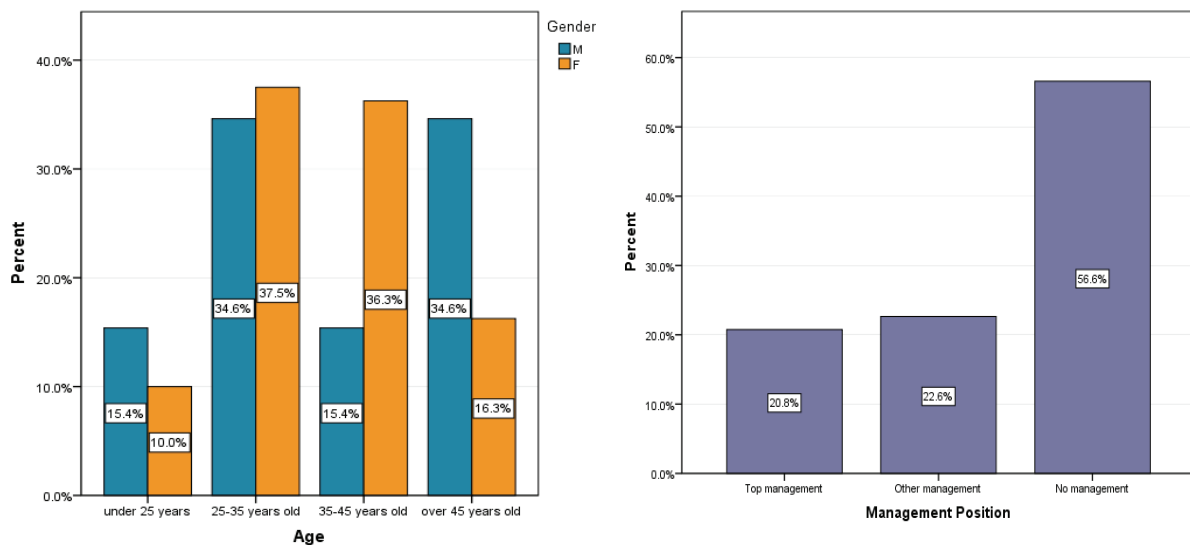
The designed questionnaire structure consists of three parts: (I) trainees' opinions on the utility of getting involved in the LeadSUS training and getting an European certification in the field; (II) collecting their needs (using a Likert scale of 5 points) on having trainings in 19 subjects related to leadership in sustainability (5 groups of subjects: understanding sustainability, technical concepts on resource management, social sustainability, product/service sustainability and management for sustainability). In this part of the questionnaire, subjects have been asked about the most suitable training method, orientation or tool that suit most to them; (III) information about the considered demography variable. The questionnaire was distributed on-line (http://leadsus.bicero.com/market-analysis) and the responses were processes using the PASW software solution. PASW was developed by IBM and it is known as SPSS (http://www-01.ibm.com/software/analytics/spss/).

3. RESEARCH RESUTLS AND COMMENTS

The research results will be given only by analysing the responds given in the part II of the questionnaire and by the responds grouped on their management position. This is the most relevant finding of the research developed and also, important for the LeadSUS project development. As a general conclusion (Table 2, bold figures/numbers), there can be seen that most subjects related to the leadership in sustainability (issues included in the questionnaire) are strong and very strong needed to be trained. In addition, there have been discovered a very little gap between top managers' opinions (express needs) and the respondents that have no management positions opinions (employees with high qualification and specialists, experts – all being graduate of a higher education institution). Table 3 shows the research results on the respondents about the most suitable training method, orientation or tool to be used during the training program. Top management and other managers, but also employees with no management position included in the research sample have agree that theoretical knowledge + best practices examples + exercises + individual projects is the most suitable training method in the case of this training program.

Table 2: Research results – Leadership in sustainability training needs identification

	Management Position			Total	Conclusions
	Top manag.	Other manag.	No manag.		
Dimensions of Sustainability (economic, ecologic and social) %					
1 no need	4.5%	.0%	1.7%	1.9%	No significant differences were found between management positions regarding the level of training needs on Dimensions of Sustainability, p=0.050
2 low level of need	4.5%	4.2%	10.0%	7.5%	
3 moderate need	4.5%	12.5%	16.7%	13.2%	
4 strong need	36.4%	33.3%	**45.0%**	**40.6%**	
5 very strong need	**50.0%**	**50.0%**	26.7%	36.8%	
Relevant/Actual Standards and Norms (relevant sustainability ISO and other norms) %					
1 no need	4.5%	8.3%	6.7%	6.6%	No significant differences were found between management positions regarding the level of training needs on Relevant/Actual Standards and Norms, p=0.411.
2 low level of need	4.5%	12.5%	8.3%	8.5%	
3 moderate need	40.9%	**45.8%**	**45.0%**	**44.3%**	
4 strong need	**50.0%**	33.3%	40.0%	40.6%	
5 very strong need	.0%	.0%	.0%	.0%	
Resource Efficiency and Cleaner Production (RECP) Methodology %					
1 no need	9.1%	.0%	.0%	1.9%	No significant differences were found between management positions regarding the level of training needs on RECP Methodology, p=0.572.
2 low level of need	4.5%	.0%	5.0%	3.8%	
3 moderate need	18.2%	16.7%	15.0%	16.0%	
4 strong need	22.7%	33.3%	26.7%	27.4%	
5 very strong need	**45.5%**	**50.0%**	**53.3%**	**50.9%**	
Water					
1 no need	9.1%	4.2%	1.7%	3.8%	No significant differences were found between management positions regarding the level of training needs on Water, p=0.397.
2 low level of need	13.6%	12.5%	8.3%	10.4%	
3 moderate need	22.7%	16.7%	20.0%	19.8%	
4 strong need	22.7%	29.2%	28.3%	27.4%	
5 very strong need	**31.8%**	**37.5%**	**41.7%**	**38.7%**	
Energy					
1 no need	9.1%	4.2%	1.7%	3.8%	No significant differences were found between management position regarding the level of training needs on energy, p=0.426.
2 low level of need	9.1%	12.5%	5.0%	7.5%	
3 moderate need	9.1%	8.3%	18.3%	14.2%	
4 strong need	27.3%	37.5%	20.0%	25.5%	
5 very strong need	**45.5%**	**37.5%**	**55.0%**	**49.1%**	
Materials and waste					
1 no need	9.1%	4.2%	1.7%	3.8%	No significant differences were found between management positions regarding the level of training needs on Materials & Waste, p=0.546.
2 low level of need	9.1%	4.2%	1.7%	3.8%	
3 moderate need	9.1%	12.5%	13.3%	12.3%	
4 strong need	27.3%	20.8%	30.0%	27.4%	
5 very strong need	**45.5%**	**58.3%**	**53.3%**	**52.8%**	
Definition/Approach of Social Responsibility					
1 no need	.0%	4.2%	1.7%	1.9%	No significant differences were found between management position regarding the level of training needs on Definition/Approach of Social Responsibility, p=0.137.
2 low level of need	4.5%	8.3%	3.3%	4.7%	
3 moderate need	13.6%	8.3%	16.7%	14.2%	
4 strong need	27.3%	29.2%	**51.7%**	**41.5%**	
5 very strong need	**54.5%**	**50.0%**	26.7%	37.7%	
Health and Safety Management					
1 no need	.0%	4.2%	.0%	.9%	No significant differences were found between management positions regarding the level of training needs on Health & Safety Management, p=0.966.
2 low level of need	4.5%	4.2%	5.0%	4.7%	
3 moderate need	13.6%	8.3%	15.0%	13.2%	
4 strong need	36.4%	37.5%	36.7%	36.8%	
5 very strong need	**45.5%**	**45.8%**	**43.3%**	**44.3%**	
Social impact assessment					
1 no need	.0%	4.2%	1.7%	1.9%	No significant differences were found between management positions regarding the level of training needs on Social impact assessment, p=0.954.
2 low level of need	.0%	4.2%	1.7%	1.9%	
3 moderate need	9.1%	.0%	8.3%	6.6%	
4 strong need	36.4%	33.3%	33.3%	34.0%	
5 very strong need	**54.5%**	**58.3%**	**55.0%**	**55.7%**	

	Management Position			Total	Conclusions
	Top manag.	Other manag.	No manag.		
Stakeholder management					
1 no need	.0%	.0%	1.7%	.9%	No significant differences were found
2 low level of need	4.5%	4.2%	3.3%	3.8%	between management positions
3 moderate need	18.2%	4.2%	10.0%	10.4%	regarding the level of training needs
4 strong need	27.3%	29.2%	33.3%	31.1%	on Stakeholder management,
5 very strong need	**50.0%**	**62.5%**	**51.7%**	**53.8%**	p=0.514.
Life Cycle Thinking					
1 no need	.0%	.0%	1.7%	.9%	No significant differences were found
2 low level of need	4.5%	4.2%	1.7%	2.8%	between management positions
3 moderate need	18.2%	16.7%	8.3%	12.3%	regarding the level of training needs
4 strong need	18.2%	29.2%	36.7%	31.1%	on Life Cycle Thinking, p=0.889.
5 very strong need	**59.1%**	**50.0%**	**51.7%**	**52.8%**	
Innovation by Design and Designing Sustainable Products/Services and Systems					
1 no need	.0%	4.2%	.0%	.9%	No significant differences were found
2 low level of need	.0%	8.3%	3.3%	3.8%	between management positions
3 moderate need	22.7%	12.5%	13.3%	15.1%	regarding the level of training needs
4 strong need	22.7%	33.3%	33.3%	31.1%	on Innovation by Design & Designing
5 very strong need	**54.5%**	**41.7%**	**50.0%**	**49.1%**	Sustainable Products/Services and Systems, p=0.581.
Sustainable Procurement and Supply Chain					
1 no need	.0%	.0%	1.7%	.9%	No significant differences were found
2 low level of need	13.6%	.0%	.0%	2.8%	between management positions
3 moderate need	9.1%	20.8%	11.7%	13.2%	regarding the level of training needs
4 strong need	36.4%	**41.7%**	41.7%	40.6%	on Sustainable Procurement and
5 very strong need	**40.9%**	37.5%	**45.0%**	**42.5%**	Supply Chain, p=0.629.
Strategic sustainability management					
1 no need	.0%	.0%	.0%	.0%	No significant differences were found
2 low level of need	.0%	.0%	3.3%	1.9%	between management positions
3 moderate need	9.1%	8.3%	6.7%	7.5%	regarding the level of training needs
4 strong need	22.7%	33.3%	38.3%	34.0%	on Strategic sustainability
5 very strong need	**68.2%**	**58.3%**	**51.7%**	**56.6%**	management, p=0.458.
Sustainable business model					
1 no need	.0%	.0%	.0%	.0%	No significant differences were found
2 low level of need	4.5%	.0%	1.7%	1.9%	between management positions
3 moderate need	4.5%	4.2%	8.3%	6.6%	regarding the level of training needs
4 strong need	13.6%	25.0%	35.0%	28.3%	on Sustainable business model,
5 very strong need	**77.3%**	**70.8%**	**55.0%**	**63.2%**	p=0.156.
Leadership in sustainability					
1 no need	.0%	.0%	.0%	.0%	No significant differences were found
2 low level of need	4.5%	.0%	1.7%	1.9%	between management positions
3 moderate need	.0%	4.2%	11.7%	7.5%	regarding the level of training needs
4 strong need	22.7%	29.2%	31.7%	29.2%	on leadership in sustainability,
5 very strong need	**72.7%**	**66.7%**	**55.0%**	**61.3%**	p=0.232.
Environmental accounting					
1 no need	.0%	.0%	1.7%	.9%	No significant differences were found
2 low level of need	13.6%	.0%	.0%	2.8%	between management position
3 moderate need	9.1%	12.5%	16.7%	14.2%	regarding the level of training needs
4 strong need	27.3%	33.3%	38.3%	34.9%	on Environmental accounting,
5 very strong need	**50.0%**	**54.2%**	**43.3%**	**47.2%**	p=0.636.
Communication with experts from different domains					
1 no need	.0%	.0%	1.7%	.9%	No significant differences were found
2 low level of need	9.1%	4.2%	5.0%	5.7%	between management position
3 moderate need	4.5%	4.2%	5.0%	4.7%	regarding the level of training needs
4 strong need	36.4%	29.2%	33.3%	33.0%	on communication with experts from
5 very strong need	**50.0%**	**62.5%**	**55.0%**	**55.7%**	different domains, p=0.661.

4. CONCLUSIONS

The presented research results together with the respondents' answers given in the case of 2 open questions were discussed during the LeadSUS project consortium meeting in January 2015. Based on

the research conclusions and the collaborative work between partners, there have been designed and detailed the LeadSUS skill card (training units and elements; performance criteria for each element).

Table 3: Most suitable training method, orientation or tool

	Management Position			Total	Conclusions
	Top manag.	Other manag.	No manag.		No significant differences were found between management positions regarding the most suitable training method, orientation or tool, p=0.316.
Theoretical knowledge presentation	4.5%	.0%	.0%	.9%	
Theoretical knowledge + best practices examples	4.5%	16.7%	10.0%	10.4%	
Theoretical knowledge + best practices examples + exercises	27.3%	41.7%	35.0%	34.9%	
Theoretical knowledge + best practices examples + exercises + individual projects	**63.6%**	**41.7%**	**55.0%**	**53.8%**	

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REFERENCE LIST

1. Barkemeyer, R., Holt, D., Preuss, L., & Tsang, S. (2014). What happened to the 'development'in sustainable development? Business guidelines two decades after Brundtland. *Sustainable Development*, *22*(1), 15-32.
2. Carroll, A., & Buchholtz, A. (2014). *Business and society: Ethics, sustainability, and stakeholder management*. Cengage Learning.
3. Cruickshank, H., & Fenner, R. (2012). Exploring key sustainable development themes through learning activities. *International Journal of Sustainability in Higher Education*, *13*(3), 249-262.
4. Cullingford, C., & Blewitt, J. (Eds.). (2013). The Sustainability Curriculum: The challenge for higher education. Routledge.
5. Dillon, J., Brody, M., & Stevenson, R. (Eds.). (2013). International handbook of research on environmental education. Routledge.
6. Eneroth, C. (2000). *E-learning for Environment: Improving E-learning as a Tool for Cleaner Production Education*. International Institute for Industrial Environmental Economics, Lund University.
7. Metcalf, L., & Benn, S. (2013). Leadership for sustainability: an evolution of leadership ability. *Journal of business ethics*, 112(3), pp. 369-384.
8. O'Byrne, D., Dripps, W., & Nicholas, K. A. (2015). Teaching and learning sustainability: An assessment of the curriculum content and structure of sustainability degree programs in higher education. *Sustainability Science*,10(1), pp. 43-59.
9. Pretorius, R. W. (2004). An environmental management qualification through distance education. *International Journal of Sustainability in Higher Education*, *5*(1), 63-80.
10. Sibbel, A. (2014). An experience in developing and implementing blended learning for sustainability.
11. Starik, M., & Marcus, A. (2000). New research directions in the field of management of organizations in the natural environment. *Academy of Management Journal*, 43(4), pp. 539 – 546.
12. Sterling, S., & Huckle, J. (Eds.). (2014). *Education for sustainability*. Routledge.
13. Vincent, S., & Focht, W. (2011). Interdisciplinary environmental education: elements of field identity and curriculum design. *Journal of Environmental Studies and Sciences*, 1(1), pp. 14-35.
14. Wilson, G., Abbott, D., De Kraker, J., Salgado Perez, P., Scheltinga, C., & Willems, P. (2011). 'The lived experience of climate change': creating open educational resources and virtual mobility for an innovative, integrative and competence-based track at Masters level. *International Journal of Technology Enhanced Learning*, *3*(2), 111-123.