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## ENVIRONMENTAL MANAGEMENT EDUCATION: INTERNATIONAL TRADITIONS AND UKRAINIAN EXPERIENCE

The paper examines environmental management education experience in the most recognized universities worldwide and compares it with Ukrainian practice. The ratings of the universities are used to make lists of universities to examine. Most of the institutions provide environmental management education in different forms. The study shows that environmental management and related disciplines cover similar topics. American universities use more practical approach and pay more attention to the role of community in decision-making. In Ukraine environmental management courses are taught focusing on management of natural resources, ecological audit, ecological expertise and environmental risk management topics.

**Keywords:** environmental management, course, education, geography, ecology, university.

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### ОСВІТА У СФЕРІ ІНВАЙРОНМЕНТАЛЬНОГО МЕНЕДЖМЕНТУ: МІЖНАРОДНІ ТРАДИЦІЇ ТА УКРАЇНСЬКИЙ ДОСВІД

У статті розглядається і порівнюється з українською практикою досвід освіти у сфері інвайронментального менеджменту в найвідоміших університетах світу. Рейтинги університетів були використані для того, щоб скласти переліки університетів для вивчення. Більшість установ забезпечує викладання інвайронментального менеджменту в різних формах. Дослідження показує, що управління навколишнім середовищем та суміжні дисципліни містять подібні теми. Американські університети використовують більш практичний підхід і приділяють більшу увагу ролі спільноти у процесі прийняття рішень. В Україні курси інвайронментального менеджменту викладаються з фокусом на раціональне використання природних ресурсів, екологічний аудит, екологічну експертизу та питання управління екологічними ризиками.

**Ключові слова:** інвайронментальний менеджмент, курс, освіта, географія, екологія, університет.

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### ОБРАЗОВАНИЕ В СФЕРЕ ИНВАЙРОНМЕНТАЛЬНОГО МЕНЕДЖМЕНТА: МЕЖДУНАРОДНЫЕ ТРАДИЦИИ И УКРАИНСКИЙ ОПЫТ

В статье рассматривается и сравнивается с украинской практикой опыт образования в сфере инвайронментального менеджмента в самых известных университетах мира. Рейтинги университетов были использованы для того, чтобы составить списки университетов для изучения. Большинство учреждений обеспечивает преподавание инвайронментального менеджмента в различных формах. Исследование показывает, что управление окружающей средой и смежные дисциплины содержат подобные темы. Американские университеты используют более практический подход и уделяют большее внимание роли общества в процессе принятия решений. В Украине курсы инвайронментального менеджмента преподаются с фокусом на рациональное использование природных ресурсов, экологический аудит, экологическую экспертизу и вопросы управления экологическими рисками.

**Ключевые слова:** инвайронментальный менеджмент, курс, образование, география, экология, университет.

**Introduction** Good governance is an important part of a sustainable development concept. It actually enables to achieve sustainable development goals which will be accepted by the United Nations in 2015 [1]. To achieve these goals managerial decisions at various levels should be adopted and consider not only the interests of business and society, but also the natural environment.

Methods and tools of environmental management are applied worldwide to reduce the impact of human activities on the environment by using existing technologies and maintaining economic feasibility and the possible economic growth to improve quality of life while preserving nature for future generations.

Apparently, education plays a vital role there.

**Problem statement.** The European countries and the United States take various steps to put environmental management theory into practice (see [2]). This kind of management is a purposeful activity which helps to maintain and improve the conditions of environment and natural resources influenced by human activities.

Generally speaking, people manage the impacts of economics on the natural environment. Proper management requires special knowledge and understanding of a complex relationship between a human society and natural environment.

This article **aims** to examine environmental management education experience in the most recognized universities worldwide and compare it with Ukrainian experience.

**Research methodology.** Environmental management education in universities is offered in the form of various programs and individual courses. The study intends to identify such forms and their content and to compare experience of different universities. Therefore, the research steps include the following:

1. To determine the top-rated institutions worldwide and in Ukraine using several ratings made by different agencies. The article does not aim to analyze the quality of the ratings precisely, it may be done by studying the methodology at the relevant web-pages provided.

**List of top-rated universities (in alphabetical order) worldwide  
and environmental management courses/programs they provide**

University	Web-page	Course	School/Department	Program/ Course level
California Institute of Technology (Caltech)	<a href="http://www.caltech.edu/">http://www.caltech.edu/</a>	Environmental Policy	Division of Geological and Planetary Sciences, Division of Engineering and Applied Science, and Division of Chemistry and Chemical Engineering	Environmental Science and Engineering Program, undergraduate and graduate course
Columbia University	<a href="http://www.columbia.edu/">http://www.columbia.edu/</a>	Earth Systems and Environmental Politics, Policy, and Management	The Earth Institute, School of International and Public Affairs	Master of Public Administration in Environmental Science and Policy
Harvard University	<a href="http://www.harvard.edu/">http://www.harvard.edu/</a>	Environmental management	Harvard Extension School, Harvard Summer School	Sustainability and Environmental Management Graduate Program
Imperial College London	<a href="http://www3.imperial.ac.uk/">http://www3.imperial.ac.uk/</a>	Environmental Policy and Management Module	Centre for Environmental Policy	MSc in Environmental Technologies
Massachusetts Institute of Technology (MIT)	<a href="http://web.mit.edu/">http://web.mit.edu/</a>	Environmental Management Practicum: Brownfield Redevelopment	The Department of Urban Studies and Planning (DUSP)	Graduate level course
Princeton University	<a href="http://www.princeton.edu/">http://www.princeton.edu/</a>	Environmental Decision Making	Princeton Environmental Institute, Department of Geosciences	Outreach Sustainability-Focused course
Stanford University	<a href="http://www.stanford.edu/">http://www.stanford.edu/</a>	Tragedy of the Commons: Human Ecology of Communal Resources; Environmental Governance	Department of Civil and Environmental Engineering	Graduate and upper-level undergraduate programs
University College London	<a href="http://www.ucl.ac.uk/">http://www.ucl.ac.uk/</a>	Conservation and Environmental Management	Department of Geography	Postgraduate studies (MSc Module)
University of California, Berkeley	<a href="http://www.berkeley.edu/">http://www.berkeley.edu/</a>	Environmental Management Systems: ISO 14000; Environmental Problem Solving	UC Berkley Extension	Professional Program in Leadership in Sustainability and Environmental Management
University of Cambridge	<a href="http://www.cam.ac.uk/">http://www.cam.ac.uk/</a>	Environmental Policy Assessment and Evaluation	Department of Land Economy	MPhil in Environmental Policy
University of Chicago	<a href="http://www.uchicago.edu/">http://www.uchicago.edu/</a>	Environmental Management and Planning in the Calumet Region; Human Impact on the Environment	Center for International Studies	The University of Chicago Program on the Global Environment (undergraduate)
University of Oxford	<a href="http://www.ox.ac.uk/">http://www.ox.ac.uk/</a>	Environmental Economics & Policy, Governing the Anthropocene, Methods and Techniques in Environmental Management	School of Geography and the Environment	MSc in Environmental Change and Management
Yale University	<a href="http://www.yale.edu/">http://www.yale.edu/</a>	Environmental Governance; Special Topics in Environmental Science, Policy, and Management; Earth Systems and Environmental Politics, Policy, and Management	Yale School of Forestry and Environmental Studies	Master of Environmental Management (MEM)

2. To identify programs and courses and to point out the main topics of the study.

3. To focus on environmental management education at Kharkiv National University.

4. General conclusions are made and the scope of further discussion and research is outlined.

The methodology has some limitations, including mentioned below:

– Some web-pages, especially of Ukrainian universities, do not provide adequate search options. In such cases the author examined some web-pages of certain departments which most likely offer environmental management education. The results represent only outcomes of the online search. The author is not responsible for unavailable content of universities' web-sites.

– The key words like 'environmental management' and 'environmental management course' were used searching via universities' web-sites. However, it is probable that the topics related to the environmental education are covered by other disciplines. Unfortunately, not every course or program has full information available online.

– Educational systems in American and European universities differ. The most evident distinction is that the US institutions create environmental management programs whereas in Europe environmental management is often a separate course or a number of courses which can be a part of several various programs.

**Environmental management in the universities worldwide.** Environmental management courses are taught in universities worldwide. We wanted to find out if the top-ranked institutions consider it worth learning. The following complex ratings of the universities in 2013 have been studied:

1. The Times Higher Education World University Rankings 2013-2014 powered by Thomson Reuters [3];

2. The Academic Ranking of World Universities (ARWU) conducted by the researchers at the Center for World-Class Universities of Shanghai Jiao Tong University (CWCU) [4];

3. The Quacquarelli Symonds (QS) top-universities rating made by a global provider of specialist higher education and careers information and solutions [5].

The list of 13 universities from the ratings has been presented. Table 1 below shows that all the best world universities provide education with regard to environmental management.

Curricula consist of different courses and many environmental management and policy courses are provided as elective. American universities imply more practical approach, e.g. university of Chicago uses a particular territory to study and apply principles of environmental management and planning and MIT offers a site-specific client-based work throughout a course.

The studied topics include the resource course, the role of government, science and the public in policy making, various management practices, sustainable development, decision-making procedures and techniques for effective environmental management, envi-

ronmental impact assessment, environmental management systems, the tragedy of the commons, conflicts and risks, community role in environmental management and others.

The programs and separate courses are interdisciplinary and require understanding of social processes as well as a strong background in Environmental sciences. So, it is not surprising that most courses and programs are designed for graduate students (Master and professional training).

Most universities provide environmental management education within environmental institutions, but some, including the University of Oxford, Princeton University, University College of London, within Geographical schools or departments.

**Environmental management in Ukrainian universities.** Following logic of the previous chapter we will study the following ratings of Ukrainian universities:

1. Rating of higher educational institutions in Ukraine using Scopus Affiliation Search in 2014 [6];

2. 8th Academic Ranking of higher education institutions of Ukraine «Top-200 Ukraine» created by the Center for International Projects «Euroosvita» in partnership with an international group of experts [7];

3. Ukrainian Universities Ranking «Compass 2013» [8].

The ratings cover different criteria but help to determine universities which provide the best education in Ukraine from various points of view.

The following list of institutions is composed from these three ratings (see Table 2) and the trends of environmental management education there are reviewed.

In Ukraine not all top-rated universities offer programs or courses in environmental management. Lots of attention is paid to management of natural resources, ecological audit, ecological (environment) expertise and environmental risk management topics which are essential for implementation of the Law of Ukraine «Towards ecological expertise» [9].

The studied topics include, among others, main concepts of environmental management, systems of environmental standards and norms, the company's environmental strategy, environmental monitoring, environmental impact assessment, management of natural resources, nature conservation, ecological and environmental law, ecological expertise, various management practices, sustainable development.

Actually, the courses content is very much alike content of European and American universities courses. However, more courses are available for undergraduate students. And some are taught at different levels at different universities, e.g. environmental management in Ivan Franko National University of Lviv and V.N. Karazin Kharkiv National University.

Most environmental management education is held by schools of geography and economics, but also by the school of ecology at Kharkiv National University.

**Environmental management at V.N. Karazin Kharkiv National University.** Environmental mana-

**List of top-rated Ukrainian universities (in random order)  
and environmental management courses/programs they provide**

University	Web-page	Course	School/ Department	Program/ Course level
Oles Honchar Dnipropetrovsk National University	<a href="http://www.dnu.dp.ua">http://www.dnu.dp.ua</a>	–	N/A	N/A
Taras Shevchenko National University of Kyiv	<a href="http://www.univ.kiev.ua/en/">http://www.univ.kiev.ua/en/</a>	Environmental Management of Water Resources, Earth Management, Natural Resources Management	School of Geography	BS
		Environmental Management	School of Economics	MS
Ivan Franko National University of Lviv	<a href="http://lnu.edu.ua/">http://lnu.edu.ua/</a>	Environmental Management and Ecological Culture; Management of Environmental Risks; Environmental Impact Assessment	School of Geography	BS
		Environmental management	School of Economics	MS
National Technical University Kharkiv Polytechnic Institute	<a href="http://www.kpi.kharkov.ua/">http://www.kpi.kharkov.ua/</a>	–	N/A	N/A
National Technical University of Ukraine "Kyiv Polytechnic Institute"	<a href="http://kpi.ua/">http://kpi.ua/</a>	Environmental Management and Audit	School of Engineering and Chemistry	Ecology and Environmental Protection Program
V.N. Karazin Kharkiv National University	<a href="http://www.univer.kharkov.ua">http://www.univer.kharkov.ua</a>	Ecological Management and Audit; Ecological Certification and Standardization; Certification ISO 14001; Environmental Management in Nature Management; Environmental Management in Sustainable Development	School of Ecology	MS
		Best Environmental Management Practices; Corporate environmental management		BS
		Environmental Management	School of Geology and Geography	BS
National University of Kyiv-Mohyla Academy	<a href="http://www.ukma.edu.ua/">http://www.ukma.edu.ua/</a>	Environmental Expertise, Ecological Law, Nature Conservation Management, Valuation of Anthropogenic Impact on the Environment	Faculty of Sciences	BS
		Environmental Politics, Environmental Management	Faculty of Sciences	MS
I.I.Mechnikov Odessa National University	<a href="http://onu.edu.ua/">http://onu.edu.ua/</a>	Environmental Impact Assessment	School of Geology and Geography	MS
National University Lviv Polytechnic	<a href="http://www.lp.edu.ua/">http://www.lp.edu.ua/</a>	Management Organization of Ecological Activities, Ecological Law	Institute of Ecology, Nature protection and tourism named after V. Chornovil	BS
		International management of nature conservation	Institute of Ecology, Nature protection and tourism named after V. Chornovil	MS
Yuriy Fedkovych Chernivtsi National University	<a href="http://www.chnu.cv.ua/">http://www.chnu.cv.ua/</a>	Management Organization of Ecological Activities	Department of Economic Geography and Environmental Management	MS

gement and economic education at Kharkiv national university has more than 35-years history (since 1979 at the School of Geology and Geography and since 1992 at the department, later the School, of Ecology). Seven courses are taught at School of Ecology. They help students to gain deep insight into modern environmental management trends, techniques and tools. In 2013 the environmental management course was renewed and became a part of School of Geology and Geography curriculum again. The course is elective and rather complex trying to embrace the most urgent topics. Some details about the course are given below.

The environmental management course provides students with the basic concepts of environmental economics and management and principles of environmental policies at the global, national, regional and local levels.

The main objective of the course is to promote environmental thinking in management and provide practical skills of decision-making and evaluating its effectiveness considering the consequences for the environment.

The students are to obtain the following competences:

- Ability to identify the factors which influence decision-making concerning environmental aspect.
- to choose qualification and apply assessment methods of human activity impact on the environment in practice.
- Communicational skills to be able to make decisions considering sustainable development principles.
- Knowledge of environmental standards and their role in marketing of goods and services.
- Ability to analyze a business strategy of a company in terms of environmental impact.

The course comprises six topics which makes 3 ECTS credits: (1) Environmental management. Decision-making for sustainable development; (2) Economics and environment: analytical impact assessment methods; (3) Tools for environmental management principles implementation; (4) Common decision-making for sustainable development goals; (5) Environment management in economics; (6) ISO 14000 and EMAS environmental standards; Environmental marketing.

There are six workshops which give the students an opportunity to develop the listed-above competences: analysis of the current environmental legislation and documents on sustainable development in Ukraine; environmental impact assessment of Ukrainian popu-

lation at the regional level using environmental footprint methodology; the course theorem: determination of the optimal environmental policy tools; a role game «Amoeba of change» based on the theory of diffusion of innovations; qualitative assessment of the effectiveness of environmental management systems; an impact of consumer choice on the environment: the role of products' eco-labeling.

Therefore, the course incorporates modern educational trends and provides students with some valuable content. The practical part helps to develop skills necessary to work on-site.

**Conclusions and further research.** Today people in every country face diverse environmental problems. It seems sound to solve these complex problems using managerial practices. Higher education responds to modern trends and offers a number of studying options for those who want to learn about environmental management applications. Universities worldwide teach separate courses and programs. However, it is possible to improve skills and find out new practices applying for the outreach level of education or professional training.

The latter is not common for the Ukrainian educational system yet where a life-long learning concept has not been implemented for a long time. Nevertheless, some important steps towards distance (online) education are being made [10]. This enables more people to get additional competences and save more time for their everyday life.

American universities are leaders in providing degree and non-degree online education. European institutions are keeping up. This provides a great opportunity for professionals worldwide to learn theory as well as highly innovative practices.

Thus, further discussion of the environmental management education should involve online learning options for all.

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## References:

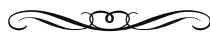
1. Sustainable development knowledge platform: Sustainable development goals: [Electronic resource]. – Mode access: <http://sustainabledevelopment.un.org/?menu=1300>
2. The European Eco-Management and Audit Scheme: [Electronic resource]. – Mode access: [http://ec.europa.eu/environment/emas/about/enviro\\_en.htm](http://ec.europa.eu/environment/emas/about/enviro_en.htm)
3. The Times Higher Education World University Rankings 2013-2014: [Electronic resource]. – Mode access: <http://www.timeshighereducation.co.uk/world-university-rankings/2013-14/world-ranking>
4. The Academic Ranking of World Universities (ARWU) 2013: [Electronic resource]. – Mode access: <http://www.shanghairanking.com/>

5. The Quacquarelli Symonds (QS) top-universities rating 2013-2014: [Electronic resource]. – Mode access: [http://www.topuniversities.com/university-rankings/world-university-rankings/2013#sorting=rank+region="+country="+faculty="+stars=false+search=](http://www.topuniversities.com/university-rankings/world-university-rankings/2013#sorting=rank+region=)
6. Rating of higher educational institutions in Ukraine using Scopus Affiliation Search: [Electronic resource]. – Mode access: [http://jsi.net.ua/scopus/ratings\\_uni/#](http://jsi.net.ua/scopus/ratings_uni/#)
7. Rating university «Top-200 Ukraine» – 2014: [Electronic resource]. – Mode access: <http://osvita.ua/vnz/rating/41406/>
8. Ukrainian Universities Ranking «Compass 2013»: [Electronic resource]. – Mode access: <http://bestuniversities.com.ua/ua/compass?year=70>
9. The Law of Ukraine «Towards ecological expertise»: [Electronic resource]. – Mode access: <http://zakon4.rada.gov.ua/laws/show/45/95-%D0%B2%D1%80>
10. Наказ Міністерства освіти і науки України «Про затвердження Положення про дистанційне навчання» МОН України; від 25.04.2013 № 466: [Електрон. ресурс]. – Режим доступу: <http://zakon2.rada.gov.ua/laws/show/z0703-13>

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## TRANS-BORDER TERRITORIES MAPPING: REALITIES AND PERSPECTIVES

The article considers the current state and perspectives of the trans-border territories mapping. Euroregions functioning features are highlighted. The existing approaches to the trans-border territories mapping have been analyzed. Forms of trans-border cooperation are considered. The need to use the system methodology in the trans-border territories study as well as the appropriateness of the system approach in the trans-border territories mapping is emphasized. The paper devotes special attention to the features of the trans-border territories system mapping and its importance for trans-border cooperation development.

**Keywords:** trans-border territories mapping, Euroregions, trans-border cooperation

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### КАРТОГРАФУВАННЯ ПРИКОРДОННИХ ТЕРИТОРІЙ: РЕАЛІЇ І ПЕРСПЕКТИВИ

У статті розглядаються сучасний стан та перспективи картографування прикордонних територій. Висвітлюються особливості функціонування євро регіонів. Проаналізовано наявні підходи до картографування прикордонних територій. Розглядаються форми організації транскордонної співпраці. Постулюється необхідність застосування системної методології під час дослідження прикордонних територій, а також доцільність застосування системного підходу при картографуванні прикордонних територій. Підкреслюються особливості системного картографування прикордонних територій та його значення для розвитку транскордонної співпраці.

**Ключові слова:** картографування прикордонних територій, євро регіони, транскордонне співробітництво.

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### КАРТОГРАФИРОВАНИЕ ПРИГРАНИЧНЫХ ТЕРРИТОРИЙ: РЕАЛИИ И ПЕРСПЕКТИВЫ

В статье рассматриваются современное состояние и перспективы картографирования приграничных территорий. Освещаются особенности функционирования евро регионов. Проанализированы существующие подходы к картографированию приграничных территорий. Рассматриваются формы организации трансграничного сотрудничества. Постулируется необходимость использования системного подхода при картографировании приграничных территорий. Подчеркиваются особенности системного картографирования приграничных территорий и его значение для развития трансграничного сотрудничества.

**Ключевые слова:** картографирование приграничных территорий, евро регионы, трансграничное сотрудничество.