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DEVELOPMENT OF ENVIRONMENTAL EDUCATION IN UNIVERSITIES OF LATVIA

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ABSTRACT

This paper describe the development of environmental education in two largest universities of Latvia - the Riga Technical University and University of Latvia.

There do not exist special education programmes in waste management in Latvia. In Riga Technical University the topic "Technologies of waste management" for engineer and master students is included in the course " Environmental engineering". Some hours of the above mentioned themes are included in the course "Environmental pollution and pollution limitation" of the Faculty of Chemistry University of Latvia. In the Master programme " Environmental Science and Management" in University of Latvia "Waste management and pollution prevention" is provided as short course (approximately 6 credit points). The new professional study programme " Integrated waste management and pollution prevention " is under preparation.

INTRODUCTION

The longterm objectives of the development of environmental education depend on the political and economic situation in Latvia. The abolition of the soviet regime and the change towards democracy, free market economy and decentralization of decision-making to the local level demand significant restructuring education programmes in the universities of Latvia.

In 1995, the Ministry of Environmental Protection and Regional Development published a National Environmental Policy Plan for Latvia [1]. The objective for

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practical steps is a deep understanding of the sustainable development concept. Trough their programmes, the institutions of higher education should contribute to the further development of sustainable development of the country, including sustainable development of the waste management.

As an environmental policy instrument, environmental education is necessary in order to:

- increase the level of public knowledge about environmental processes and trends;
- increase public interest and knowledge about problems associated with environmental protection and remediation;
- increase the public's sense of responsibility;
- increase practical public support for the solution of problems associated with environmental protection and remediation by responsible State institutions.

RIGA TECHNICAL UNIVERSITY

The programmes of environmental education for engineers at Riga Technical University have been developed since 1980, but the concept of this education is still the subject of discussion. The objectives for environmental education in Latvia today are not the same as they were in 1980s. During the period of the socialist "planned economy", the universities of Latvia had a very little interest in environmental problems. Only a few of them and how to solve them, were integrated into relevant existing disciplines, such as air pollution problems at the Faculty of Electrical and Power Engineering; environmental toxicology at the Faculty of Chemical Technology; waste-water treatment processes at the Faculty of Civil Engineering.

Today, because the society of the new independent Latvia must adapt to the conditions of market economy and to new concepts in environmental management at the international level, environmental education for engineers is acquiring great significance.

The creation of new faculty for "general environmental engineering" education at Riga Technical University was discussed. Unfortunately, our industry was not interested in such professionals , i.e., "generalists". Specialization in environmental engineering sciences at the Faculty of Chemical Technology offers Engineer diploma and/or Master Degree with specialization in the field of Environmental Technologies and Equipment (renamed to Environmental Engineering since the year 1997/98).

Since September 1996 one of the common compulsory courses of the Bachelor's and engineering study programmes of all the faculties is "Principles of Environmental Engineering" (3 credit points). The aim of the course is not only to inform students about environmental damage and other regional environmental problems, but also to stimulate them to think about environmental issues as a part of wider programmes.

Compulsory course on Environmental Engineering Science in the Master's programmes of all the faculties of Riga Technical University is under preparation. This course should be more scientific and specified.

All the graduates - bachelors, engineers and masters - should have an understanding of both the engineering solutions and their environmental consequences. Such knowledge will increase the capability of architects, civil engineers, chemical technologists to communicate with specialists in environmental sciences and management [2].

UNIVERSITY OF LATVIA

Starting with the nineties, more and more environmental aspects are included in the study programmes of the University of Latvia, including the development of several academic programmes on environmental science. The interdisciplinary training of environmental managers with broad perspective in the frame of the Master of Science studies on environmental science and management was developed at the University of Latvia in 1992/1993 [3].

Environmental education today

At present University of Latvia offers the following possibilities of environmental education:

- Faculty of Geography and Earth Science - Bachelor's and Master's programme "Environmental Science" (in total 168 and 79 credit points*), some environmental coursesare included in Bachelor's programmes for Geography and Geology (in total 16 and 21 credit points), Master's programme "Urban and regional planning" (in total 80 credit points);
- Faculty of Chemistry- a lot of environmental courses, including, waste and pollution prevention in Bachelor's programme (in total approximately 30 credit points), Master's programme in Environmental Chemistry (in total 80 credit points) and professional study programmes: Environmental Control and Control of Materials Radioactivity; Environmental Protection and Expertise (each 80 credit points);
- Faculty of Biology - a lot of courses in Ecology, Nature Protection in Bachelor's and Master's programme (in total 17 and 12 credit points), Master's programme in Ecology (80 credit points);
- Faculty of Management and Economic Information - Bachelor's and Master's programme Environment and Business Administration (in total 160 and 80 credit points);
- Faculty of Physics and Mathematics- courses Mathematics Models of Environmental Problems and Environmental and Social Impacts of Energy Use (in total 6 credit points);
- Interfacultary Centre for Environmental Science and Management Studies - two Master's Degree programmes: Environmental Science and Management

and Environmental Education (in total 79 credit points each), optional courses for all Bachelor's programmes University of Latvia: Environmental Science, Management and Policy and Environmental Education and Public Awareness (2 credit points each).

* 1 credit point corresponds to 16 contact hours

Centre for Environmental Science and Management Studies

Centre for Environmental Science and Management Studies (CESAMS) was established as an interfacultary structural unit at the University of Latvia in January 1993 aiming to promote development of interdisciplinary environmental education and environmental science research programmes, to provide development and publication of resource and information materials as well as to foster continuing professional development for teachers and students. The centre was initiated as the result of active academic and organisational work by the staff of the Ecological Centre University of Latvia in the field of informal environmental education and public awareness raising. CESAMS has been established by direct assistance of TEMPUS project in co-operation and co-ordination with EU universities (Roskilde University, Denmark, Free University Berlin, Germany and Lund University, Sweden) and the Ministry of Environmental Protection.

CESAMS structure is developing around the following directions:

- Waste management and Pollution Prevention,
- Environmental Communication and Sustainable Development,
- Environmental Planning and Regional Development,
- Environmental Education.

CESAMS has the specialised environmental management and environmental education library.

At present CESAMS realises two Master Degree programmes: Environmental Science and Management and Environmental Education - comprising interdisciplinary course in environmental science focusing on the academic aspects of environmental science and practical aspects of environmental management and pedagogy. The training programmes are based on wide experience adjustment of many foreign universities as well as original research and experience acquiring running various courses and preparing different teaching aids according to the conditions of the transition period in Latvia.

The general aim of the set programmes Environmental Science and Management is by interdisciplinary and interactive teaching/learning environment and team project work promote and facilitate the participants to acquire multi- and interdisciplinary knowledge, problem solving, management and communication skills in the field of environmental management. Interdisciplinarity as the first main basis of the programmes is presented by both - the content and the methods .

Students with different background first university degree in natural, social sciences, humanities, agriculture and technical sciences are enrolled for Master

course. They have an opportunity not only to study further their previous speciality in accordance with the multi- and interdisciplinary knowledge and to develop necessary skills for further professional work [4.

Until now there have gratuated 70 Masters of Science in Environmental Science and Management, most of them working in the Ministry of Environmental Protection and Regional Development and other institutions of this Ministry, in other ministries, in local authorities, some enterprises (the leading specialist in Waste Management of the Ministry of Environmental Protection and Regional Development has reveived Master Degree, too).

Today already for the fourth group of students there is being realised Master Degree programme Environmental Science and Management. Further on, considering the results of previous years entrance competitions- average 4 candidates (mainly working in environmental protection and environmental management institutions) per 1 place - as well as according to perspective plans of UL CESAMS and Republic of Latvia Ministry of Environmental Protection and Regional Development, it is planned to enrol 25- 30 students having practical experience each year. The courses Waste Management and Pollution Prevention are included in this master degree programme (in total 6 credit points).

Development of Professional Study System in CESAMS

As the next step in the development of environmental science and management as an interdiscipline there has been considered the conception of development of programmes for continuing professional qualification studies. The graduates of Master programme on environmental science and management, according to their previously received Bachelor degree or academic diploma speciality and to those multifunctional environmental management fields of professional life activities they are involved in, would be able to receive appropriate additional training and professional qualification in the interdisciplinary field of environment.

Professional study programmes in accordance with agreement with Ministry of Environmental Protection and Regional Development and respective professional associations would be developed for realisation in academic year 1997/1998, partly testing them already before. There is offered the realisation of the following professional study programmes, which have been developed taking into consideration the further development of the multidisciplinary branches of environmetal management in accordance with spectrum of theoretical and practical developments in environmental science and management: 1- environmental impact assessment and inspection, 2- waste management and pollution prevention, 3- environmental communication (and sustainable development), 4- environmental planning (and regional development). Initially these programmes should be realised as postgraduates programmes and/or parallel Master degree studies (later on as separate programmes, also parallel to undergraduate (environmental science) courses for senior undergraduate students). Demand for realisation of such programmes (for groups consisting of 8-15 people) can be very fast growing

during next 4-5 years, additionaly considering the development and possible changes of academic and professional study programmes [5].

Professional study programme " Integrated Waste Management and Pollution Prevention"

According to National Environmental Policy Plan for Latvia one of the priority problems, which will be solved with a specific plan of activities, organisational structure, timetable and regular State budget funding is national programme waste management.

At present ander preparation is Latvian National Municipal Solid Waste Strategy (the second draft is accepted in 1997, including education and public awareness), National Hazardous Waste Strategy must be further developed. It is necessary to develop an integrated solid waste management approach including proper and cost-efficient options for collection, recycling, transportation, treatment and final disposal of different types of waste. In order to implement such an integrated approach it is necessary to train appropriate staff being involved in waste management at the level of state institutions, local authorities and enterprises level. According to the mentioned above preparation and realisation of professional study programme Waste Management and Pollution prevention is included in the National Environmental Action Plan of Latvia (1997).

Based on the existing CESAMS experience and in co-operation with Lund University, Sweden, and Ministry of Environmental Protection and Regional Development is prepared the first draft of the professional study programme Integrated Waste Management and Pollution Prevention [6].

The programme is to be developed, teaching materials and teaching aids to be prepared until February 1998 when it is planned to begin the programme running. Initially the programme was financially supported by Latvian Environmental Protection Fund, but we are still open for additional professional and financial support.

CONCLUSIONS

According to the mentioned above every year the interest about environmental education among stydents as well as among other interests is growing. It testifies that environmental education in Latvia is a high necessity and it is developing towards EU standarts.

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