ESTONIAN QUALITY AGENCY FOR HIGHER AND VOCATIONAL EDUCATION

Assessment Report

Study Programme Groups: Life Sciences and Environmental Protection

Tallinn University

Tallinn University of Technology

Euroacademy

EKKA

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Introduction

The aim of the assessment panel was the evaluation of five study programmes, respectively

- A BSc study programme in “Biology”, followed by a MSc programme in “Molecular - Biochemistry and Ecology” at Tallinn University (TU).
- BSc and MSc programmes entitled “Environmental Management” at Tallinn University (TU).
- BSc and MSc programmes entitled “Gene Technology at Tallinn University of Technology (TUT).
- BSc and MSc programmes entitled “Industrial Ecology” at Tallinn University at Tartu (TTU).
- ProfHE and MSc programmes entitled “Environmental Protection” at EuroAcademy.

The assessment panel was composed of:

Prof. Laurent Counillon (Chair)	University Nice-Sophia Antipolis	France
Prof. Maris Klavins	University of Latvia	Latvia
Prof. Kari Keinänen	University of Helsinki	Finland
Prof. Rik Leemans	Wageningen University	the Netherlands
Prof. Romanus Lenz	Nürtingen University of Applied Sciences	Germany
Prof. Olav Aarna (Employers representative)	Member of the Management Board, Estonian Qualifications Authority	Estonia
Adrian Stan (Student Representative)	Vice-president at Timisoara Dental Students Association	Romania

The assessment panel for Tallinn University of Technology Environmental Protection Study programme Group was composed of:

Prof. Laurent Counillon (Chair)	University Nice-Sophia Antipolis	France
Prof. Kari Keinänen	University of Helsinki	Finland
Prof. Rik Leemans	Wageningen University	the Netherlands
Prof. Olav Aarna (Employers representative)	Member of the Management Board, Estonian Qualifications Authority	Estonia
Adrian Stan (Student Representative)	Vice-president at Timisoara Dental Students Association	Romania

The coordination of the whole assessment process was performed by Liia Lauri, (Information Manager), employed by *Estonian Higher Education Quality Assurance Agency (EKKA).*

Tasks of the Assessment panel

On January 23 2015, panel members were assigned Self Evaluation Reports (SERs) to analyse. Additional information (numbers of students and their evolution in the different programmes, Estonian higher Education system, classification of publications, etc.) was also provided to the experts by EKKA for the SERs analysis.
Preliminary reports, and lists of comments and questions were communicated by experts four to three weeks before the visits.

Panel Visits

The assessment panel met in Tallinn at EKKA office on Monday March 16th 2015. Panel members were introduced to the Higher Education System as well as the assessment procedure by EKKA. Then, the experts gave a brief summary of the programmes they had examined and discussed comments and questions that emerged from the analysis of the Self Evaluation Reports. This enabled the panel to list points and questions to discuss with each group at the different Universities. The distribution of tasks between the members of the assessment panel was then decided.

For all programmes and Universities the schedule started by discussions with the responsible vice rectors and deans, followed by persons responsible for the study programmes, and then staff members. Following these, the panel had meetings with the students and the representatives from the employment market (employees, employers and alumni). Visits of the teaching and research facilities were also organized and Master and Bachelor thesis manuscripts were also available for examination by the panel members. The whole committee appreciated the open and pleasant atmosphere of the discussions with the different colleagues of the programmes, which enabled open exchanges of information and a productive evaluation. The members of the committee had significant time during the breaks and after the visits to share impressions and discuss different points.
On Tuesday march 17th, the committee visited Tallinn University where the four programs listed above were examined. On Wednesday, 18th, the committee visited Tartu University of Technology in order to evaluate the “Gene Technology BSc and MSc programmes. On Thursday 19th the committee was split in two subgroups Prs. Counillon, Kainänen and Leemans accompanied by Liia Lauri visited Tallinn University at Tartu, while Prs. Lenz, Aarna, and Klavins accompanied by Adrian Stan visited Euroacademy.
On Friday March 20th, the whole panel held an all-day meeting, during which both the structure of the final report was agreed and findings of the meetings were compiled in a first draft of the assessment reports.

Study Programmes Findings Summary

Main strengths:

- The overall quality of the programmes is good according to international standards. This is due to a combination of several important factors:
    - The strong dedication of the teaching staff, leading to a good teaching quality and to a close proximity between teachers and students.
    - The small numbers of students enabling almost personalized teaching
    - The coherent and well thought structure of the programmes.
    - The support from the Universities.
    - The excellent access to electronic information and libraries.
- The teaching facilities are of very good quality at TU and TUT thanks to European Structural funds.
- Lively interactive and capable students.
- The fact that students from the different program find jobs quite easily after graduation.

Main weaknesses:

- There are not enough representatives from private sector in the program councils as well as in the teaching.
- Despite a good general level, several heterogeneities could nevertheless be observed between the Bachelors and Masters programmes examined by this committee. A substantial part of this situation comes from the fact that very different research environments back the different programmes. According to international standards those can either be excellent (TUT), good but limited (TU and TUT at Tartu) or non-existent (Euroacademy).
- Funding is not sufficient for the practical works that are costly in biology and those have to be supported by research funds. This is not a good long-term solution *a minima* because of the fluctuating nature of research funding.
- The programs are confronted to problems that appeal more global solutions than those they can propose: the demographic and economic context are important factors in the decreasing enrolments rates and in the alarming dropout rates. Also the levels of the students graduating from high schools are very heterogeneous and difficult to assess. This will lead to face important choices for the near future.

Study programme Evaluation panel main recommendations:

- In general the programs should more actively search to develop connection with private and industry sector.
- Keep databases of alumni, not only at the University level but at the program levels

- Programmes should be taught in English from Bachelor, in order to maximize the attractivity towards foreign students and the employability of the graduates from the programmes.
- More applied courses, which enhance the employability of graduates outside of academic research at both BSc and MSc levels, should be developed, perhaps in consultation with biotechnology companies.
- In order to decrease dropout rates, Universities and programmes leaders should continue to strongly advocate towards a more homogeneous level of high school students and towards a stronger financial support for students
- More interactive and problem-based learning should be included in the lectures.
- A strong connection between internationally competitive research and teaching, particularly at is required, particularly at Master level. This should guide an important strategic reflexion concerning the maintaining, modification or closure of several programs.

1. Assessment report of Tallinn University

Study programme group	Life Sciences
Higher education institution	Tallinn University
Study Programmes	BSc Biology MSc Molecular Biochemistry and Ecology

A. General findings

This programme contains a Bachelor and Master belonging to the Biosciences and Environment programme group. It is composed of a BSc study programme in Biology, followed by a MSc programme in Molecular Biochemistry and Ecology. The BSc programme is aimed at providing the basics in Chemistry, Mathematics and Biology, while leaving space for a minor field of study. This is completed by a Bachelor's thesis.

The MSc programme, was recently created from the fusion of Molecular Biochemistry and Marine Biology programmes. It is strongly orientated towards molecular mechanisms that are taught in detail. This Master programme actively integrates the students into the research projects led by the faculty members, with a strong focus on instrumental analysis.

For both BSc and MSc the choice has been to introduce a large proportion of elective courses.

The SER was informative, clear and well organized. The information it displayed was relevant and allowed an efficient analysis of the study programmes it described. Additional information provided in the Appendixes was a useful support to analyse the different sections of the SER in more detail.

Strengths:

- The contents and workload within the different modules and courses are well defined, scientifically solid and consistent.
- There is continuity in teaching methods and subjects between BSc and MSc. This vertical integration is interesting as it give a very strong coherence to the programme.
- A strategic choice has been to introduce an important ratio of elective courses both in BSc and MCs. This differentiates this programme from similar programmes of the other Universities and is very popular among the students who appreciate to become actors in their own curriculum.

- The campus has been renovated and has received structural funds. Consequently, the students benefit from very good conditions in terms of lecture rooms as well as rooms and equipment for practical courses. Of note, modern equipment has been acquired for analytical chemistry and is made available for the students.
- At Master level, the strong focus on instrumental analysis which benefits of recent and modern laboratory equipment.
- The investment of the staff in the programme is very positive both for teaching and counselling. The students give in general a positive feedback on the quality of the courses. Their remarks appear to be well taken into account by the staff.
- An important reform is under way at the level of the University. This is expected to result in the evolution of the programmes towards more interdisciplinarity.

Areas for Improvement:

- The research is of good quality but the variety of subjects is rather limited. This does not fully match the width of the teaching programmes examined here. Although this is merely a problem at the BSc level, this might be more problematic for MSc which is a level at which students strongly benefit from programmes that are backed by a large diversity of research groups that can offer a wide range of research subjects.
- There is a strong contrast between the important investments that have been made in building, facilities and equipment and the difficulties in meeting the running costs for the programmes, especially for practical works.
- The decreasing enrolment rates and increasing dropout rates both in BSc and in MSc.
- The choice to have a large amount of elective courses is not enough backed with counselling students on the possible choices, especially at BSc level.
- Some contents may be modified to leave space for teaching more advanced molecular biology techniques at the master level.
- There are possibilities for mobility, of the students and staff, noticeably Erasmus agreements with foreign universities, However, the panel felt that international mobility is still too low and should be reinforced.

Recommendations:

- Indeed, the research carried indoors is quite focused while the scope of the science taught in the whole curriculum is quite broad. This discrepancy led the panel committee to the conclusion that a reflexion on the connection between research and teaching should be carried out. This is important not only for the content of the programme but also for it’s coherence, future and also for the teaching staff.
- The difficulty to fund costly practicals might be addressed through the wider reflexion on the connection between the research and the existing modules.

- The decreases in enrolment and dropout rates should be addressed from a wide angle of view that includes a reflexion on quality and motivation of the students and on scientific quality standards.
- A strong focus should be kept on what is specific and is historically identified as strong at TU in Life Sciences (training teachers in life Sciences, interdisciplinary aspects).
- In implementing the new reform, the contents of the diplomas will still have to be straightforward enough to be well understood by future employers.
- Considering the high ratio of elective courses, more counselling should be given to the students to help them in their choices, or to identify tracks or group of elective courses.
- The modern facilities equipment and the quality of the new buildings might be worth advertising to promote the programmes to potential employers.
- Increase the number of external lecturers from private sector to expand the network of potential employers.
- Setup career days or consultations for the students.

B: Strengths and Areas for Improvement of Study Programmes by assessment areas

1. Study programme and study programme development

BSc in Biology (with minor field of study)

Taken together the structure, content and workload of the study programme are adapted at fulfilling its learning outcomes. The programme is divided into four modules, which can be either general, or subject specific in biology (Introductory courses in Natural Sciences, Life Processes, Species diversity).

The choice has been made to provide a large proportion of elective courses, in connection with the compulsory core of the modules. The aim is to provide diversity and offer interesting connections. In addition, the students choose a minor specialty through open elective courses. They can continue in their minor field of study after graduation. This is an important specificity of this particular programme, which is particularly appreciated by the students, as it not only offers a broader scope but also allow the students to become actors in their own curriculum. Students would nevertheless benefit from an increased guidance in the choices of their elective courses.

The students also have to produce a bachelor's thesis that will be defended publicly in front of a committee. The choice of the subject is made on a relatively free basis through discussions with members of the teaching staff who are also involved in research.

The programme length and structure follows the organization for BScs that has been defined by the University Senate that setup the general statute (document that can be downloaded) for the structure of a BSc programme. In addition, Appendix D shows that the programme has also been designed in order to comply with the standards for higher education established by the Estonian Government. (Regulation No 258 dated August 2002, with subsequent amendments).

MSc in Molecular Biochemistry and Ecology

This programme originates from the merging of two master programmes in 2013 *Molecular Biochemistry* (launched in 2008) and *Biology (Marine Biology),* as both of them had a very small number of students. This led to reorganization and to some extent this makes it difficult to fully evaluate the output of this programme, as it is rather new. However, the information on its structure, resources, staff and students is reasonably complete.

Similar to the BSc, the Master's programme consists in:

General courses, 50% mandatory, 50% elective courses; Subject-specific courses – with about 40% of the credits in elective courses (Natural sciences, Molecular Biochemistry, Molecular Ecology).

The programme continues with open elective courses, the presentation of a Master's thesis seminar and the Master's thesis

Merging two different programmes is always a difficult task. Here the coherence is based on two strong points: firstly the two parts of the programme, biochemistry and ecology, are both focused on molecular mechanisms, which therefore emerge as a common denominator. Taken together, the workload is correctly distributed between the different items and the contents are scientifically coherent, while some important parts may be more deepened (see the remark at the end of the section).

Secondly, the organization of the Master is very similar to that of the BSc. In particular here also the choice has been to introduce an important amount of elective courses, which represent 42% of the subject specific courses. Of note, students are recommended to choose their elective courses by taking into account their master's thesis subject.

As it was the case for the Bachelor programme, appendix D shows that the programme has also been designed in order to comply with the standards for higher education established by the Estonian Government. Finally, at the end of the MSc programme, the students must have a B2 level in a foreign language as well as a computing level at the end of the programme. Of note there is also a course on databases and the use of informatics resources in biology.

Both MSc and BSc programmes have a study council that contains a director, one representative of the administrations, lecturers, a student, alumni and a representative of the employers. This council is responsible for maintaining the programme up to date and meets once a year. It takes into account the feedback from students (both through electronic questionnaires at the end of each course and informal discussions), employers, teachers and alumni. This council also pays a particular attention to the evolution of similar programmes in other universities. This results in propositions for changes that have then to be validated by the Institute Board, in order to be applied in the next academic year.

The SER gives several examples of courses that have been changed, removed or replaced by others. Taken together, there is a substantial feedback into the programme. The students have confirmed this later point during the site-visit.

In the council, the stakeholders are not employed from the private sector. In contrast, they originate in majority from Research Institutes, governmental or municipal structures. Private companies therefore are not adequately represented and it is very difficult to assess whether they may represent an important source of employment for the alumni of this programme, both at BSc and MSc levels

Remarks on the whole programme and on its future developments

In general this programme is self-consistent and well balanced but built on very classical contents. For a programme that is strongly focused on molecular mechanisms, it appears that molecular biology techniques, and enzyme kinetics are taught quite late. In other words, the programme describes biochemistry and genetics in the BSc and classical molecular biotechnology techniques in the Master programme. As a result, there may be not enough space in the Master to teach more advanced techniques and approaches in molecular biology.

Another point raised by the students during the visit is that many courses, especially at the BSc level are knowledge based. Although basic knowledge is important in biology, it might be worth introducing slightly more problem-based learning in the BSc modules.

This programme is expected to undergo substantial changes based on the reform that will take place at the level of the whole university. The present Institutes will be concentrated in a limited numbers of institutes (5) that will be based on large societal problems (i.e. Education Innovation, Digital and Media culture, Health and Sustainable lifestyle, Society and governance).

This will result in a deep reorganization of the programmes that will cover a larger scientific area, probably here from ranging Psychology to Biochemistry and Ecology.

Strengths and areas for improvement relating to the study programme and study programme development (both study programmes are treated together, as they possess a very close organization)

Strengths:

- The contents of the different modules and courses and the workload in the different modules are classical but in general fine.
- There is continuity in teaching methods and subjects between BSc and MSc. This vertical integration gives clarity and consistency to the programme.
- A strategic choice has been to introduce an important ratio of elective courses both in BSc and Master. This differentiates this programme from similar programmes of other Universities and leads the students to become actors in their own curriculum.

Areas for improvement:

- The choice to have a large amount of elective courses is not enough backed with counselling students on the possible choices.
- The programme offers a very classical training. Complex and high throughput molecular techniques are not enough represented for such a programme.
- The council does not involve enough stakeholders from private companies.

Recommendations:

- Some contents may be renovated to leave space for teaching more advanced molecular biology techniques at the master level.
- More problem-based learning might be introduced in the BSc programme.
- Considering the high ratio of elective courses, more counselling should be given to the students to help them in their choices, or to identify tracks or group of elective courses.
- A strong focus should be kept on what is specific and is historically identified as strong at TU in Life Sciences (training teachers in life Sciences, interdisciplinary aspects).
- In implementing the new reform, the contents of the diplomas will still have to be straightforward to understand by future employers.

2. Resources

NB: For this item, BSc and Master will be documented together as they share the same resources and facilities.

Learning environment, equipment

The programme benefits from a renovated campus with new constructions, aimed essentially at absorbing the increasing number of students (terminated in 2013). Consequently, most of the teaching is performed in the new Astra building, with excellent equipment and presentation technology. This building provides a pleasant environment for student's life in general. All necessary equipment is present for modern laboratory teaching in biochemistry and molecular biology. More generally well- equipped practical rooms for general biology and chemistry are also available. There is no practical room for genetics. There are also 3 well-equipped analytical chemistry laboratories that are used mostly for research but are widely made available for the students.

Financial

There is a striking contrast between the financial resources that have been invested (mainly through structural funds) into the building, equipment for practical and for research (mostly in analytical chemistry) and the running costs available for the programme, which are not sufficient and not secured.

Library and online resources

The Academic Library provides the academic staff and the students with free access to several databases of e-journals and other scientific publications as well as databases in various fields of biochemistry and ecology. Open Internet sources are also used appropriate. The number of hard copy book, especially English-written major text books in Biochemistry, Molecular and Cellular Biology, is not sufficient.

The students can also access materials outside of the University network. Finally, a web-based Moodle database system allows the students to access teaching materials, reviews, articles and presentations, both from within and also from other universities.

Strengths and areas for improvement relating to learning environment and resources

Strengths:

- The quality of the building and teaching facilities, both for lectures and practical work. The modern equipment of the existing research laboratories.
- The electronic resources for the students.

Areas for improvement:

- The strong contrast between the important investments that have been made in building, facilities or equipment and the difficulties in meeting the running costs for the programmes, especially for practical.

- The difficulties to get access to English written reference textbooks for the students.
- The limited number of research projects carried indoor, which do not help to provide the students with a large diversity of projects and does not generate enough funds to cover for the practical work.

Recommendations:

- A deep reflexion on the connection between research and teaching should be carried out. In particular does the variety of research topics match the area covered by the BSc and MSc courses?
- The difficulty to fund costly practical might be addressed through the wider reflexion on the connection between the research and the existing modules.

3. Teaching and learning

NB: For this item, BSc and Master will be documented together as they share the same methods and organization and have the same problems.

The programme uses a classical combination of classwork, laboratory work, e-study, fieldwork, and individual work. Most of classwork powerpoint presentations are made available for the students. Taken together those appear to be robust forms of teaching and studies, well adapted to achieve the learning outcomes both for the BSc and MSc degrees. However, as previously mentioned, students may like to attend more interactive courses based on problem-solving teaching. Transverse skills are implemented through several dedicated courses and also through the Bachelor's and Master Thesis works. The master is of course more centred towards individual and practical work than the BSc.

Approximately 30% of courses are laboratory practice at the BSc level, which is quite significant, but the SER states that not enough is achieved, especially, for Chemistry and Biochemistry, mainly due to the lack of sufficient financial resources for the programme. Individual work involves reading compulsory literature, writing reports, essays, submitting term papers and a Bachelor's thesis.

An interesting point is that the students have the possibility to study abroad, thanks to a quite large number of Erasmus agreements (21 Universities in 13 European countries). Several mobilities have been reported in the SER, for M.Sc. students (Australia and Sweden). This should be used more extensively, not only at Master but also at Bachelors level.

Assessments are also a combination of classical methods: They are performed at the end of the courses under the form of written and/or oral exams, with progress tests to pass for some of them, or with housework for others. The assessment methods and criteria are described in great detail within each module given in appendix A. During the visit the students confirmed that the assessments were transparent and objective.

Strengths and areas for improvement relating to the process of teaching and learning

Strengths:

- A strategic choice has been to introduce an important ratio of elective courses both in BSc and Master. This differentiates this programme from similar programmes of other Universities and leads the students to become actors in their own curriculum.
- The feedback from the students on the involvement of the teachers, and on the quality of teaching is in general good.

Areas for Improvement:

- The choice to have a large amount of elective courses is not enough backed with counselling students on the possible choices.
- Some contents may be modified to leave space for teaching more advanced molecular biology techniques at the master level.
- Mobility of teaching staff and international mobility of the students are too low, and should be reinforced.

Recommendations:

- Considering the high ratio of elective courses, more counselling should be given to the students to help them in their choices, or to identify tracks or group of elective courses.
- Find incentives to use the mobility possibilities more frequently.

4. Teaching staff

NB : here also BSc and MSc will be examined together :

For the whole Biology Programme (MSc and BSc) the teaching staff consists in 30 persons, with 17 PhDs, 11 MScs and 2 lecturers with a Bsc degrees. This number contains several young PhD students teaching in the MSc. Those lecturers are in the final stage of their doctorate and mainly teach within their scientific field of expertise. Taken together this constitutes a sufficient level of expertise for the programme, and the number of teachers is largely sufficient, especially as the number of students is decreasing. Several members of the teaching staff in the MSc level programme overlap with those of the BSc level. As for the programmes and organization, this facilitates the connection of the courses between these two levels.

The lecturers, as well as supervisors are mainly from the Institute of Mathematics and Natural Sciences, with additional members from other Institutes. From the CV given in

appendix and the staff met during the visit, the teaching members appear to be evenly distributed between Chemistry, Biochemistry, Ecology and Medical Sciences. The SER mentions the presence of one colleague from Karolinska Institute in Sweden, and one colleague from a private company (Cambrex corporation) in Tallinn.

The appendix E shows that the several lecturers have a good publication record for the past 5 years. Most of them have obtained funding from the Estonian system for science projects but it is also possible to notice European funds for some of them.

The supervisors of student research projects are usually the employees of the Institute. For more specific topics, the students have the possibility to choose external supervisors. If those external supervisors chosen by students do not have an academic background, a second supervisor from the University backs them.

The students' feedback on the teachers' availability is very positive. The teaching quality is also well-ranked high from the students. Through the visit, the experts could judge that the teachers were strongly committed in delivering high quality scientific contents and very positively involved with the students.

Strengths and areas for improvement relating to the teaching staff

Strengths:

- The staff is highly qualified deeply involved, and delivers high quality scientific contents.
- The staff is well involved in research.

Area for future improvement:

- The research topics are quite focused. For the lecturers and professors who are not directly in those research fields, this may not offer the most optimal potential for scientific career development.
- International exchanges are not used enough by the teaching staff.

Recommendations:

- The possibility for the teacher to have a scientific career and/or to remain in the high international scientific standards should be an important element in future reflexions on the relation of research with this programme.
- A reflexion should be carried out on the incentives for staff mobility.

5. Students

For BSc, admission procedures have evolved since 2014, as only three Final Exams are obligatory in Estonian High Schools: language, mathematics, and a foreign language. For admission in the programme, biology is also taken into account. However, this does not fully compensate for the uneven levels between high schools leading to quite heterogeneous levels between the students, especially in mathematics, physics and chemistry. The Master students are recruited through an entrance examination, where competences, motivation, abilities and the master's thesis subject are discussed. Taken together, during the visit, the whole committee gained a positive impression of the motivation and general capacity of the students. This might be due to the fact that the less motivated and qualified students have dropped out of the programme (see below) and were not in the panel of students who were met during the visit.

Admission of students to the *Biology* programme has been dropping importantly during the last five years (SER Table page 18). Maybe more worryingly for the BSc programmes, the dropout rates have been very high during this period, leading to a situation where graduation numbers have been low and will become lower.

The table provided in the SER (page 23) shows Master Dropout rates were about 2 /10 students between 2010 and 2013 and peak at 4 out of 7 students in 2014. This might be purely incidental, particularly because those students were enrolled in the previous program (Marine Biology). However, it must be made sure that this is not a recurring problem.

It is not too early to conclude whether this is a trend toward an increase or just a transient phenomenon, but this has to be carefully taken into account.

During the visit, several reasons were given for this problem, both by the students and teachers: the very heterogeneous levels of the student's high school education (see above), economical problems making that many students have to work in parallel, intrinsic difficulties of studying, lack of motivation of some students and also but very marginally the lack of interest of certain courses. It is clear that based on these multiple causes, no simple solution exist. However, it has to be noted that the economical aspect, which is the most important reason for the professors, was not considered to be the main cause of dropout by the students.

At Master level, the programme is rather new and statistics on alumni employment are not available. However, as it results from the fusion of two previously existing programmes, it should have been, in principle possible to infer some trends for the employment of these students in the SER.

After BSc graduation some students have found employment in Nature Centres of the State Forest Management Centre, Tallinn Botanical Garden and Tallinn Zoological Garden, Marine Zoology Institute.

During the visit, Alumni and Employers were all positive regarding the quality of the students who graduated from this programme. However the committee did not meet employers from the industry. Taken together with the fact that such employers are not present in the programme council, this is a strong indication that industry does not appear to be a priority as a job market for the students of the present programme. Part of the reason might be the historical context, in particular the fact that TU was well known for teachers training. However, this is rather problematic, especially for the Master programme since graduates with a strong background in molecular and analytical techniques may, in principle, be very strong candidates for employment in biotechnology industry. Taken together, the university has to adopt a more proactive attitude towards potential employers of the private sector.

Strengths and areas for improvement related to students

Strengths:

- The large training with its high content of elective courses results in students that can adapt to very different situations and demands.
- More generally, the quality of the students is well appreciated by the employers and leads to satisfactory levels of employment after graduation.

Areas for Improvement:

- The very limited (if any) connection with industry and private companies.
- The decreasing enrolment rates and increasing dropout rates in BSc, but also in Master.

Recommendations:

- Pay enough attention to the intrinsic reasons that lead to decreasing enrolment and increasing dropout.
- Be more proactive towards industries and companies in order to build a network for students employment: Invite private companies members in the programme council, include more members of companies in the teaching, advertise the quality of the novel infrastructures, setup career days for the students etc.

2. Assessment report of Tallinn University

Study programme group	Environmental protection
Higher education institution	Tallinn University
Study Programmes	Environmental Management, Bachelor Environmental Management, Master

A. General findings

As of November 1st, 2014, there were 61 students at the Bachelor's level and 29 students at the Master's level – which is a rather low number.

Although formally independent, the structures of both study programmes have been designed with a common philosophy that emphasises an interdisciplinary approach, based on the fundamentals of both natural and social sciences and connected by integrative courses.

Both programmes successfully passed the joint transitional evaluation as a programme group, *Environmental Protection*, organized by the Estonian Higher Education Quality Agency in 2010. The evaluation covered quality, resources, and sustainability of the study programme group.

According to the *Tallinn University Statute*, the University's mission is *to support the sustainable development of Estonia in the preparation of intellectuals, in research and in the application of its results via the collective exchange of views and the promotion of academic partnership.* The objectives of Environmental Management study programmes support this mission statement and are in full compliance with it. The Environmental Management studies belong to one of planned focus fields of TU – *Healthy and Sustainable Lifestyle*.

The Development Plan 2015-2020 of the University will lead to focussing on 5 thematic + 1 overarching field and give guidance to restructure also the study programme of Environmental Protection/Environmental Management. This fundamental new structuring will start in September 2015; details are not yet known. It will include an overall staff reduction of 10-20%, and a reduction of study programs from 150 to less than 100 (e.g. to 5 BA study programs instead of 15).

A new relevant focus for Environmental Management will be the field of "Sustainable Lifestyle" with a transdisciplinary approach (e.g. including involvement of stakeholders), supported by IT, teamwork, and entrepreneurship. During the group evaluation we discussed, that the BA program could then potentially be integrated in a BA Ecology, and the

current MA programme Environmental Management could be enlarged by the topic of Environmental Psychology/Risk perception.

Strengths

Currently the program is well balanced between ecology and economy and has many electives, in both, the BA and MA programmes

Areas of Improvement

- There is a dramatic decrease of students in this program, which also asks for structural changes (as well as a reduction of electives, which was started already after the last evaluation in 2010).
- Internationalisation should be improved by more international teaching offers as well as more international mobility by outgoers.
- In the discussions during the visit, it was mentioned several times, that for the students the existing scholarships are not enough and the funding too low.

Recommendations

- To attract more students, more internationalisation as well as the recruitment of younger teaching staff is recommended. As many students have to work besides studies, there is a general need for more numerous and higher scholarships, which could be expressed by the university to institutions at the state level responsible for higher education development.
- The new Development Plan 2015-2020 should be seen as challenge and chance for the further development of the study program Environmental Protection/Management, including more young and international teaching staff.
- Another recommendation is, to pen the programme for social as well as “problem-based” aspects and approaches, so that it fits into the new field of “sustainable lifestyle”. Make the BA broader/integrate it in Ecology, and the Master more specific.

B: Strengths and Areas for Improvement of Study Programmes by assessment areas

1. Study programme and study programme development

The study programme consists of five main modules that reflect the underlying philosophy:

- General courses
- Methodology – emphasis on data processing and research

- Natural sciences – basics of natural sciences
- Social sciences – basics of social sciences
- Applied sciences – integration of the above in order to achieve interdisciplinarity; practical tools for environmental management
- Open electives – individual development.

Strengths and areas for improvement relating to the study programme and study programme development:

- The curriculum (BA and MA) is consistent with its objectives and learning outcomes. There is a strong focus on Environmental Impact (as well as Risk) Assessment and Management.
- The further development of the study program will be based on the development plan 2015-2020 (which was not available for the evaluation committee beforehand, and can be only regarded as contributions in the discussions with the university delegates meeting the committee). The relevant staff members are included in this process; whether a development participation will happen with professionals and students can only be expected, as the relevant councils as well as a (up to now positive) feedback from employers is existing.

Recommendations:

- First of all, make a clear (and agreed) check list of development criteria and clarify the connections to other (especially in-house) study programmes (as a reaction of the Development Plan of the University).
- We also recommend a further reduction of electives.
- Widen the focus to social aspects, e.g. environmental psychology.
- Include real trans-disciplinary (and more holistic) approaches (joint problem solving amongst science and society).
- “Teach the teachers” in order to inform and motivate the whole society for Environmental and Sustainability issues (one third of graduates will become teachers).

2. Resources

Tallinn University has accomplished a long-term development plan designed to improve the learning and research environment. Reconstruction of the university campus was completed in 2013. As a result, the study environment has been markedly improved compared to previous years and the requirements are now fully satisfied. Due to severe demographic

changes, the numbers of (especially national) students and staff will not grow significantly (if at all). Consequently, there should be no further problems with the availability of space or study rooms.

The feedback from the students indicates that the coverage and availability of study materials is good. The feedback scores on the 5-point scale have been above 4.0, with an average score of 4.6 over the last three years.

Even though the financing of higher education has been gradually increasing, the financial situation of the Institute remains difficult. The structural reform is expected to provide some positive effect, mainly through an increase in the cost-effectiveness of activities.

Strengths and areas for improvement relating to learning environment and resources:

The teachings and learning environment, including aids and equipment (Experimental Labs, GIS), strongly supports the achievement of objectives in the study program. Textbooks as paper edition seem to be a bit limited, but e-sources are widely available. The “lab-teaching connection” seems to have a big potential, but could not be checked explicitly during the visit, as there was a holiday.

Recommendations:

Due to the good facilities of Labs and research, we recommend to use this as a potential for connecting research facilities and teaching, maybe even by inviting external professionals for joint study projects.

3. Teaching and learning

The forms of teaching include: classes, homework, e-study, fieldwork, practical placement and individual work. Classes typically include lectures, seminars, workshops and practical placement as well as projects. Usually, different forms and methods are combined to achieve the study outcomes. A required course paper (individual research project) is the most important project and precedes the BSc thesis.

At the end of each course, students are required to fulfil an electronic feedback questionnaire.

To make the assessment of BSc as well as MSc theses more systematic and transparent, Instructions for Assessment of Theses (for both reviewers and Members of the Commission for thesis hearing) have also been adopted.

Strengths and areas for improvement relating to the process of teaching and learning:

Due to the high amount of electives as well as small classes the teaching and learning is quite flexible and facilitates the achievement of learning outcomes. In general, modern teaching methods are used (but might enlarged in the field of educating future teachers, as well as in project studies). Student mobility is low, but increases. The interaction between research and teaching is possible (e.g. HERCULES project), and quite a large number of research papers are part of the studies.

Recommendations:

Enhance cooperation with potential future employers (also by joint study projects as well as guest lectures).

4. Teaching staff

A total of 20 academic staff members of the Institute of Mathematics and Natural Sciences are involved in teaching the Environmental Management undergraduate program. Due to its interdisciplinary character, 9 members from the academic staff of other institutes of TU (Institute of Psychology, Institute of Political Science and Governance, the Law School,) are also engaged and several courses are integrated with other study programmes. Professionals from the public and private sectors are granted the status of *visiting lecturers* and work on a contractual basis. Researchers and instructors of other Institutes (Institute of Ecology, Institute of Political Science and Governance) and from outside of TU (e.g. Estonian University of Life Sciences, Estonian Environmental Research Centre, Stockholm Environmental Institute Tallinn Centre) are regularly engaged as supervisors, co-supervisors or reviewers of the BA and MA theses. For instance, all nine theses defended in spring 2014 included a co-supervisor or a reviewer from outside of the Institute of Mathematics and Natural Sciences.

The formal qualifications of the teaching staff are considered close to be satisfactory – 7 of the 22 compulsory courses have teachers with a doctoral degree. Feedback from students demonstrates that the methodical competence of lecturers is high. The vast majority of students found that the lecturer presented the subject in a clear and understandable way; the average grade being 4.5.

Strengths and areas for improvement relating to the teaching staff:

Teaching staff is qualified in order to achieve the objectives and learning outcomes of the study programme, but lacks in younger generations as well as international relations. As salaries of university teachers are rather low, it needs further incentives especially for teachers coming from abroad or external institutions (as younger as well as international stuff has to be enlarged).

According to the Self-Assessment Report one lecturer is engaged in teaching-skills development.

Recommendations:

More engagement in professional and teaching skills development (due to the fast growing development in transdisciplinary environmental projects) is needed.

5. Students

From 2008 until the academic year 2013/2014, the admission was based on the so-called *threshold score*, formed by the applicants' National High School Final Examinations results. The qualifying/competitive examination results considered for deciding the applicant's suitability included that of the native language, plus his/her results of two National High School Final Exams that the applicant has taken from the following list: (1) Biology, (2) Geography, (3) Math, and (4) Civics. Any applicant who met the threshold criteria was eligible for admission. The *threshold score* was set by the particular institute and varied from year-to-year between 70 – 80, this being one of the highest *threshold scores* at TU (and among similar study programmes at other Estonian universities).

During the last decade, the admission numbers have fluctuated greatly without any clear trend, and are rather low.

Graduates may continue their studies towards a Master's degree at TU or in related programmes elsewhere. Those who prefer a practical career are qualified to work as junior environmental management professionals in the public or private sector, in non-profit organisations, or in consultancies. The alumni are employed by government agencies (e.g., Environmental Inspectorate), local administration (e.g. Harju County) and private enterprises (e.g. Reimann Retked Ltd). However, the current economic situation as well as the decrease of population does not support an increase in the number of jobs for Bachelors, especially inside Estonia. Therefore, most graduates are expected to continue learning at the Master's level.

Strengths and areas for improvement related to students:

Student places are filled with motivated and capable students, but dropout rates are rather high. The number of remaining students, graduating within the standard period of study, is rather large. To study at other Estonian and/or foreign higher education institution is not foreseen in the curriculum. The discussion with employers, alumni as well as students came to the conclusion, that the employment rate of alumni is rather high for those students, who are actively searching and have sufficient “soft skills”. Alumni and their employers are in general satisfied with their professional preparation, but see the increasing complexity of tasks in the future – which needs a good mix of generalists as well as specialists. The students therefore plea for a more professional orientation of the study programme (e.g. by networking).

Recommendations:

- A particular attention should be given to the dropout causes in order to identify possible actions to be aimed at this problem
- More professional practise orientation is needed for better carrier (and job) preparation.
- Establishing of an Alumni-network is recommended.

3. Assessment report of Tallinn University of Technology

Study programme group	Life Sciences
Higher education institution	Tallinn University of Technology
Study Programmes	Gene Technology, Bachelor Gene Technology, Master

A. General findings:

Tallinn University of Technology has a three-year Bachelor level programme and a two-year Master level programme in gene technology. The purpose is to train professionals for biotechnology and related fields in industry and in the public sector, including academic research. Both programmes have a wider scope than implied by the name "gene technology", resembling by content and aims study programmes in molecular biology and biotechnology in many other countries. During the site visit, the expert team learned that even if it may not describe the contents in an accurate way, the name gene technology has its historical origins and has become established as a well-known brand. Of note, University of Tartu is also running BSc and MSc programmes in gene technology.

The BSc programme builds the basic knowledge and practical skills with a curriculum, which is strong in chemistry with the necessary physical and mathematic supportive subjects, and in relevant biological subjects. In the MSc programme, the students become familiar with different fields of molecular biology, especially those represented in the Department´s research. A distinctive feature of both programmes is the early integration of students to practical laboratory work and research. Because the teaching staff and facilities are the same in the two programmes, the programmes will be discussed together in the subsequent chapters and the remarks and recommendations apply to both programmes unless indicated otherwise. Both programmes (BSc/YAGB and MSc/YAGM) were presented in the same, avry thorough and informative self-evaluation report.

Strengths:

- Solid curriculi consistent with international standards
- Active high-quality research supporting teaching and serving as attraction and inspiration to students and provides them with good research skills
- The study programmes have remained popular despite unfavourable demographic trends
- The big university campus provides a wide variety of possibilities to students
- The students participate actively in exchange programmes

Areas of Improvement:

- The programmes have little space for elective courses making it difficult for the students to benefit from the full potential of the campus and build their skills in a more individual fashion for the diverse needs of the job market.
- The laboratory practises of students suffer from insufficient funds; now the practicals are largely run by using the research funds of the host laboratories leaving an important part of teaching sensitive to fluctuations in research funding.
- In spite of the international job markets and gene technology research, and in contrast to many other TUT study programmes, the programmes are run only in Estonian language
- The MSc programme is largely shaped by the interests of the research groups, which guarantees good integration of teaching with research, but may limit the students´ perspectives and possibilities for employment beyond academic research.
- Use of student feedback as a tool in the continuous development of the programme does not work optimally because of low response rates.

Recommendations:

- More space for elective courses should be reserved at both BSc and MSc levels
- Funds should be allocated to cover the costs of basic practical studies
- English should be introduced as a teaching language in MSc programme to promote internationalization and participation of foreign students
- Courses which increase the employability of graduates outside of academic research at both BSc and MSc levels should be developed, perhaps in consultation with biotechnology companies
- Students´ motivation to give feedback should be increased, e.g., by improving the protocols or making the impact of feedback more visible

B: Strengths and Areas for Improvement of Study Programmes by assessment areas

1. Study programme and study programme development

Gene technology Bachelor and Master study programmes have solid structures and contents which are consistent with their respective aims and expected learning outcomes, and comply with national and University-level regulations and standards. Overall, the curriculi have an up-to-date look and resemble biotechnology and molecular biology programmes internationally. Strong foundation in mathematics, physics and chemistry built in the BSc studies, large content of practical laboratory studies and early integration to research are distinctive features. The courses link to each other in a logical manner with no obvious major gaps or neglected areas. The Master level curriculum is strongly shaped by the research fields actively pursued in the Department. Bioinformatics and systems biology have been recognized as important areas for future development, and plans to recruit experts in these areas are in progress. To some extent these fields are already covered in the teaching (at MSc level), but the new recruitments will be instrumental for the further development in these important and expanding fields.

At both Bachelor and Master level, the curriculi are rather rigid: most courses are compulsory and the little choice there is left, is between a few alternatives in course modules. Considering the dynamic nature and diversity of the job market, more flexibility would be appropriate and would allow the students to benefit from the full potential of the campus and build their skills in a more individual fashion.

The name “Gene technology” in the title of the programmes as opposed to more representative “molecular biology” is used for historical reasons, but has been established as a well-known trade mark for the programmes. Despite the problems caused by the unfavourable demographic trends which have drastically decreased the number of students entering University and resulted in less stringent admission to many study programmes, TUT Gene Technology programmes have managed - together with similar programmes in University of Tartu - to remain quite popular and respected among students and general public. The programmes maintain a strong research-oriented culture aiming at high quality scientific education. Related to this, the programmes have an active outreach programme, which informs general public and prospective students on gene technology.
Based on feedback collected from employers and alumni in 2011, the gene technology graduates from TUT and the University of Tartu are ranked equal.

TUT is running many international Master level programmes and lists internationalization as one of the University level strategic goals, but the gene technology programmes use Estonian as the only teaching language. This is in contrast to the international nature of job markets and research and effectively excludes the entry of foreign students to the programme either as regular or visiting students. As a consequence, the students of gene technology programmes participate actively in Erasmus and other exchange programmes,

but there is little traffic the other way round. The language issue is more relevant in Master than Bachelor level studies.

After a period of growth in the last decades, the biotechnology job market has recently become more challenging. Considering this, and the strongly research group –oriented MSc studies, the programmes should consider measures which improve the employment prospects also outside academic research. In this respect, co-operation with private companies and other potential employers will be important. This would help the students to become better aware of the job market and of the most needed skills and competencies as early in their studies as possible.

Strengths:

- The curriculi have a solid foundation in chemistry, physics and mathematics and are consistent with international standards
- Active high-quality research supports teaching and serves as attraction and inspiration to students and provides them with good research skills
- The study programmes have remained popular despite the unfavorable demographic trends
- The Department has a strategic vision for the future development of the programmes, including plans to expand to new areas through recruitments

Areas for improvement:

- The programmes are rather rigid and leave little space for elective courses, which produces graduates with fairly uniform knowledge and skill base.
- Internationalization of the programme. In spite of the strong research orientation of the programme and the international job markets for gene technology, and in contrast to many other TUT study programmes, which have lots of foreign students, the gene technology programmes are all-Estonian. (but students only from TUT to abroad)
- The programmes (especially the MSc programme) are largely shaped by the interests of the research groups. This guarantees good integration of teaching with research, but may limit the students´ perspectives and possibilities for employment beyond academic research.

Recommendations:

- More space should be reserved in the curriculum for studies of students´ free choice

- The MSc programme should be “internationalized” by adopting English as a teaching language
- Co-operation with private companies should be increased and courses (study elements which focus on employment beyond academic research (entrepreneurship, teamwork , leadership skills) should be incorporated in the studies
- The expert team strongly supports the initiatives already taken to strengthen bioinformatics and systems biology in the MSc programme

2. Resources

The study programmes are housed in a relatively new building which hosts two Departments (Depts Chemistry and Gene Technology) in the TUT campus, the largest University campus in Estonia, and provide a good study environment. Lecture rooms and facilities in the neighbouring building are also used. Overall, the facilities are modern and meet the standards of high-quality teaching. IT and library services include campus-wide wi-fi, access to electronic databases (mainly scientific journals) and provide good support to the studies. The teaching laboratories are fairly small, considering the number of students, and financial support for their maintenance (including the running costs) is clearly insufficient. The students get their practical training and do their BSc and MSc thesis studies in in-house research projects, but also in neighbouring research institutes, other Universities in Estonia or abroad, and in some cases in private companies.

Due to EU structural funds and national and University-level investments, the research laboratories in TUT Department of Gene Technology are well-equipped with modern instrumentation needed in molecular biological research and provide - together with high-level scientific projects - a good environment for reaching advanced skills for experimental research in molecular biosciences and biotechnology. A major problem is the lack of funds allocated to laboratory studies. The expert team learned that this is a national-level problem, and has resulted in the reduction of BSc level laboratory courses in many related study programmes in Estonia. In TUT Department of Gene Technology, maintenance of relatively extensive laboratory studies is largely based on channelling of some of research funds to teaching. Such critical dependence makes this important part of teaching vulnerable to fluctuations in research funding. During the site visit, it became clear that the problem is well realized in the programme, but no clear views were presented on how it should be corrected.

Strengths:

- Modern facilities and a large campus with a wide diversity of options
- Strong research groups and research infrastructure

Areas of development:

- The laboratory practises of students suffer from insufficient funds; now the running costs are covered by research funds, which is far from ideal and is critically dependent on fluctuations in research funding.

Recommendations:

- Financial solutions to cover the laboratory teaching in a stable manner should be sought with the Department, Faculty and University administration.

3. Teaching and learning

Most courses combine traditional lectures with practical work or projects/seminars, and thus, in principle, can promote development of knowledge and applicative skills in parallel. Students´ performance is assessed in most courses solely by exams. As judged from the examples provided to the assessment panel, the exams are often designed to test the ability to apply and integrate knowledge in addition to testing of memorizing facts and key concepts.

Content of chemistry in the curriculum is strong, especially in the BSc programme, which actually has 50% overlap with the corresponding programme in chemistry. However, according to student feedback, the chemistry courses are among the least liked, receiving grades well below the average. This may be partly related to the complexity of the topic, as the expert panel learned during site visit, but for long-term viability of such chemistry-based programme, it may be necessary to do revise or reconsider the teaching methods of those courses.

Early integration of students in research is one of the strong points in the Bachelor programme and an essential part of MSc studies. The strong research activity and research-oriented culture in the Department provide an inspiring environment for the students. The selection of research projects and supervisors for laboratory projects including BSc ad MSc thesis studies is well-organized but favors staying in the same laboratory throughout the studies. Typically, a student begins his/her project at BSc thesis level and continues in the MSc studies, and in many cases, in subsequent PhD studies in the same project or topic and under the same supervisor. An alternative would be to rotate students through several different laboratories and environments during their studies, which would expand their

methodological skills and scope of thinking. In principle, such rotation is currently possible, but for reasons of convenience (of both students and host laboratories), it seems to be used very seldom. The experience from several research projects and laboratories would also help the student to better choose the Master´s Thesis project.

The students can also do their projects outside the Department of Gene Technology, and in these cases, the Department provides one supervisor. The student need to defend their BSc and MSc theses in an examination for which both in-house and outside opponents are used. The topics of the theses cover the whole range of molecular biology and biochemistry and as judged on the basis of brief on-site inspection, their quality is comparable to similar theses at the international level.

Strengths:

- Early integration of students to research
- Top research in the Department (e.g. in molecular neurobiology and plant biology) provides interesting and challenging projects and expert supervision

Areas for improvement:

- The practical studies/research projects are commonly carried out in the same laboratory that was chosen in the beginning of the studies, which may narrow the scope of training and education
- Student motivation and commitment to chemistry studies is at an unsatisfactory level based on grades give to chemistry courses in student polls

Recommendations:

- Rotation of students between laboratories would facilitate the exposure of students to a wider range of experimental approaches and research environments than is currently happening
- The study programmes should explore different possibilities to improve student motivation to chemistry; for example, by revision of teaching methods, by making the relevance of the chemistry for subsequent biological studies more visible, etc.

4. Teaching staff

The number of teaching staff is 27, including four professors and ten assistant professors, and 22 (81 %) of the teachers hold a Ph.D. degree from a relevant field. To a large extent,

the teachers are involved in both Bachelor and Master level teaching. Judging from CVs, most staff members have strong experience in university-level teaching and are active in research, and several are internationally recognized scientists in their fields. Importantly, the research fields that are represented are quite diverse spanning from plant biotechnology to molecular neuroscience to proteomics. It is evident that the high-quality research done in the Department of Gene Technology is among the majors factor attracting students to the programme. The expert panel received the impression that the teachers are motivated and committed to development of the programme. This view is supported by the student polls, which indicate that the level of satisfaction to the quality of teaching is exceptionally good (over 4 out of a maximum of 5). Visiting professors/lecturers participate regularly in teaching.

The age structure of the teaching staff is healthy with no strong bias to seniors close to retirement. Most teachers are recruited to 5-year contracts, using criteria, which mostly emphasize research merits (publications). This is important for the maintenance of high-quality research and the status of the programme, but may not necessarily encourage teachers to invest their time in developing teaching methods etc. Indeed, while the teachers generally maintain and develop their their scientific knowledge and expertise by regularly attending to conferences, there is no concerted effort to develop and improve the pedagogical skills of the staff.

Strengths:

- High level of research activity and professionalism of the staff
- Diversity of expertise

Areas for improvement:

- Motivation and incentives to develop teaching methods and skills may be difficult to maintain in the strong research-driven culture, but are essential for the long-term success of the programmes

Recommendations:

- Incentives should be generated to improve investments by the staff to the development of pedagogical skills (financial rewards, recruitment policy, etc.)

5. Students

The admission procedures and criteria are appropriate for molecular bioscience study programme. The flow-through rates (“graduation effectiveness) of the programmes are

somewhat higher than average in TTU, being 57-82 % in Master level and 35-68% in Bachelor level studies, which are reasonable and indicate the absence of programme-specific problems. However, the number of dropouts is still fairly high.

During the site-visit, the expert team met with a bright group of students who represented both BSc and MSc programmes. The students were generally quite satisfied with the study programmes and the level of teaching and felt clear pride of studying in TUT ("it is not easy to graduate from TUT"). Several students had chosen TUT because of the interesting research in the Department of Gene Technology and the possibility to do laboratory work already in the BSc studies. The team learned that the most common reasons for dropout include loss of interest to the field and move to other study programmes (typically medicine; "half of our course is thinking to go to study medicine").

The student had many ideas for the development of the programme, and wished to have more freedom of choice regarding the courses ("customizability"), to have more possibilities to develop team work and leadership skills, and to have more links and co-operation with private companies.

When asked about their future prospects, most students saw themselves as graduate students, entrepreneurs in the biotechnology area or planned to move abroad to explore there possibilities outside Estonia.

The student feedback on the quality of teaching is collected regularly and appears generally positive but with response rates of about 25% it cannot be regarded as representative. According to the students, the low rates reflect their belief that the feedback does not seem lead to any changes.

Strengths:

- High quality and level of motivation of students

Areas for improvement:

- There is plenty of room to strengthen the students´ active participation in the planning of the programme(s)
- Co-operation of the programmes with the "outside world", including biotechnology enterprises, even though it exists at many levels, is not visible to the students

Recommendations:

- Possibilities to increase the participation of students as well as alumni and biotechnology companies in the development of the programmes should be explored in order to improve the employment prospects of the graduates

- Student feedback should be used more efficiently as a tool for the continuous development of teaching and of the programmes; for example, more efficient ways to collect feedback should be studied (with students) and the impact of the feedback should be more visible.

4. Assessment report of Tallinn University of Technology

Study programme group	Environmental protection
Higher education institution	Tallinn University of Technology (Tartu College)
Study Programmes	Industrial Ecology, Bachelor Industrial Ecology, Master

A. General findings

Tartu College (TC) of Tallinn University of Technology (TUT) is a regional academic education and research institute in southern Estonia. TC provides a co-operative, open and student-friendly environment on its own campus with dedicated staff and enthousiastic students. TC performs quality research in a few dedicated areas, teaches several programmes in a flexible way, has established excellent relationships with regional and local governments and industries, and complies well with all TUT's rules and regulations. Its research and education strongly contributes to TUT's overall strategy.

The Assessment Committee visited TC on 19 March 2015 to evaluate its BSc and MSc education programme in Industrial Ecology and was welcomed by TC's director and head of the Curriculum Committee, Prof. L. Nei, and the Industrial Ecology Program Director, Prof. M. Ivask. They introduced TC and the programmes. Subsequently the Assessment Panel met several staff members, current BSc and MSc students, and alumni and employers. Most recent BSc and MSc theses, course materials and the staff's research papers and professional publications were made avaialble. The visit concluded with the presentation of the preliminary findings, which are elaborated below.

Strengths

The BSc Industrial Ecology[1] and MSc Industrial Ecology at TUT's Tartu College provides an respectable academic education programme creating environmental professionals, who understand engineering and industrial processes, and who have the skills to analyse, understand and manage the environmental impacts of industrial activities. This interdisciplinary, regionally oriented niche is unique in Estonia and internationally. Over the last decade the programmes have become more focused.

Both programmes provide excellent job opportunities in the region, and this will likely continue to do so because their students obtain the necessary basic knowledge and skills, and seem willing to further develop themselves professionally. The alumni and employers stressed that the focus on understanding industrial processes was essential for this success.

[1] per September 2015 the programmes name changes into 'Environmental Management'

The Assessment Committee, after reading TC's self-evaluation Report, was initially concerned on the critical mass of these education programmes with relatively few students varying between 8 and 21 admitted students for both the BSc and MSc programme. However, both lecturers and students convinced the Assessment Panel that these numbers, combined with the own campus and dedicated staff, is actually a major asset. Lecturers are available for questions and additional supervision. Deficiencies (in especially mathematics) are dealt with at an individual student basis. Criticisms and feedbacks by students are quickly discussed and resolved and students who have a job (to support themselves), are practically well accommodated.

Areas of Improvement

Industrial Ecology and the various tools (e.g. Life Cycle Analysis and Environmental Impact Assessment) require advanced data collection and analysis, and thus a sufficient background in mathematics and statistics. As the laboratory facilities for teaching chemistry at TC are limited and the reliance on the facilities of University of Tartu increase, expanding the focus on chemistry, as earlier recommended by the transitional evaluation committee in 2010 and the Estonian Ministry of the Environment, seems nowadays less appropriate. The Assessment Panel is not convinced that this shift is based on the proper strategic arguments to improve the quality and employability of the programme's students.

The TC's Curriculum Committee addresses and governs all study programmes. This committee is chaired by Prof. Lembit Nei. For each educational programme a dedicated advisory group is established. How these groups interact with the Curriculum Committee remains vague in the self-evaluation report. Also the Curriculum Committee's actual role and responsibilities are ambiguous. The curriculum committee strategically further develops the educational programmes and controls their quality and study-ability. The programme director, Prof. M. Ivask, and her team implement the proposed curricula. Although, control and implementation seemingly are separated, the Assessment Committee was not fully convinced that this also followed in the actual procedures, as responsibilities and tasks are poorly indicated in both the self-evaluation report and during the site visit. Control and implementation responsibilities should indeed be separated to reduce possible conflicts of interests, and to guarantee the best possible education quality.

A MSc-student (who is the student member of the Steering Committee developing the self-evaluation report) was commissioned to draft the self-evaluation report. She successfully compiled all the necessary information in EKKA's required formats for this assessment but, unfortunately, scantily provided the necessary analysis and strategic context, and did not include a comprehensive (discussion on) TC's and the Industrial Ecology Programmes' strategy, missions/visions and future developments. This is the responsibility of TC's management and steering committee. TC's director both provided us with links to TUT's necessary strategies and regulations but poorly hinted at TC's local ones. These only

partially emerged during the discussions during the Assessment Panel's visit. Having such information more comprehensively in TC's self-evaluation report would have facilitated a more focussed Assessment Committee's site visit. For example, as the self-evaluation report was drafted in December, essential information on the recently approved (by the TUT council and the Ministry of Education and Science) BSc programme (and its new name) could have been covered and discussed in the report.

Recommendations

The discussion to reduce the mathematics and statistics requirements to enter the Industrial Ecology programmes in favour of chemistry, should recognized that mathematics and statistics skills are essential assets of industrial ecologists.

The Assessment Committee strongly recommends that the governance structure of the programmes guarantees the Curriculum Committee's independence and minimize possible conflicts of interest between the development, implementation and evaluation of both BSc and MSc programmes.

The Assessment Committee missed a clear vision on future needs and developments. Such vision was not summarized in the self-evaluation report. Although Prof. L. Nei indicated that TC fully complied to the TUT strategy, the commitee recommends that TC also continues to further develop and communicate its own solid local future strategic plan. Such plan should strengthen the required decisions on, for example, future education and research directions, employability of students and the staff's expertise and research directions.

B: Strengths and Areas for Improvement of Study Programmes by assessment areas

Industrial Ecology (Bachelor)
Industrial Ecology (Master)

1. Study programme and study programme development

The content and structure of the study programmes are consistent with their objectives and learning outcomes. The different parts of these programmes form a coherent whole. The best quality for TC's learning environment is strived for. Their further development is based on legislation, development plans, analyses (including labour market and feasibility analyses) and professional standards. This was reinforced by the discussions with alumni and employers.

Strengths and areas for improvement relating to the study programme and study programme development:

TC's BSc programme provides a broad environmental education with sufficient elements relevant for industrial ecology but also general environmental topics and additional interdisciplinary topics (such as statistics, law and monitoring) relevant for environmental experts. The strengths of this programme is not only its appropriate Industrial Ecology basis, but especially its success in providing sufficient job opportunities.

The study programme development rapidly and effectively takes into account feedback from students, employers, alumni and other stakeholders.

The BSc students all obtain practical experience during an internship. Although this 3-ETCS study element is highly appreciated by the students and stimulated by TC, its learning goals are, however, not very well specified in the curriculum (only mentioned in the self-evaluation Report Appendix 3, 5th Semester). Clearer guidelines should be developed for such integrated practice. Students would like more opportunities to familiarize them with potential work places. Alumni indicated that they could provide the possibility for short student excursions to their workplace, give informal guest lectures on their experiences, or even short job-shadowing possibilities.

TC's MSc programme Industrial Ecology strongly focuses on and successfully provides the necessary knowledge for future environmental experts that can be employed in industry regionally and locally. The desired and acquired skills to achieve this, however, are less distinctly specified in the documentation.

The programme and course descriptions in the Appendices of the self-evaluation Report strongly stress knowledge acquisition as the most important learning outcome. Alumni and employers, however, stressed that the student's skills gained during their education, were important. The current academic literature on learning outcome identifies three specific types of skills that should be considered when defining learning outcomes:

- Knowledge or so-called cognitive skills. Six levels (i.e. remember, understand, apply, analyse, evaluate and create) of cognitive processes can be distinguished;
- Physical skills, involving co-ordination of the brain and muscular activities; and
- Affective skills, involving attitudes, values and feelings.

TC claims that its students are strongly stimulated to study abroad. This is facilitated by recognizing credits for courses obtained abroad. However, few Industrial Ecology students have taken the opportunity and, although they were extremely positive on having had the experience, they also were concerned about language limitation for studying in a non-

English country, limited early planning abilities to study at a foreign university and the delay in study progress at TC.

Recommendations:

Better guidelines and more possibilities for internships in the BSc should be considered. (Part of this is likely already considered to some extent in the new 2015 curriculum.)

The Assessment Panel recommends implementing individual career or development plans for individual lecturers to enhance quality of teaching and supervision.

The Self-evaluation Report provides inadequate information to fully assess the MSc programme on Industrial Ecology (covered only by one page). Objectives, learning outcomes and other important information on, for example, governance, employment and students' evaluations, and links to the different appendices are not systematically provided. Future assessments should be informed with better and more comprehensive information.

The learning outcomes in all the course descriptions should be improved by involving all required skills and not only knowledge.

If TC wants to further stimulate foreign studies, such limitations should be reduced, and possibilities to participate in such exchange programmes should be improved.

2. Resources

Resources (teaching and learning environments, teaching materials, teaching aids and equipment, premises, financial resources) support achieving the objectives in the study programme but to obtain practical research experience is limited. Textbooks and other teaching aids are sufficiently available and access to common (international) library databases is good. Adequacy of resources is ensured for changing circumstances (change in student numbers etc.). Resource development seems sustainable. For example, the shift towards the new BSc programme Environmental Management is supported by k€70 by TUT.

Strengths and areas for improvement relating to learning environment and resources:

The current possibilities for MSc research within TC's own research projects (e.g. soil biota, composting and Nano-materials) are limited. This is effectively overcome by linking to research projects at other universities and within industry. Such MSc thesis projects are supervised with a TC and an external supervisor. Experience with external supervisors is good and both interact on a regular basis. Although TC is regionally and nationally well connected, this reliance on external Msc projects and supervisors can be vulnerability.

The different laboratories are basic and probably provide limited capabilities to advance MSc thesis research or chemistry teaching. This limitation is partially removed by collaborations with other universities, who generously provide elaborate access and expertise to TC's research. This dependency on facilities elsewhere is probably a vulnerability, which should be addressed in TC's future strategy.

Although recent literature is available through Tallinn Technical University, most course literature listed in the self-evaluation report is relatively old (i.e. from the nineties and early 21st century). The course literature should be kept up-to-date. This enhances the timeliness of the courses.

Recommendations:

Effective monitoring of external research supervision for the MSc thesis progress and quality should be established.

A strategic plan on how to reduce possible vulnerabilities in education and research dependencies with other institutes and organisations should be developed.

As research in industrial ecology requires mostly databases and computer resources, expanding TC's research in this direction could provide additional and better possibilities for MSc thesis students in industrial ecology. TC should thus consider broadening its research base more towards industrial ecological topics. In the near future, some of TC's senior lecturers and researchers will retire and this could provide an opportunity to shift research interests. TC's management should consider this in developing its next strategic vision.

3. Teaching and learning

The process of teaching and learning is flexible, takes into account the specifics of the study's form and facilitates to achieve the learning outcomes. Adequate teaching methods are used in teaching. The theses, essays and other reports are checked against plagiarism. The teaching and learning process supports mobility between institutes in Tartu and Estonia (and sometimes abroad). Assessment of learning outcomes (including recognizing prior learning and work experiences) seems transparent and objective.

Strengths and areas for improvement relating to the process of teaching and learning:

The Assessment Committee was impressed by how student's feedback and suggestions on lectures, courses and the programme were stimulated and accommodated in the development process of courses and the programme. For example, several examples were

provided where guest-lecturers, on which TC's programmes strongly depend, did perform poorly. These lecturers were rapidly replaced. Also the teaching and research staff seems to respond constructively to criticisms and suggestions by students.

Flexibility, frequent and immediate contact with students, and being serious with feedback are all seen as important assets. Most lecturers are involved in the development of the programmes and are conscious that they also have to develop themselves. The Assessment Committee was, however, not fully convinced that lecturers also familiarize themselves with recent trends in education and research. This is essential for teaching timely topics and actual developments to potential environmental professionals.

The information on teaching and learning in MSc self-evaluation report was poorly elaborated. A higher quality and informative self-evaluation report with appropriate motivation and documentations of especially the MSc programme, should have been available to the Assessment Committee. Some additional information was provided during the Assessment Committee's visit to TC and its discussions with staff and students. The MSc study programme seems to fulfil its purposes but obtaining practical research experience is limited. Most students obtained relevant jobs within the field and region.

Recommendations:

Special attention should be given keeping the teaching methods up-to-date. This should be prioritized by the Steering Committee.

4. Teaching staff

The background of the teaching staff is diverse. Although three young staff members are currently pursuing a PhD, not all have adequate qualifications to achieve the objectives and learning outcomes of the study programme, and to ensure quality and sustainability of the teaching and learning. The teaching activities of these staff members are supervised by of senior staff members as required by the Estonian Standard of Higher Education.

Strengths and areas for improvement relating to the process of teaching and learning:

Overall student assessment on the staff's teaching skills is positive. Students especially value the staff's approachability and willingness-to-assist. Recognised researchers and foreign and visiting lecturers participate in teaching the study programme.

The teaching staff is engaged in professional and teaching-skills development.

Recommendations:

The staff should be further stimulated to further develop their teaching skills and their academic and topical expertise.

5. Students

Student places are filled with motivated, enthusiastic and capable students. Dropout rates are reasonable. The proportion of students graduating within the standard period of study is large. Students can study at other Estonian and/or foreign higher education institutions as part of their studies. Employment rate of alumni is high. Alumni and their employers are satisfied with their professional preparation and social competencies.

Recommendations:

TUT keeps a database of its alumni. TC should develop alumni chapter within this database and possibly a dedicated area in social media to keep in contact with its alumni. This allows for distributing a TC newsletter and better access to professional expertise, guest lecturers and internship and thesis possibilities.

5. Assessment report of Euroacademy

Study programme group	Environmental Protection
Higher education institution	Euroacademy
Study Programmes	Environmental Protection, Professional HE Environmental Protection, Master

Introduction

Euroacademy is a private owned higher education institution. Euroacademy provides education on social science subjects but also on environmental protection subjects. The Assessment Committee visited Euroacademy on 19 March 2015 to evaluate its Professional HE and MSc education programme in Environmental Protection field. During site visit the Assessment Committee discussed the study programs under evaluation with the Rector of academy staff members, current Professional HE and MSc students, and alumni and employers. At the end of the day, Assessment Committee presented preliminary findings.

B. General findings:

Strengths

- The model of financial and administrative functioning of Euroacademy is a strength as it helps to develop a flexible institution being able to operatively address actual challenges in higher education area
- An advantage of the Professional HE and MSc study program in the field Environmental Protection is well elaborated curricula offering wide background of environmental science in combination with an in practice based education, increasing competiveness of graduates in labour market.
- A definite strength of the study program is the running of the study program not only in Estonian, but also in Russian language and the efficient attraction of foreign students
- A positive aspect of the program is the involvement of leading scientists, professionals as well as international lecturers in the running of the study program
- Considering the small size of the study groups good and close relations between students and lecturers are appreciated, resulting in positive graduate feelings in respect to their Alma Mater
- A flexible and student-friendly study plan, and a study management system are present

Areas of Improvement

- **Infrastructure of Euroacademy and resources** (especially laboratory facilities) needed for the running of the Professional HE and especially MSc study programmes
- **Need to ensure correspondence of the volume of total learning hours** (26 hours in accordance with the Estonian regulation) with the actual study volume expected from the students.
- **Staff management and staff renewal** policy to ensure sustainability of the study programmes and Euroacademy functioning
- **Involvement of professionals and alumni** in environmental protection field at further development of the curricula (accordingly to established regulations and formalised procedures)
- **Academic staff research performance** and identification of academic profile corresponding to environmental protection field of Euroacademy could be encouraged
- **Quality of the Professional HE and especially MSc thesis**
- **Courses in different languages and decreased student numbers can lead to small groups who might be economically not sustainable. Therefore, a more specific and attractive study programme is needed to cope with the general decrease of potential students.**

Recommendations:

- Internship should be included in the Professional HE programme in full volume (27 ECTS not to be split amongst separate study courses) accordingly to elaborated individual internship plan, under tight control of academic staff, resulting in writing and defending a placement report
- Consider the possibility to reorganise the study programs as part time study program, actively involving distance learning tools
- Further efforts to improve the Euroacademy infrastructure (laboratory facilities and library resources) in respect to availability of research facilities are at first needed for the elaboration of student qualification papers (especially at MSc level).
- Elaborate and implement a plan for staff renewal and in-service training

- Both for Professional HE and MSc study programs more attention should be paid on training on EU environmental legislation, use of mathematical methods, statistical analysis approaches. Consideration of issues of Environmental Economics and Risk Assessment might be of importance for further development of the study program content.

- Further improvement of student training in English language could be recommended to achieve equal knowledge level within the student group. Development of student entrepreneurship skills is of importance and should be addressed in the curricula.

- Offer of continuous education courses for alumni and professionals in the field of environmental protection could be appreciated and might support establishment of position of Euroacademy in the Estonian higher education market

- Regular reading of research articles (science reading) should be further used as a regular study tool of importance also to improve the quality of Professional HE and MSc thesis works.

- More practical training would help to improve development of skills needed in labour market and thus would improve competitiveness in labour market.

- Student counselling should be improved to reduce the dropout rate.

- Further attention should be paid on the quality of the self-assessment report to prepare them in adequate quality.

B: Strengths and Areas for Improvement of Study Programmes by assessment areas

Environmental Protection (Professional HE)

Strengths

- A definite strength of the study program is the running of the study program not only in Estonian, but also in Russian language and efficient attraction of foreign students

- A positive aspect of the program is the involvement of leading scientists, professionals as well as international lecturers in the running of the study program

- The good and close relations between Euroacademy administration students and lecturers are appreciated

- Flexible and student-friendly study plan, and study management system is appreciated
- An advantage of the Professional HE study program is well elaborated curricula offering wide background of environmental science in combination with an in practice based education, increasing competiveness of graduates in labour market.

Areas for improvement

- For Professional HE study programs more attention should be paid on training on EU environmental legislation, use of mathematical methods, statistical analysis approaches. Further improvement of student training in English language could be recommended to achieve equal knowledge level within the student group.
- Regular reading of research articles (science reading) could be more used as a regular study tool of importance also to improve the quality of Professional HE thesis works
- Model of student internship realisation should be changed. To reach intended learning outcomes of student placements (internship) it is important to realise it in full allocated volume (27 ECTS) accordingly to elaborated internship plan, under tight control of academic staff, resulting in a placement report.
- Resources needed for the running of the Professional HE (at first, laboratory equipment) should be improved
- Efforts should be continued to improve the Euroacademy library resources, e-learning tools
- Student counselling could be improved to reduce the dropout rate
- Student feedback impact on the study program development could be improved
- Provide more information about Erasmus+ and other exchange programs to boost the students and encourage visiting other countries.

Environmental Protection (Master)

Strengths

- A definite strength of the study program is the running of the study program not only in Estonian, but also Russian language and efficient attraction of foreign students

- Flexible and student-friendly study plan, and study management system is present
- Good and close relations between students and lecturers is appreciated

Areas for improvement

- Consideration of issues of Environmental Economics and Risk Assessment might be of importance at further development of the study program content.
- Resources needed for the running of the MSc study program and especially at elaboration of MSc thesis should be improved
- At elaboration of MSc thesis more cooperation with Estonian public universities and research institutes is strongly encouraged
- Further efforts are recommended to raise the academic rigour of MSc thesis
- More practical training would help to improve development of skills needed in labour market and thus would improve competitiveness in labour market.
- Student feedback impact on the study program development could be improved

1. Study programme and study programme development

The share of practical training during the lecturing process and the broad curricula is in accordance with the current trends common in EU universities for professionals in field in environmental protection. The Professional HE program structure reflects the evident need for Environmental managers in labour market not only in Estonia, but also in other EU member states. On the other hand, the curricula both for Professional HE and MSc are rather broad and are quite close to issues of a general “sustainable development” – which again is closely related to Environmental Management, which can provide students with skills and knowledge needed for a wide field of professions. Program curricula development takes place in close cooperation with social partners and possible employers, as well as graduates, considering current trends in local and international labour market. Major attention is paid at the elaboration of the learning outcomes. The intended learning outcomes are consistent with the program content.

Aims and objectives of the curricula are clearly formulated in the self-evaluation report and reflect the graduation requirements. Name and content of the curricula are in accordance with the objectives, whereas the MSc do not clearly identify specialisation directions. EU

environmental legislation is considered within the study program curricula, but more attention could be allocated here.

All curricula offer face-to-face and independent studies, including practical training. Practical training is of importance to reach intended learning outcomes and it is offered in majority of study courses. Around 33% of the courses are elective. The students learn soft skills as well as presenting and reporting the outcomes of their studies. Problem-solving tasks seem to be a core issue of many courses and the overall curriculum.

Strengths relating to the study programme and study programme development:

- An advantage of the Professional HE study program is its well elaborated curricula which offer a wide background of environmental science in combination with an in practice based education. This increases the competiveness of graduates in labour market.

Recommendations:

- Regular reading of research articles (science reading) could be more used as a regular study tool of importance also to improve the quality of Professional HE and MSc thesis works.
- Close and formalised procedures supporting the involvement of professionals in environmental protection field are strongly suggested for the further development of the curricula of study program
- Both for Professional HE and MSc study programs more attention should be paid on training on EU environmental legislation, use of mathematical methods, statistical analysis approaches. Consideration of issues of Environmental Economics and Risk Assessment might be of importance at further development of the study program content.
- Further improvement of student training in English language could be recommended to achieve equal knowledge level within the student group.
- It could be suggested the possibility to reorganise the study program as part time study program, actively involving distance learning tools
- Offer of continuous education courses for alumni and professionals in the field of environmental protection could be appreciated and might support establishment of position of Euroacademy in the Estonian higher education market

2. Resources

The resources necessary for the running of the Professional HE and especially MSc study programmes are present at a very minimal level: classroom equipment could be considered as acceptable: basic software units are available, basic equipment for laboratories at the same time can ensure training only of small groups of students in several study courses. Also library resources satisfy minimal requirements necessary for studies and student independent work. Major databases are accessible using resources of public libraries. At Euroacademy is located impressive collection of lichens. In the SER plans to expand the classrooms and laboratories are mentioned, however status of private institution limits accessibility to major funding sources to significantly expand infrastructure. A major factor affecting the availability of resources is the funding system of the Euroacademy that nees to rely at first on student fee payments.

Areas for improvement relating to learning environment and resources:

- The resources needed for the running of the Professional HE and especially MSc study programmes are present, however, at a minimal level

Recommendations:

- Further efforts to improve the Euroacademy infrastructure (including library resources) in respect to availability of research facilities at first needed for elaboration of student qualification papers (especially at MSc level).

3. Teaching and learning

The self-evaluation report and discussions during the visit provided a comprehensive information of the different teaching methods applied in the Euroacademy. Traditional teaching techniques (lectures and exercises) provide the core of the work. Problem-based learning has also been developed in some courses and new teaching methods using the computer network are being introduced. Small study groups allow for a personalised communication between students and teachers, which is much appreciated by the students. Students seem to be satisfied with the teaching.

Computers and licensed software are used in teaching, including GIS software, AutoCAD etc. However, to keep the study quality at an acceptable level in the future will require regular investments to provide access to specialised software.

Euroacademy has co-operation relationships with different organizations (private companies, local government, and state institutions) to organize practical training of the students, in order to develop their professional skills and to provide a teamwork experience.

For students possibilities are provided to participate in the project works, and part of them are already employed.

Student assessment is objective and both the students and the staff regard the grading system as relatively objective. Student assessment and their feedback analysis is done using the VOTA system and it includes activity reports and student feedback. Education involves tasks that develop social competence. Examination procedures are flexible.

The organisation of studies is based on a detailed calendar both between and within semesters. The cycle-based organisation of studies makes the use of students' time effective but may cause problems for students that are temporarily away, so reducing student mobility and possibilities to participate in the international student exchange programs.

Students receive sufficient information on organization and content of studies. Counselling of students is mainly based on an open door policy.

Students were satisfied with the study loads despite the fact that often they had to combine full time work and studies. Roughly half of the study time is allocated for independent work. The expert team has got an impression that the Euroacademy administration carefully follows to the student study progress to reduce the drop out and in case of complaints, changes the study organization.

Strengths relating to the process of teaching and learning:

- A definite strength of the study program is the running of the study program not only in Estonian, but also in Russian language and the efficient attractivity towards non-Estonian speaking students
- A positive aspect of the program is the involvement of leading scientists, professionals as well as international lecturers in the running of the study program

Recommendations:

- Professional HE. One of essential elements of the study program is student internship. To reach intended learning outcomes of student placements (internship) it is important to realise it in full allocated volume (27 ECTS) accordingly to elaborated internship plan, under tight control of academic staff, resulting in a placement report.
- MSc. Further efforts are recommended to raise the level of MSc thesis

4. Teaching staff

The teaching staff of the study programs in Professional HE and MSc curriculum at Euroacademy conforms to the standard required in Estonia in terms of formal scientific competence. Few of the teachers are also involved in scientific research and publish regularly in international journals; however their bibliographic record could be better. Several teachers are well known experts in their field. Most of the teachers in these courses are, in reality, employed as researchers or teachers at state funded institutes or public universities. At the same time combination of experienced researchers and professionals provide possibilities to deliver high quality education and develop skills needed in labour market. Another significant problem is the high average age of the academic staff (51.5 years), however several young lecturers with good academic performance indicators are recently involved in the study program.

Probably due to high workload for a part of the program staff and actual employment at state funded institutes or public universities, the staff is not actively involved in international and national mobility. Research by the part time employed staff takes place principally in the public universities and institutes, although in some cases research cooperation has resulted in Euroacademy publications (locally published papers) and conferences, with an emphasis on relevant joint research in the social science elements of the environmental research sector. It seems the investments into research infrastructure are minimal and rely too importantly on the intensive use of resources provided by public universities and research institutes.

With strong evidence of continued staff ageing and key staff well beyond retirement age, it is evident that a well elaborated policy for staff renewal is needed.

Recommendations:

- Further efforts to raise academic performance and identification of academic profile corresponding to environmental protection field of Euroacademy could be encouraged
- Plan for staff renewal is needed

5. Students

The number of students admitted has been decreasing during last decades, however recently it is stabilised mostly due to inflow of foreign students. Intensive advertising of the study program is going on. As efficient tool to attract students, can be considered the running of the study program not only in Estonian, but also in English and Russian.

Considering the profile of the Euroacademy the advice and guidance services offered to student candidates are functioning well. An advantage for this is the small number of students in the Euroacademy. In addition electronic sources, students also can easily reach professors and lecturers and because of the personal contact they get intensive help from the staff of the faculty.

Student mobility is low, considering full (part-time) employment of majority of students.

The Euroacademy administration and lecturers provide monitoring and student counselling. The monitoring system for student achievements is well documented and it seems the assessment system functions very well.

It has been given a statement that the employment rate of alumni is high.

Strengths related to students:

- Good and close relations between students and lecturers is appreciated
- Students are motivated to obtain needed education level
- Flexible and student-friendly study plan, and study management system is present
- Employment record of alumni is good.
- Alumni and their employers are satisfied with the professional preparation of graduates and their social competencies.
- Activities of alumni and their contacts with the Euroacademy is a good sign of student positive feelings in respect to their Alma Mater

Recommendations:

- More practical training would help to improve development of skills needed in labour market and thus would improve competitiveness in labour market.
- To improve student counselling to reduce the dropout rate
- Student feedback impact on the study program development could be improved