Assessment report
Limited Framework Programme Assessment

Master Environmental Sciences

Utrecht University

Contents of the report

1. Executive summary

In this executive summary, the panel presents the main considerations which led to the assessment of the quality of the Master Environmental Sciences programme of Utrecht University. The programme was assessed according to the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, published on 20 December 2016 (Staatscourant nr. 69458).

The panel appreciates the programme's main objective to educate students for positions on the labour market in this domain. The programme objectives are sound and relevant, as the programme is meant to offer students on the one hand the broad, integrative overview on sustainable development, while on the other hand allowing them to specialise in one of the application fields, being Energy & Materials, Environmental Change & Ecosystems, Earth System Governance, International Development (all belonging to one specialisation) and Water Science and Management (the second specialisation).

The objectives have been adequately translated into the intended learning outcomes of the programme. These are adequately stated and include relevant knowledge and understanding of the domain, research skills and academic skills. The intended learning outcomes of both specialisations differ, but match the programme intended learning outcomes. The skills and attitudes are part of the intended learning outcomes, but could be articulated more clearly. The intended learning outcomes meet the master level.

The programme objectives are within the boundaries of the domain-specific reference framework for academic programmes in Environment and Sustainability Sciences. The panel is very positive about the effort by the joint academic programmes in Environment and Sustainability Sciences in the Netherlands to draft this framework and regards this to be a sound and up-to-date description of this domain.

The Societal Advisory Board of the Copernicus Institute is regarded by the panel as an effective instrument for the programme to keep abreast of relevant trends in the professional field.

The organisational structure of the programme is appropriate.

The number of incoming students is substantial and is regarded by the panel to be favourable.

The curricula of both specialisations match the intended learning outcomes of the programme. The panel regards the curriculum to be solid, well-structured and coherent. The courses address relevant subjects. The academic skills training, especially in the Transdisciplinary Case Study course is adequate. The panel appreciates the specialisation programmes and tracks offered, allowing students to tailor the curriculum to their preferences. The approval procedure of electives by the Board of Examiners is adequate, but could be communicated better. The panel advises to allow the Water Science and Management specialisation its own design and to distinguish this specialisation more clearly from comparable programmes of Wageningen University and Delft University of Technology. System analysis tools, such as cost-benefit analysis, multi-criteria analysis and life cycle analysis should be addressed in all specialisations and tracks. The panel noted the students being content with the curriculum.

The lecturers in the programme are nearly all PhDs and have strong research backgrounds. Their educational capabilities are up to standard, as the substantial proportions of lecturers being BKO- or SKO-certified show. The panel advises to include in the SKO-training ICT in education, skills development and transdisciplinary working. The regular staff meetings on education are very positive. The lecturers are easily approachable for students.

The panel approves of the entry requirements and the admission procedures of the programme. The panel appreciates both the preparatory courses and the individualised pre-master programmes, offering students tailor-made routes to remedy their deficiencies.

The panel finds the educational concept and the range of study methods of the programme adequate, promoting problem-oriented and student-activating learning. Programme management achieves student-centred learning in offering study routes but less in accommodating individual learning styles of students. The panel advises to promote the latter. The panel encourages programme management to investigate ICT-based study methods. The information provision and study guidance in the programme are satisfactory. The panel advises to tailor the career services to the students' programme and profiles. The panel regards the study load to be appropriate. The student success rates are adequate.

The programme examination and assessment policies are in line with the University and Faculty rules and regulations. The panel is very positive about the responsibilities and activities of the Board of Examiners. The examination methods selected in the courses meet the course contents. The panel is positive about the scheduling of multiple examinations in the courses, as this balances the study load and allows both students' knowledge and skills to be assessed adequately. Adequate measures are taken to counter free riding. The supervision and assessment of the Master thesis are appropriate. The panel welcomes the measures taken by programme management to ensure the examinations and assessments quality.

The examinations of the courses are considered by the panel to be up to standard. The panel advises to make the Transdisciplinary Case Study, which addresses academic skills, part of the final projects of the programme to emphasise the relevance of the course in this respect.

The panel supports the grades awarded to the Master theses. The grades given for the theses were certainly not too high. The panel considers the theses to be very solid. Some of the theses were assessed by the panel to be very good, surpassing the level to be expected. Students gave evidence of definitely having achieved the programme learning outcomes.

The panel is convinced the graduates of the programme are well-equipped to obtain suitable positions in this domain.

The panel that conducted the assessment of the Master Environmental Sciences programme of Utrecht University assesses this programme to meet the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, judging the programme to be good. Therefore, the panel recommends NVAO to accredit this programme.

Rotterdam, 27 August 2018

Prof. dr. W.A. Hafkamp
(panel chair)

drs. W. Vercouteren
(panel secretary)

2. Assessment process

The evaluation agency Certiked VBI received the request by Utrecht University to support the limited framework programme assessment process for the Master Environmental Sciences programme of this University. The objective of the programme assessment process was to assess whether the programme would conform to the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, published on 20 December 2016 (Staatscourant nr. 69458).

Management of the programmes in the assessment cluster Environment and Sustainability Sciences convened to discuss the composition of the assessment panel and to draft the list of candidates.

Having conferred with management of the Master Environmental Sciences programme of Utrecht University, Certiked invited candidate panel members to sit on the assessment panel. The panel members agreed to do so. The panel composition was as follows:

- Prof. dr. W.A. Hafkamp, full professor of Environmental Sciences, Erasmus University Rotterdam (panel chair);
- Prof. dr. M.C.E. van Dam-Mieras, emeritus professor Sustainable Development and Educational Innovation, Leiden University (panel member);
- Prof. dr. L. Hordijk, emeritus professor Environmental Systems Analysis, Wageningen University (panel member);
- P. Aarts BSc, student Master Biological Sciences, University of Amsterdam (student member).

On behalf of Certiked, drs. W. Vercouteren served as the process coordinator and secretary in the assessment process.

All panel members and the secretary confirmed in writing being impartial with regard to the programme to be assessed and observing the rules of confidentiality. Having obtained the authorisation by the University, Certiked requested the approval of NVAO of the proposed panel to conduct the assessment. NVAO have given their approval.

To prepare the assessment process, the process coordinator convened with management of the programme to discuss the outline of the self-assessment report, the subjects to be addressed in this report and the site visit schedule. In addition, the planning of the activities in preparation of the site visit were discussed. In the course of the process preparing for the site visit, programme management and the Certiked process coordinator regularly had contact to fine-tune the process. The activities prior to the site visit have been performed as planned. Programme management approved of the site visit schedule.

Well in advance of the site visit date, programme management sent the list of final projects of graduates of the programme of the most recent years. Acting on behalf of the assessment panel, the process coordinator selected 15 final projects of this programme. In the selection, the specialisations as well as the tracks within one of the specialisations were taken into account. Students in the Water Science and Management specialisation register either for the Environmental Sciences programme (21PD-60810) or for the Earth Sciences programme (21PD-66986). Only the final projects of students having registered for the Environmental Sciences programme were selected. The final projects of students, having registered for the Earth Sciences programme were not selected. The grade distribution in the selection was ensured to conform to the grade distribution in the list, sent by programme management.

The panel chair and the panel members were sent the self-assessment report of the programme, including appendices. In the self-assessment report, the student chapter was included. In addition, the expert panel members were forwarded a number of final projects of the programme graduates, these final projects being part of the selection made by the process coordinator.

A number of weeks before the site visit date, the assessment panel chair and the process coordinator met to discuss the self-assessment report provided by programme management, the procedures regarding the assessment process and the site visit schedule. In this meeting, the profile of panel chairs of NVAO was discussed as well. The panel chair was informed about the competencies, listed in the profile. Documents pertaining to a number of these competencies were presented to the panel chair. The meeting between the panel chair and the process coordinator served as the briefing for panel chairs, as meant in the NVAO profile of panel chairs.

Prior to the date of the site visit, all panel members sent in their preliminary findings, based on the self-assessment report and the final projects studied, and a number of questions to be put to the programme representatives on the day of the site visit. The panel secretary summarised this information, compiling a list of questions, which served as a starting point for the discussions with the programme representatives during the site visit.

Shortly before the site visit date, the complete panel met to go over the preliminary findings concerning the quality of the programme. During this preliminary meeting, the preliminary findings of the panel members, including those about the final projects were discussed. The procedures to be adopted during the site visit, including the questions to be put to the programme representatives on the basis of the list compiled, were discussed as well.

On 23 April 2018, the panel conducted the site visit on the Utrecht University campus. The site visit schedule was in accordance with the schedule as planned. In a number of separate sessions, the panel was given the opportunity to meet with Faculty Board representatives, programme management, Board of Examiners chair and members, lecturers and final projects examiners, and students and alumni.

In a closed session at the end of the site visit, the panel considered every one of the findings, weighed the considerations and arrived at conclusions with regard to the quality of the programme. At the end of the site visit, the panel chair presented a broad outline of the considerations and conclusions to programme representatives.

Clearly separated from the process of the programme assessment, the assessment panel members and programme representatives met to conduct the development dialogue, with the objective to discuss future developments of the programme.

The assessment draft report was finalised by the secretary, having taken into account the findings and considerations of the panel. The draft report was sent to the panel members, who studied it and made a number of changes. Thereupon, the secretary edited the final report. This report was presented to programme management to be corrected for factual inaccuracies. Programme management were given two weeks to respond. Having been corrected for these factual inaccuracies, the Certiked bureau sent the report to the University Board to accompany their request for re-accreditation of this programme.

3. Programme administrative information

Name programme in CROHO:	M Environmental Sciences
Orientation, level programme:	Academic Master
Grade:	MSc
Number of credits:	120 EC
Specialisations:	Sustainable Development
	Water Science and Management
Location:	Utrecht
Mode of study:	Full-time (language of instruction is English)
Registration in CROHO:	21PD-60810
Name of institution:	Utrecht University
Status of institution:	Government-funded University
Institution's quality assurance:	Approved

4. Findings, considerations and assessments per standard

4.1 Standard 1: Intended learning outcomes

The intended learning outcomes tie in with the level and orientation of the programme; they are geared to the expectations of the professional field, the discipline, and international requirements.

Findings
The programme is a two-year, research-based, interdisciplinary programme, meant to address both the social sciences and natural sciences dimensions of the Environment and Sustainability Sciences domain and meant to prepare students for positions on the labour market in this domain.

The programme objectives are to offer students a broad, integrative overview of perspectives on sustainable development, combined with in-depth knowledge of one of the application fields offered and the sustainability challenges in these fields. The application fields are Energy & Materials, Environmental Change & Ecosystems, Earth System Governance, International Development and Water Science and Management. The first four fields of application are tracks of the Sustainable Development specialisation programme, whereas the last one is a separate specialisation programme. The Energy & Materials track addresses sustainable production and consumption of energy and materials in society. The Environmental Change & Ecosystems track deals with the interaction of human activity and the physical and biotic environment quality. The Earth System Governance track covers management of sustainable development, as approached from different disciplinary angles. In the International Development track, students are taught to balance human development and natural resources depletion. The Water Science and Management specialisation goes into water management and the related qualitative and quantitative problems.

The programme's objectives have been translated into the intended learning outcomes of the programme. The intended learning outcomes of both specialisations differ to some extent, but are covered by those of the programme as a whole. These intended learning outcomes include knowledge and understanding of natural sciences and social sciences in the sustainable development context, research skills and academic skills.

Programme management drafted a table from which the correspondence of the intended learning outcomes to the Dublin descriptors for master programmes may be inferred.

The objectives of the programme conform to the domain-specific reference framework for academic programmes in Environment and Sustainability Sciences, which has been drafted by the joint programmes in the Netherlands. In this domain-specific reference framework, reference has been made to international frameworks and benchmark statements. This Utrecht University programme may be regarded to be positioned in the *Sustainability Solutions Emphasis* part of the Environment and Sustainability Sciences domain.

To remain up to date on relevant trends in the professional field, programme management meets yearly with the Societal Advisory Board. This Board has been installed at the level of the Copernicus Institute of Sustainable Development. In addition, contacts with the professional field are maintained through research projects and via guest lecturers.

The programme is English-taught and aims to attract students from the Netherlands as well as from abroad.

Considerations
The panel appreciates the programme main objective to educate students for positions on the labour market in this domain.

The panel considers the programme objectives to be sound and relevant, as the programme is meant to offer students on the one hand the broad, integrative overview on sustainable development, while on the other hand allowing them to specialise in one of the application fields, being Energy & Materials, Environmental Change & Ecosystems, Earth System Governance, International Development or Water Science and Management.

The objectives have been adequately translated into the intended learning outcomes of the programme. These are adequately stated and include relevant knowledge and understanding of the domain, research skills and academic skills. The panel observed the intended learning outcomes of both specialisations to differ, but to match the programme intended learning outcomes. The skills and attitudes are definitely part of the intended learning outcomes, but could be articulated more clearly.

The intended learning outcomes conform to the master level. This is exemplified by the Dublin descriptors criteria for master level programmes matching the intended learning outcomes.

The programme objectives are within the boundaries of the domain-specific reference framework for academic programmes in Environment and Sustainability Sciences, this programme having a clear profile within this framework. The panel is very positive about the effort by the joint academic programmes in Environment and Sustainability Sciences in the Netherlands to draft this framework and regards this to be a sound and up-to-date description of this domain.

The Societal Advisory Board of the Copernicus Institute of Sustainable Development is regarded by the panel as an effective instrument for the programme to keep abreast of relevant and important trends in the professional field.

Assessment of this standard
These considerations have led the assessment panel to assess standard 1, Intended learning outcomes, to be satisfactory.

4.2 Standard 2: Teaching-learning environment

The curriculum, the teaching-learning environment and the quality of the teaching staff enable the incoming students to achieve the intended learning outcomes.

Findings
The programme is offered by the Department of Innovation, Environmental and Energy Sciences, better known as the Copernicus Institute of Sustainable Development of the Faculty of Geosciences of Utrecht University. The Board of Studies of the Graduate School of Geosciences of the Faculty is responsible for the programme quality, this responsibility having been delegated to the director of education of the Copernicus Institute. The Master Management Team, consisting of the director of education and the programme leaders of the Master programmes, takes care of the day-to-day management of this and the other Master programmes of the Institute. The programme leader of the programme meets regularly with the track coordinators to discuss track-related issues. The Institute's chamber of the Faculty Master Education Committee, which includes one staff member and one student for each of the Master programmes, advises the Master Management Team on the quality of the programmes. The Faculty Board of Examiners is responsible for the quality assurance of examinations and assessments of all programmes of the Faculty. One of the chambers of the Board has the authority to monitor the examinations and assessments of this and the other programmes of the Copernicus Institute.

The number of students enrolling in the programme varied somewhat the last few years, but is on average about 110 students, being divided into about 100 students for the Sustainable Development specialisation and about 10 students for the Water and Science Management specialisation. Students enrolling in the latter specialisation may either register in the Earth Sciences programme or in the Environmental Sciences programme. These programmes have different Croho-numbers and have slightly different set-ups. Students receive different diplomas. This situation will end as of 2018, when all students will register in the Environmental Sciences programme. About 42 % of incoming students come from abroad.

Programme management presented tables for both specialisations, demonstrating the relations between the intended learning outcomes and the curriculum components. Although the intended learning outcomes of the specialisations differ somewhat, they both match the programme intended learning outcomes. The curriculum structure is essentially T-shaped, reflecting the integrative view on sustainable development in combination with the in-depth knowledge of the field of application selected by students. The integrative courses are three compulsory courses (22.5 EC), addressing the relations between natural sciences and social sciences domains and include subjects, such as global challenges, systems approach, sustainability modelling and transdisciplinary application. The *Transdisciplinary Case Study* course includes training of academic skills. In addition, students take the mandatory *Research Design* course. Parallel to the integrative courses, students take three to five application field courses (30 EC to 37.5 EC), introducing them to current scientific developments and the research methodology of the field of application selected. Students may take a maximum of four electives (30 EC). Electives should be related to the programme domain and are subject to approval by the Board of Examiners. Students complete the curriculum with the Master Thesis, being either 30 EC or 45 EC. A large proportion of students conduct their Master Thesis research abroad. Some students are enrolled in the selective Joint International Master Programme in Sustainable Development, allowing them to take courses at a number of universities across the globe. Talented students may apply for additional programmes in this domain, offered at Utrecht University.

The staff lecturing in the programme are about 50 lecturers, excluding a number of external lecturers. About 25 % of the teaching staff are from abroad. The vast majority of the lecturers are researchers at the Copernicus Institute of Sustainable Development. Some lecturers in the Water Science and Management specialisation are researchers at other research institutes of Utrecht University. The research at the Copernicus Institute is highly valued, internationally. The lecturers introduce their research in the courses. About 90 % of the core lecturers have PhDs. About 68 % of them are at least BKO-certified and another 21 % are in the process of obtaining this certificate. About 34 % of the lecturers are SKO-certified. The BKO-certificate is a prerequisite to obtain a permanent position, whereas the SKO-certificate is a prerequisite to become associate or full professor. Formal and informal meetings are regularly scheduled for lecturers to discuss education and examinations. The work load of the lecturers is balanced. One period may be without lecturing to allow lecturers to do research. Lecturers are experienced by the students as easily approachable.

Students with bachelor degrees in a wide range of social and natural sciences are eligible for admission. In addition, applicants should have, among others, basic knowledge of mathematics, basic knowledge of physical processes in the environment, and academic and research skills. For the Water Science and Management specialisation, natural sciences bachelor degrees are required. Admission is granted on a case-to-case basis. Applicants who do not meet the entry requirements, are offered a number of options to remedy deficiencies, ranging from online tests to the pre-master programme of 30 EC maximum.

The programme educational concept is problem-oriented learning, taking problems from this domain as points of departure for the teaching and learning processes. In the application courses, students do small scientific research projects to solve disciplinary or multidisciplinary problems. Conforming to Utrecht University educational principles, the programme offers student-centred and activating learning. The study methods adopted in the programme include lectures, tutorials, debates, assignments and presentations. New, ICT-based study methods are gradually being introduced. The average number of hours of face-to-face education is about 9 to 11 hours per week in the first year and about 6 to 8 hours per week in the second year, depending on the specialisation and excluding supervision in the Master Thesis project. The students-to-staff ratio is estimated at 30 : 1 to 35 : 1. Information is available through the programme learning system, but students feel this could be presented more clearly. Students are informed also in information meetings by the programme leader and the study advisor. The study association plays a role in informing students. Study advice is on the student’s request offered by the study advisor. The track coordinators assist students in finding Master Thesis subjects and supervisors. University and Faculty career officers advise students on career perspectives. The study load is balanced by the continuous assessment system in the courses, assessments being spread over the duration of the courses. The student success rates of the specialisation Sustainable Development are about 27 % of the students graduating within two years and about 78 % of them graduating within three years (average figures for last three cohorts). The figures for the Water Science and Management specialisation are 16 % after two years and 75 % after three years.

Considerations
The panel regards the organisation of the programme to be adequate.

The number of incoming students is substantial and is regarded by the panel to be favourable.

The curricula of both specialisations match the intended learning outcomes of the programme. The panel regards the curriculum to be solid, well-structured and coherent. The courses address relevant subjects, both in the integrative courses and in the application field courses. The academic skills training in the curriculum and especially in the Transdisciplinary Case Study course is adequate. The panel appreciates the specialisation programmes and tracks offered, allowing students to tailor the curriculum to their preferences. The panel judges the approval procedure of electives by the Board of Examiners to be adequate, but could be communicated better. The panel recommends to allow the Water Science and Management specialisation its own design, not to be pressed too much into the programme framework. The panel also advises to distinguish this specialisation more clearly from comparable programmes of Wageningen University and Delft University of Technology. System analysis tools, such as cost-benefit analysis, multi-criteria analysis and life cycle analysis are only presented in the Energy & Material specialisation. The panel recommends to include these subjects in all of the specialisations and tracks. The panel noted the students being content with the curriculum.

The lecturers in the programme are practically all PhDs and they have strong research backgrounds. Their educational capabilities are up to standard, as the substantial proportions of lecturers being at least BKO-certified and lecturers being SKO-certified show. The panel encourages programme management to include in the SKO-training ICT in education, skills development and transdisciplinary working. The regular staff meetings on education are regarded by the panel as very positive. The lecturers are easily approachable for students.

The panel approves of the entry requirements and the admission procedures of the programme. The panel appreciates both the preparatory courses and the individualised pre-master programmes, offering students tailor-made routes to remedy their deficiencies.

The panel finds the educational concept and the range of study methods of the programme adequate, promoting problem-oriented and student-activating learning. Programme management achieves student-centred learning in offering study routes but less in accommodating individual learning styles of students. The panel advises to promote the latter. The panel encourages programme management to investigate ICT-based study methods. The information provision and study guidance in the programme are satisfactory. The panel considers the career services to be too generic and advises to tailor these to the students' programme and profiles. The panel regards the study load to be appropriate and welcomes the continuous assessment system in this respect. The student success rates are adequate.

Assessment of this standard
These considerations have led the assessment panel to assess standard 2, Teaching-learning environment, to be good.

4.3 Standard 3: Student assessment

The programme has an adequate system of student assessment in place.

Findings
The programme policies regarding examinations and assessments conform to the Utrecht University educational model requirements and to the Faculty of Geosciences examination policy. Rules and regulations about examinations and assessments are laid down in the programme Teaching and Examination Regulations, the programme catalogue and the course outlines. As has been indicated, the Faculty Board of Examiners is responsible for the quality assurance of examinations and assessments of this and all other programmes of the Faculty. One of the Chambers of the Board has the authority to monitor the examinations and assessments of this and the other programmes of the Copernicus Institute. The Chamber has the authority for the programmes of Copernicus Institute.

The examination methods in the programme are diverse and include written examinations, research papers, written assignments, and oral presentations. In each of the courses, multiple examination methods are scheduled, to allow for various knowledge and skills components to be assessed, and to balance the study load of the courses. The final grade of the courses is the weighed outcomes of the grades of these examinations.

At the completion of the programme, students are to present the Master thesis as their final project. The Master thesis (30 EC) is an individual research project. The thesis project may be extended to 45 EC, if the student can substantiate to need more time for data collection or data processing. Thesis projects may be combined with internships. Thesis projects are supervised by staff members of the Copernicus Institute, mostly being BKO- or SKO-certified. The thesis research proposal is graded by both the supervisor and the second assessor. The final theses are assessed by the supervisor and the second reader as well, making use of the thesis rubric. They independently grade the thesis and determine the grade in consultation. The oral presentation is graded by the chair of the thesis presentation session. In case of internships, internship supervisors are asked for advice about the thesis process and results.

In the programme, a number of measures to ensure the quality of examinations and assessments have been taken. The assessment plan for the programme has been drafted, aligning the intended learning outcomes of the programme, the course objectives and the course examinations. Examinations and assessment are part of the BKO- and SKO-training. For the courses, assessment matrices are drafted, showing the relations between the course examinations and the course objectives. Examiners present examinations to fellow examiners for review. In integrative projects, individual performances may be part of the assessments. Students are asked to give feedback on their fellow students' efforts to prevent free rider behaviour in group assignments. Rubrics have been introduced to assess assignments and theses. On behalf of the Board of Examiners, the Committee of Assessments regularly evaluates the quality of samples of examinations. The Board of Examiners reviewed a number of theses. Calibration sessions among examiners have not yet been scheduled. Students are informed about the examination method and the assessment set-up of the course. Students may compare their answers to the answer keys.

Considerations
The panel observed the programme examination and assessment policies to be in line with the University and Faculty rules and regulations. The panel is very positive about the responsibilities and activities of the Board of Examiners. The Board and the Committee of Assessments thoroughly monitor and review the examination and assessment procedures and products.

The examination methods selected in the courses are approved by the panel, as they meet the contents of the courses to be assessed. The panel is positive about the scheduling of multiple examinations in the courses, as this balances the study load and allows both students' knowledge and skills to be assessed adequately. Adequate measures are taken to counter free riding.

The panel regards the assessment of the Master thesis to be appropriate. The supervision of the thesis is organised adequately. The assessment is conducted reliably, involving three expert examiners, who use elaborate assessment forms.

The panel welcomes the measures taken by programme management to ensure the examinations and assessments quality. The validity of the examinations is promoted through the programme assessment plan and the course assessment matrices. The reliability of the assessments is fostered by assessment forms and rubrics. Students are provided adequate information on the examinations and are given the opportunity to check their answers. The panel proposes to schedule calibration sessions to allow examiners to share their views on the assessments of final projects.

Assessment of this standard
The considerations have led the assessment panel to assess standard 3, Student assessment, to be good.

4.4 Standard 4: Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

Findings
The panel reviewed a number of examinations of courses in the programme.

The panel inspected fifteen Master theses of the graduates of the programme. In the thesis, students are to demonstrate having the capabilities to conduct research individually, with only limited supervision. The average grade of the theses for the last two years was 7.4 for both specialisations. The proportion of *cum laude* was 12 % over the last years, but no cum laude was awarded in the Water Science and Management specialisation in this period.

Management of the joint academic programmes in Environment and Sustainability Sciences in the Netherlands very recently conducted a survey among employers of graduates of these programmes. This survey shows graduates of academic programmes in this domain to have at present appropriate job opportunities and career prospects. The survey explains students will continue to have favourable positions on the labour market in the foreseeable future. The survey also shows academic programmes in this domain to adequately prepare students for the professional field in this domain.

A recent survey conducted by the Utrecht University programme shows about 90 % of the graduates having found jobs within one year. They have found work in a wide range of economic sectors, being commercial companies, consultancies, government, education or research.

Considerations
The examinations of the courses which were reviewed by panel members are considered by the panel to be up to standard.

The panel appreciates the *Transdisciplinary Case Study* course as a valuable course for students to acquire academic skills. The panel proposes to make this course part of the final projects of the programme to emphasise the relevance of the course in this respect.

The panel supports the grades awarded to the Master theses. The grades given for the theses were certainly not too high. The panel considers the theses to be very solid. Some of the theses were assessed by the panel to be very good, surpassing the level to be expected. Students gave evidence of definitely having achieved the programme learning outcomes.

The panel is convinced the graduates of the programme are well-equipped to obtain suitable positions in this domain.

Assessment of this standard
The considerations have led the assessment panel to assess standard 4, Achieved learning outcomes, to be good.

5. Overview of assessments

Standard	Assessment
Standard 1. Intended learning outcomes	Satisfactory
Standard 2: Teaching-learning environment	Good
Standard 3: Student assessment	Good
Standard 4: Achieved learning outcomes	Good
Programme	Good

6. Recommendations

In this report, a number of recommendations by the panel have been listed. For the sake of clarity, these have been brought together below. The panel recommends programme management:

- To articulate the intended learning outcomes on skills and attitudes more clearly.
- To allow the Water Science and Management specialisation its own design, not to be pressed too much into the programme framework.
- To distinguish the Water Science and Management specialisation more clearly from comparable programmes of Wageningen University and Delft University of Technology.
- To include system analysis tools, such as cost-benefit analysis, multi-criteria analysis and life cycle analysis in the curriculum of all of the specialisations.
- To include ICT in education, skills development and transdisciplinary working in the SKO-certification.
- To promote student-centred learning by accommodating individual learning styles of students.
- To investigate ICT-based study methods.
- To tailor the career services to the students' programmes and profiles.
- To formalise the status of the Transdisciplinary Case Study as final project of the programme for the assessment of the academic skills of students.
- To schedule calibration sessions to allow examiners to share views on the assessments of final projects.

Assessment report
Limited Framework Programme Assessment

Bachelor Global Sustainability Science

Utrecht University

Contents of the report

1. Executive summary

In this executive summary, the panel presents the main considerations which led to the assessment of the quality of the Bachelor Global Sustainability Science programme of Utrecht University. The programme was assessed according to the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, published on 20 December 2016 (Staatscourant nr. 69458).

The programme started in 2016 as the merger of two preceding programmes in this domain. Therefore, the third year of the curriculum and the final projects of this programme could not be assessed. Having conferred with NVAO, the panel was allowed to assess the third year of the programme on the basis of the findings of the first two years and to assess the achieved learning outcomes of the programme on the basis of final projects of students of the two preceding programmes.

The panel appreciates the programme's main goal to enable students to continue their education at master level. The panel proposes, however, to strengthen the labour market qualifications of the students of this international programme.

The programme objectives are appreciated by the panel, reflecting disciplines from both natural sciences and social sciences to analyse problems in the environment and sustainability domain and being directed towards the solving of problems in this domain from a clearly interdisciplinary perspective. The panel considers the programme to have a profile of its own among the academic programmes in Environment and Sustainability Sciences in the Netherlands.

The objectives have been adequately translated into the intended learning outcomes of the programme. The skills and attitudes are definitely part of the intended learning outcomes, but could be articulated more clearly. The intended learning outcomes conform to the bachelor level.

The programme objectives are within the boundaries of the domain-specific reference framework for academic programmes in Environment and Sustainability Sciences. The panel is very positive about the effort by the joint academic programmes in Environment and Sustainability Sciences in the Netherlands to draft this framework and regards this to be a sound and up-to-date description of this domain.

The Societal Advisory Board of the Copernicus Institute is regarded by the panel as an effective instrument for the programme to keep abreast of relevant trends in the professional field.

The organisational structure of the programme is appropriate.

The number of incoming students is substantial and is regarded by the panel to be favourable.

The curriculum of the programme matches the intended learning outcomes. The curriculum is considered by the panel to be well thought through and to be very solid, with strong courses. The panel is positive about the three integrative projects, allowing students to become acquainted with interdisciplinary problems and solutions to these problem. The panel regards the curriculum to be well-structured and coherent. Although academic skills are addressed appropriately, the panel recommends to report these more explicitly.

The lecturers in the programme are nearly all PhDs and have strong research backgrounds. Their educational capabilities are up to standard, as the substantial proportions of lecturers being BKO- or SKO-certified show. The panel advises to include in the SKO-training ICT in education, skills development and transdisciplinary working. The regular staff meetings on education are very positive. The lecturers are easily approachable for students.

The panel approves of the entry requirements and the admission procedures of the programme. The panel suggests to schedule mathematics and natural sciences subjects to remedy deficiencies not as part of the curriculum, but prior to the start of the curriculum to free up time for more advanced subjects.

The educational concept and the study methods of the programme allow for student-activating learning and for students addressing interdisciplinary problems in this domain. Programme management achieves student-centred learning in offering study routes but less in accommodating individual learning styles of students. The panel advises to promote the latter. The panel encourages programme management to investigate ICT-based study methods. The information provision and study guidance in the programme are satisfactory. The panel advises to tailor the career services to the students' programmes and profiles. The panel regards the study load to be appropriate. The student success rates are adequate as well.

The programme examination and assessment policies are in line with the University and Faculty rules and regulations. The panel is very positive about the responsibilities and activities of the Board of Examiners. The examination methods selected in the courses meet the course contents. The panel is positive about the scheduling of multiple examinations in the courses, as this balances the study load and allows both students' knowledge and skills to be assessed adequately. Adequate measures are taken to counter free riding. The supervision and assessment of the Consultancy Project and the Bachelor thesis as final projects are appropriate. The panel welcomes the measures taken by programme management to ensure the examinations and assessments quality.

The examinations of the courses are regarded by the panel to be up to standard. The panel considers the Bachelor theses to be very solid and to exhibit sound theoretical and methodological performances on the part of the students. The theses definitely were not graded too high.

The panel applauds the very wide range of master programmes the programme graduates are admitted to and considers this to be convincing evidence of the learning outcomes, achieved by the graduates.

The panel which conducted the assessment of the Bachelor Global Sustainability Science programme of Utrecht University assesses this programme to meet the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, judging the programme to be good. Therefore, the panel recommends NVAO to accredit this programme.

Rotterdam, 27 August 2018

Prof. dr. W.A. Hafkamp
(panel chair)

drs. W. Vercouteren
(panel secretary)

2. Assessment process

The evaluation agency Certiked VBI received the request by Utrecht University to support the limited framework programme assessment process for the Bachelor Global Sustainability Science programme of this University. The objective of the programme assessment process was to assess whether the programme would conform to the standards of the limited framework, as laid down in the NVAO Assessment framework for the higher education accreditation system of the Netherlands, published on 20 December 2016 (Staatscourant nr. 69458).

Management of the programmes in the assessment cluster Environment and Sustainability Sciences convened to discuss the composition of the assessment panel and to draft the list of candidates.

Having conferred with management of the Bachelor Global Sustainability Science programme of Utrecht University, Certiked invited candidate panel members to sit on the assessment panel. The panel members agreed to do so. The panel composition was as follows:

- Prof. dr. W.A. Hafkamp, full professor of Environmental Studies, Erasmus University Rotterdam (panel chair);
- Prof. dr. M.C.E. van Dam-Mieras, emeritus professor Sustainable Development and Educational Innovation, Leiden University (panel member);
- Prof. dr. L. Hordijk, emeritus professor Environmental Systems Analysis, Wageningen University (panel member);
- P. Aarts BSc, student Master Biological Sciences, University of Amsterdam (student member).

On behalf of Certiked, drs. W. Vercouteren served as the process coordinator and secretary in the assessment process.

All panel members and the secretary confirmed in writing being impartial with regard to the programme to be assessed and observing the rules of confidentiality. Having obtained the authorisation by the University, Certiked requested the approval of NVAO of the proposed panel to conduct the assessment. NVAO have given their approval.

The Bachelor Global Sustainability Science programme started in September 2016. The programme is the merger of two separate programmes, being offered by Utrecht University up to 2015. These programmes are the programmes Bachelor Environmental Studies (Milieu-maatschappijwetenschappen, 21PD-56839) and Bachelor Environmental Sciences (Milieu-natuurwetenschappen, 21PD-56988). As the current programme is only offered since 2016, the panel could not assess the third year or the final projects of students of this programme. Having discussed this with NVAO representatives, the panel was allowed to assess the third year of the programme on the basis of the findings and the considerations about the first two years of the programme and to assess the achieved learning outcomes of the programme on the basis of the final projects of the two programmes, being phased out.

To prepare the assessment process, the process coordinator convened with management of the programme to discuss the outline of the self-assessment report, the subjects to be addressed in this report and the site visit schedule. In addition, the planning of the activities in preparation of the site visit were discussed. In the course of the process preparing for the site visit, programme management and the Certiked process coordinator regularly had contact to fine-tune the process. The activities prior to the site visit have been performed as planned. Programme management approved of the site visit schedule.

Well in advance of the site visit date, programme management sent the list of final projects of graduates of the programmes Bachelor Environmental Studies (21PD-56839) and Bachelor Environmental Science (21PD-56988) of the two most recent years. Acting on behalf of the assessment panel, the process coordinator selected a total of 15 final projects of these programmes. The grade distribution in the selection was ensured to conform to the grade distribution in the list, sent by programme management. Additional criteria have been taken into account, if these had been found to be relevant for the programme.

The panel chair and the panel members were sent the self-assessment report of the programme, including appendices. In the self-assessment report, the student chapter was included. In addition, the expert panel members were forwarded a number of final projects, these final projects being part of the selection made by the process coordinator.

A number of weeks before the site visit date, the assessment panel chair and the process coordinator met to discuss the self-assessment report provided by programme management, the procedures regarding the assessment process and the site visit schedule. In this meeting, the profile of panel chairs of NVAO was discussed as well. The panel chair was informed about the competencies, listed in the profile. Documents pertaining to a number of these competencies were presented to the panel chair. The meeting between the panel chair and the process coordinator served as the briefing for panel chairs, as meant in the NVAO profile of panel chairs.

Prior to the date of the site visit, all panel members sent in their preliminary findings, based on the self-assessment report and the final projects studied, and a number of questions to be put to the programme representatives on the day of the site visit. The panel secretary summarised this information, compiling a list of questions, which served as a starting point for the discussions with the programme representatives during the site visit.

Shortly before the site visit date, the complete panel met to go over the preliminary findings concerning the quality of the programme. During this preliminary meeting, the preliminary findings of the panel members, including those about the final projects were discussed. The procedures to be adopted during the site visit, including the questions to be put to the programme representatives on the basis of the list compiled, were discussed as well.

On 23 April 2018, the panel conducted the site visit on the Utrecht University campus. The site visit schedule was in accordance with the schedule as planned. In a number of separate sessions, the panel was given the opportunity to meet with Faculty Board representatives, programme management, Board of Examiners chair and members, lecturers and final projects examiners, and students and alumni.

In a closed session at the end of the site visit, the panel considered every one of the findings, weighed the considerations and arrived at conclusions with regard to the quality of the programme. At the end of the site visit, the panel chair presented a broad outline of the considerations and conclusions to programme representatives.

Clearly separated from the programme assessment process, panel members and programme representatives met to conduct the development dialogue, with the objective to discuss future developments of the programme.

The assessment draft report was finalised by the secretary, having taken into account the findings and considerations of the panel. The draft report was sent to the panel members, who studied it and made a number of changes. Thereupon, the secretary edited the final report. This report was presented to programme management to be corrected for factual inaccuracies. Programme management were given two weeks to respond. Having been corrected for these factual inaccuracies, the Certiked bureau sent the report to the University Board to accompany their request for re-accreditation of this programme.

3. Programme administrative information

Name programme in CROHO:	B Global Sustainability Science
Orientation, level programme:	Academic Bachelor
Grade:	BSc
Number of credits:	180 EC
Specialisations:	Water, Climate & Ecosystems Energy & Resources Governance & Societal Transformation Business & Innovation
Location:	Utrecht
Mode of study:	Full-time (language of instruction is English)
Registration in CROHO:	21PD-56987
Name of institution:	Utrecht University
Status of institution:	Government-funded University
Institution's quality assurance:	Approved

4. Findings, considerations and assessments per standard

4.1 Standard 1: Intended learning outcomes

The intended learning outcomes tie in with the level and orientation of the programme; they are geared to the expectations of the professional field, the discipline, and international requirements.

Findings
The Bachelor Global Sustainability Science programme is a three year interdisciplinary, academic programme. The programme essentially prepares students for master programmes in the environment and sustainability sciences domain. In theory, bachelors may enter the labour market but in practice this rarely happens.

The objectives of the programme are to educate students to understand natural and social systems and their interrelations, to address regional and global environmental and sustainability problems and to find solutions to these problems. Students are educated to acquire theoretical and methodological knowledge of both natural sciences and social sciences and to bring together this knowledge in order to analyse and to address environmental and sustainability problems. The programme aims to teach students to address these problems from the interdisciplinary angle. The programme is meant to teach students to approach problems from the systems analysis perspective.

Students may select one out of four specialisations or tracks within the programme. These are Water, Climate & Ecosystems, Energy & Resources, Governance & Societal Transformation and Business & Innovation. In these tracks, students are taught to focus on one of these application fields and to address environmental and sustainability problems within these fields.

The programme objectives have been translated into the intended learning outcomes of the programme. These include general academic competencies, such as conceptual and critical thinking, domain-specific knowledge of relevant natural sciences and social sciences including more in-depth knowledge and skills about one of the specialisations and academic skills, such as research, presentation, writing and collaborative skills.

Programme management drafted a table, mapping the intended learning outcomes to the Dublin descriptors, from which the correspondence of the intended learning outcomes to the Dublin descriptors for bachelor programmes may be inferred.

The objectives of the programme conform to the domain-specific reference framework for academic programmes in Environment and Sustainability Sciences, which has been drafted by the joint programmes in the Netherlands. In this domain-specific reference framework, reference has been made to international frameworks and benchmark statements. This Utrecht University programme may be regarded to be positioned in the *Sustainability Solutions Emphasis* part of the Environment and Sustainability Sciences domain.

To remain up to date on relevant trends in the professional field, programme management meets yearly with the Societal Advisory Board. This Board has been installed at the level of the Copernicus Institute of Sustainable Development. The design of the recently started Bachelor Global Sustainability Science programme has been thoroughly discussed by the Board.

The programme is English-taught and aims to attract students from the Netherlands as well as from abroad.

Considerations
The panel appreciates the programme main goal to allow students to enter master programmes in this domain and to continue their education at master level. The panel proposes, however, to strengthen the labour market qualifications of students, especially since the programme is being English-taught and has been given an international profile.

The panel considers the programme objectives to be sound and relevant. The programme objectives are appreciated by the panel, as they reflect disciplines from both natural sciences and social sciences to analyse problems in the environment and sustainability domain and as they are directed towards solving problems in this domain from a clearly interdisciplinary perspective. The panel regards the programme profile to be relevant and considers the programme to have a position of its own among the academic programmes in Environment and Sustainability Sciences in the Netherlands.

The objectives have been adequately translated into the intended learning outcomes of the programme. These are well stated and include relevant knowledge and understanding of the domain, research skills and academic skills. The skills and attitudes are definitely part of the intended learning outcomes, but could be articulated more clearly.

The intended learning outcomes conform to the bachelor level. This is exemplified by the Dublin descriptors criteria for bachelor level programmes matching the intended learning outcomes.

The programme objectives are within the boundaries of the domain-specific reference framework for academic programmes in Environment and Sustainability Sciences, this programme having a clear profile within this framework. The panel is very positive about the effort by the joint academic programmes in Environment and Sustainability Sciences in the Netherlands to draft this framework and regards this to be a sound and up-to-date description of this domain.

The Societal Advisory Board of the Copernicus Institute of Sustainable Development is regarded by the panel as an effective instrument for the programme to keep abreast of relevant and important trends in the professional field.

Assessment of this standard
These considerations have led the assessment panel to assess standard 1, Intended learning outcomes, to be satisfactory.

4.2 Standard 2: Teaching-learning environment

The curriculum, the teaching-learning environment and the quality of the teaching staff enable the incoming students to achieve the intended learning outcomes.

Findings
The programme is offered by the Department of Innovation, Environmental and Energy Sciences, better known as the Copernicus Institute of Sustainable Development of the Faculty of Geosciences of Utrecht University. The Board of Studies of the Undergraduate School of Geosciences of the Faculty is responsible for the programme quality, this responsibility having been delegated to the director of education of the Copernicus Institute. The Bachelor Management Team, consisting of the director of education and the programme leaders of the Bachelor programmes, takes care of the day-to-day management of this and the other Bachelor programmes, offered by the Institute. The curriculum committee, composed of the programme leader and the track coordinators, discuss the development of this programme. The Bachelor Education Committee, being composed of two lecturers and two students of each of the programmes, advise the Bachelor Management Team on the quality of the programmes. The Faculty Board of Examiners is responsible for the quality assurance of examinations and assessments of all programmes of the Faculty. One of the Chambers of the Board has the authority to monitor the quality of the examinations and assessments of this and the other programmes of the Copernicus Institute.

The number of students entering the programme in 2016, the first time the programme was offered, amounted to 178 students. Programme management applied for an intake restriction (*numerus fixus*) of 150 students, which was granted for the 2017 intake. The proportion of foreign students was about 20 % in 2016 and about 12 % in 2017. This proportion is expected to be about 30 % in 2018. Programme management has set a target of 20 % of foreign students to be able to offer a genuinely international classroom.

Programme management presented a table, showing the curriculum covering all of the intended learning outcomes. The curriculum structure conforms to the Utrecht University Educational Model, consisting of major courses (135 EC), being composed of compulsory core courses (75 EC) and major track courses (60 EC) and, in addition, optional courses (45 EC). The level of courses rises throughout the curriculum. The compulsory core courses address, among others, mathematics, statistics, philosophy of science and ethics, natural processes, socio-economic processes and research skills. At the end of each of the three years, students do interdisciplinary projects on sustainability. The project in the first year is a regional field study, the second project results in a case study report on Sustainable Development Goals, and the project in the third year is a consultancy project for a real-life client. In the major track courses, students are taught the main concepts and theories of one of the four tracks they have chosen, deepen their knowledge of research areas and research methods and take three integrative projects in their field of specialisation. The balance of natural sciences, social sciences and integrative courses differs across the tracks. Some tracks are more natural sciences oriented, whereas other tracks are more directed towards social sciences. At the end of the curriculum and being part of the track, students complete their Bachelor thesis, being an individual research project. Academic skills are part of all courses in the curriculum and in particular of the integrative projects. The optional courses may be chosen to broaden the curriculum, to take minors, to complete two tracks or to take courses abroad. Talented students may take the Faculty of Geosciences honours programme.

The staff lecturing in the programme are about 60 lecturers, excluding a number of external staff. About 20 % of the teaching staff are non-Dutch nationals. The vast majority of the lecturers are researchers at the Copernicus Institute of Sustainable Development. The research at the Copernicus Institute is highly valued, internationally. The lecturers introduce their research in the courses. Over 70 % of the core lecturers have PhDs. About 61 % of them are at least BKO-certified and another 16 % are in the process of obtaining the BKO-certificate. About 30 % of the lecturers are SKO-certified. The BKO-certificate is a prerequisite to obtain a permanent position, whereas the SKO-certificate is a prerequisite to become associate professor or full professor. Formal and informal meetings are regularly scheduled for lecturers to discuss education and examinations. The work load of the lecturers is balanced. One period may be without lecturing to allow lecturers to do research. Guest lecturers may lecture in the integrative projects. Lecturers are experienced by students to be easily approachable.

Programme management organises activities to inform prospective students. Entry requirements are secondary school diplomas with sufficient levels of mathematics and sufficient levels of knowledge of at least two of the subject areas of Biology, Chemistry, Physics or Economics. Incoming students are required to attend the selection day, which includes a cognitive test, a system analysis test, and motivation letter. Foreign students may apply via online proctoring. In the courses *Natural Processes* and *Mathematics and System Analysis*, additional study materials are offered to students with relative deficiencies.

The educational concept of the programme is in line with the Utrecht University educational concept. Students are offered activating and small-group learning, complemented by regular assessments. Students are required to engage actively in the learning processes. The study methods are lectures, tutorials and group assignments in the courses, group assignments in the integrative projects and individual assignments in the Bachelor thesis project. The programme policy is to introduce new, ICT-based study methods gradually. The number of hours of face-to-face education is 14.6 hours per week in the first year. The number in the second and third year have not yet been recorded, but may be estimated at about 12 to 14 hours per week on the basis of the numbers in the preceding, phased out programmes. The student-to-staff ratio is 40 : 1 to 45 : 1 on average. In tutorials, about 24 students are in class. Student groups in the integrative projects include 5 to 6 students. Information is available through the programme learning system, but students feel this could be presented more clearly. All first-year students have their own tutor. They are lecturers in the programme. Tutors meet with students three times per year to discuss study progress and study plans. Through the system of student mentors, organised by the study association, senior students assist the students. In all of the years of the programme, the study advisor is the main point of contact for students in case of questions about or problems in their studies. University and Faculty career officers advise students on career perspectives. Students regard the study load to be acceptable, but feel the programme could be more challenging. The number of students failing the first year is about 14 %, which is rather favourable. Student success rates of the preceding programmes were about 40 % after three years and about 83 % after four years.

Considerations
The panel is of the opinion that the organisational structure of the programme is appropriate.

The number of incoming students is substantial and is regarded by the panel to be favourable.

The curriculum of the programme matches the intended learning outcomes. The curriculum is considered by the panel to be well thought through and to be very solid, with strong courses. The panel is positive about the three integrative projects, allowing students to become acquainted with interdisciplinary problems and solutions to these problem. The panel regards the curriculum to be well-structured and coherent. The panel appreciates the tracks offered, allowing students to tailor the curriculum to their preferences. Although academic skills are addressed appropriately in both the courses and integrative projects, the panel recommends to report these more explicitly. Students may point to these skills, when applying for jobs. The panel noted the students being content with the curriculum.

The lecturers in the programme are practically all PhDs and they have strong research backgrounds. Their educational capabilities are up to standard, as the substantial proportions of lecturers being BKO-certified or SKO-certified show. The panel encourages programme management to include in the SKO-training ICT in education, skills development and transdisciplinary working. The regular staff meetings on education are regarded by the panel as very positive. The lecturers are easily approachable for students.

The panel approves of the entry requirements and the admission procedures of the programme. The panel suggests to schedule mathematics and natural sciences subjects to remedy deficiencies not as part of courses in the curriculum, but prior to the start of the curriculum to free up time for more advanced subjects.

In the panel's view, the educational concept and the study methods of the programme are adequate. These allow for student-activating learning and for students addressing interdisciplinary problems in this domain. Programme management achieves student-centred learning in offering study routes but less in accommodating individual learning styles of students. The panel advises to promote the latter. The panel encourages programme management to investigate ICT-based study methods. The information provision and study guidance in the programme are satisfactory. The panel considers the career services to be too generic and advises to tailor these to the students' programmes and profiles. The panel regards the study load to be appropriate. The student success rates are adequate as well.

Assessment of this standard
These considerations have led the assessment panel to assess standard 2, Teaching-learning environment, to be good.

4.3 Standard 3: Student assessment

The programme has an adequate system of student assessment in place.

Findings
The programme policies regarding examinations and assessments conform to the Utrecht University educational model requirements and to the Faculty of Geosciences examination policy. Rules and regulations about examinations and assessments are laid down in the programme Teaching and Examination Regulations, the programme catalogue and the course outlines. As has been indicated, the Faculty Board of Examiners is responsible for the quality assurance of examinations and assessments of this and all other programmes of the Faculty. One of the Chambers of the Board has the authority to monitor the examinations and assessments of this and the other programmes of the Copernicus Institute. The Chamber has the authority for the programmes of Copernicus Institute.

The examination methods in the programme are diverse and include written examinations, research papers, written assignments, and oral presentations. In each of the courses, multiple examination methods are scheduled, to allow for various knowledge and skills components to be assessed, and to balance the study load of the courses. The final grade of the courses is the weighted outcome of the grades of these examinations.

At the completion of the programme, students are to present two final projects. The Consultancy Project is a group project, with the goal to advise external clients on the solution of real-life problem. The project is of a more practical nature and results in both individual and group products. Communication and collaboration skills are tested in this project. The Bachelor thesis (15 EC) is an individual research project of a more theoretical nature, the subject being within the specialisation selected. The thesis project is supervised by one of the staff members of the Copernicus Institute, mostly being BKO- or SKO-certified. The thesis research proposal is graded by the supervisor. Feedback is given on the research question, on the thesis structure, and on the draft thesis. The theses are assessed by the supervisor and the second reader, who use the thesis assessment form. They determine the grade in consultation.

In the programme, a number of measures have been taken to ensure the quality of examinations and assessments. The assessment plan for the programme has been drafted, aligning the intended learning outcomes of the programme, the course objectives and the course examinations. Examinations and assessment are part of the BKO- and SKO-training. For the courses, assessment matrices are drafted, showing the relations between the course examinations and the course objectives. Examiners present examinations to fellow examiners for review. In integrative projects, individual performances may be part of the assessments. Students are asked to give feedback on their fellow students' efforts in order to prevent free rider behaviour in group assignments. Rubrics have been introduced to assess assignments and theses. On behalf of the Board of Examiners, the Committee of Assessments regularly evaluates the quality of samples of examinations. Calibration sessions among examiners have not yet been scheduled. Students are informed about the examination method and the assessment set-up of the course. Students may compare their answers to the answer keys.

Considerations
The panel observed the programme examination and assessment policies to be in line with the University and Faculty rules and regulations. The panel is very positive about the responsibilities and activities of the Board of Examiners. The Board and the Committee of Assessments thoroughly monitor and review the examination and assessment procedures and products.

The examination methods selected in the courses are approved by the panel, as they meet the contents of the courses to be assessed. The panel is positive about the scheduling of multiple examinations in the courses, as this balances the study load and allows both students' knowledge and skills to be assessed adequately. Adequate measures are taken to counter free riding.

The panel regards the assessment of the Consultancy Project and the Bachelor thesis to be appropriate. The supervision of the thesis is organised adequately. The assessment is conducted reliably, involving two expert examiners, who use elaborate assessment forms.

The panel welcomes the measures taken by programme management to ensure the examinations and assessments quality. The validity of the examinations is promoted through the programme assessment plan and the course assessment matrices. The reliability of the assessments is fostered by assessment forms and rubrics. Students are provided adequate information on the examinations and are given the opportunity to check their answers. The panel proposes to schedule calibration sessions to allow examiners to share their views on the assessments of final projects.

Assessment of this standard
The considerations have led the assessment panel to assess standard 3, Student assessment, to be good.

4.4 Standard 4: Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

Findings
The panel reviewed a number of examinations of courses in the programme.

The panel inspected fifteen Bachelor theses of graduates of both preceding programmes. The average grade of the theses for the period of 2013 to 2017 was 6.9 for the Environmental Studies programme and 7.3 for the Environmental Sciences programme. The proportion of *cum laude* is small. The prerequisites for cum laude are challenging and the examiners tend to grade rather conservatively.

A recently conducted survey among graduates of the preceding programmes shows them to be admitted to a wide range of master programmes of both Utrecht University and other Universities. Depending on the programme, about 40 % to 60 % of the students go to other Universities, whereas the same proportions continue their studies at Utrecht University. The students indicated to the panel to feel well-prepared for these master programmes.

Considerations
The examinations of the courses which were reviewed by panel members are considered by the panel to be up to standard.

The panel supports the grades awarded to the Bachelor theses. The theses definitely were not graded too high. The panel considers the theses to be very solid and to exhibit sound theoretical and methodological performances on the part of the students.

The panel applauds the very wide range of master programmes the programme graduates are admitted to and considers this to be convincing evidence of the learning outcomes, achieved by the graduates.

Assessment of this standard
The considerations have led the assessment panel to assess standard 4, Achieved learning outcomes, to be good.

5. Overview of assessments

Standard	Assessment
Standard 1. Intended learning outcomes	Satisfactory
Standard 2: Teaching-learning environment	Good
Standard 3: Student assessment	Good
Standard 4: Achieved learning outcomes	Good
Programme	Good

6. Recommendations

In this report, a number of recommendations by the panel have been listed. For the sake of clarity, these have been brought together below. The panel recommends programme management:

- To strengthen the labour market qualifications of the students of this international programme.
- To articulate the intended learning outcomes on skills and attitudes more clearly.
- To report the academic skills in the curriculum more explicitly.
- To offer mathematics and natural sciences subjects to remedy deficiencies not as part of the curriculum, but prior to the start of the programme to free up time for more advanced subjects.
- To include ICT in education, skills development and transdisciplinary working in the SKO-certification.
- To promote student-centred learning by accommodating individual learning styles of students.
- To investigate ICT-based study methods.
- To tailor the career services to the students' programmes and profiles.
- To schedule calibration sessions to allow examiners to share views on the assessments of final projects.