



NVAO • NEDERLAND

# INITIAL ACCREDITATION

ACADEMIC MASTER  
SCIENCE FOR SUSTAINABILITY  
Radboud University

FULL REPORT  
JUNE 4, 2024



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# 1 Peer review

The Accreditation Organisation of The Netherlands and Flanders (NVAO) determines the quality of a new programme on basis of a peer review. This initial accreditation procedure is required when an institution wishes to award a recognised degree after the successful completion of a study programme.

The procedure for new programmes differs slightly from the approach to existing programmes that have already been accredited. Initial accreditation is an ex ante assessment of a programme. Once accredited this new programme becomes subject to the regular review process.

The quality of a new programme is assessed by means of peer review. A panel of independent peer experts including a student, reviews the plans during a site visit to the institution. A discussion amongst these peers forms the basis for the panel's final judgement and the advisory report. The agenda for the panel visit and the documents reviewed are available from the NVAO office upon request.

The outcome of this peer review is based on the standards described and published in the limited NVAO Assessment framework for the higher education accreditation system of The Netherlands (Stcrt. 2019, nr. 3198). Each standard is judged on a three-point scale: meets, does not meet or partially meets the standard. The panel will reach a conclusion about the quality of the programme, also on a three-point scale: positive, conditionally positive or negative.

NVAO takes an accreditation decision based on the full panel report. Following a positive NVAO decision with or without conditions, the institution can proceed to offer the new programme.

This report contains the panel's findings, analysis and judgements resulting from the peer review. It also details the commendations as well as recommendations for follow-up actions. A summary report with the main outcomes of the peer review is also available.

The panel's full and summary reports are published on NVAO's website: [www.nvao.net](http://www.nvao.net). More information on NVAO and peer reviews of new programmes can also be found there.

## 2 New programme

### 2.1 General data

<b>Institution</b>	Radboud University
<b>Programme</b>	Science for Sustainability
<b>Variant</b>	Fulltime
<b>Degree</b>	Master of Science
<b>Location</b>	Nijmegen
<b>Study load</b>	120 ECTS <sup>1</sup> credits

### 2.2 Profile

The academic master's programme Science for Sustainability intends to educate 'sustainability navigators'. They apply and integrate scientific knowledge from various fields in a multi-stakeholder context to develop a shared understanding of environmental sustainability challenges. Interdisciplinarity and transdisciplinarity are key concepts in the programme.

The programme has been developed by the Faculty of Science in cooperation with Nijmegen School of Management, both faculties of Radboud University. Staff members of both faculties have ample experience in research cooperations. The two faculties have captured practical arrangements in a collaboration agreement.

### 2.3 Panel

#### Peer experts

- Prof. dr. Rik Leemans (chair), emeritus professor of Environmental Systems Analysis at Wageningen University;
- Dr. Frauke Behrendt, Associate Professor Transitions to Sustainable Mobility, Eindhoven University of Technology;
- Dr. Ron Cörvers, Associate Professor Governance for Sustainable Development, Maastricht University; and
- Mark Alexander Dzoljic, student MA Political Science University of Amsterdam

#### Assisting staff

- Anne Martens MA (secretary); and
- Julia van Proosdij-de Bruijn (NVAO policy advisor and process coordinator)

#### Site visit

Nijmegen, 15 April 2024.

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<sup>1</sup> European Credit Transfer and Accumulation System

### 3 Outcome

The NVAO-approved Panel reaches a positive conclusion regarding the quality of the master's programme Science for Sustainability that is proposed and developed by Radboud University in Nijmegen. The institution intends to offer the programme of 120 ECTS credits as a fulltime programme. The programme complies with all standards of the limited NVAO framework.

The ambitious programme intends to educate 'sustainability navigators': applied scientists and academic professionals who facilitate dialogues about sustainability and thus guide and contribute to the transition towards a sustainable society. They apply and integrate scientific knowledge from a various fields in a multi-stakeholder context to develop a shared understanding of environmental sustainability challenges, explore potential solutions, set direction and guide the transition process. The programme meets regional, national and international requirements and educates professionals who aim to connect disciplines and stakeholders, and consider different perspectives, while keeping sustainability goals in mind.

Interdisciplinarity and transdisciplinarity are key concepts in the programme. Students develop a strong knowledge base in the natural, management and sustainability sciences, and learn to deal with actor-specific knowledge and values. These skills are combined with skills that enable graduates to collaborate with colleagues from other disciplines and other societal actors.

The curriculum of the programme is well structured and offers students the opportunity to specialise in a particular direction and add their own emphasis to the programme to create the desired personal sustainability navigator profile. The programme aims to attract a heterogenous student population to create a diverse and international classroom where students and teachers learn from each other's disciplinary and cultural perspectives. The programme positively pays ample attention to personal and professional development. The Panel appreciates the regular self-reflection and the development of feedback skills, which support students' individual learning process.

The programme deploys a suitable variety of assessment modes. Students finish the programme with a substantial thesis, which is an individual academic research report on a specific sustainability challenge within a transdisciplinary context. The thesis addresses the programme's key topics while also reflecting the academic master's level.

The programme has been developed by the Faculty of Science in close cooperation with Nijmegen School of Management. Although Science for Sustainability is their first joint programme, staff members already collaborate in ample joint research projects. The programme's qualified and dedicated staff members have collaborated intensely to develop the programme and are a real team.

The Panel concludes that Science for Sustainability is a relevant, ambitious, innovative and well-elaborated programme. The Panel agrees with the programme's argumentation regarding its choice for an English-taught curriculum and a study load of 120 ECTS credits.

Standard	Judgement
1. Intended learning outcomes	meets the standard
2. Teaching-learning environment	meets the standard
3. Student assessment	meets the standard
Conclusion	<i>positive</i>

## 4 Commendations

The programme is commended for the following features of good practice:

1. Profile – Interdisciplinarity and transdisciplinarity are key concepts. Students develop a strong disciplinary knowledge base in the natural, management and sustainability sciences, learn to deal with actor-specific knowledge and values, and acquire skills that enable graduates to collaborate with colleagues from other disciplines and other societal actors;
2. Curriculum – The curriculum is ambitious, innovative and well elaborated. The second year allows students to specialise in a particular direction and to create a personal sustainability navigator profile;
3. Teaching staff – The Panel appreciates the programme’s qualified and dedicated staff members. All staff members are active researchers and all teaching staff will have a university teaching qualification (UTQ) when the programme starts. The teachers are ambitious, enthusiastic and internationally recognised, and have ample experience in disciplines relevant to this broad programme;
4. Cooperation– The programme is offered jointly by the Faculty of Science and Nijmegen School of Management, and has a clear governance structure. It is well anchored in existing research cooperation and benefits from best practices of other (joint) programmes at Radboud University. The staff members showed an impressive collaborative process and are a real team;
5. Reflection – Regular self-reflection and the development of feedback skills support students’ individual learning process. The use of a reflection report is innovative and supports students’ personal and professional development.

## 5 Recommendations

For further improvement to the programme, the Panel recommends a number of follow-up actions:

1. Stakeholders – Explicitly mention cooperation with external stakeholders in the programme's final qualifications, and reflect more strongly on communication with and connecting to stakeholders in assignments and assessment forms;
2. Advisory Board – Formalise connections with external stakeholders by installing an Advisory Board that periodically evaluates the programme, amongst other input to the programme;
3. International classroom – Develop specific educational activities to ensure an international environment also when the programme attracts a rather homogenous student population;
4. External thesis project – If the thesis project is carried out externally, provide the necessary contracts to formally arrange responsibilities for all parties involved (student, university and external organisation).

## 6 Assessment

### 6.1 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.*

#### **Judgement**

Meets the standard.

#### **Findings, analysis and considerations**

The master's programme Science for Sustainability intends to educate 'sustainability navigators'. They apply and integrate scientific knowledge from various fields in a multi-stakeholder context to develop a shared understanding of environmental sustainability challenges, explore potential solutions, set direction and guide the transition process. The programme has been developed jointly by Radboud University's Faculty of Science and Nijmegen School of Management.

During the site visit, the Panel learnt that the new programme Science for Sustainability is in line with the profile of Radboud University. The university has a central sustainability programme with ambitions related to most of the United Nations' Sustainable Development Goals (SDGs). Radboud University integrates sustainability in all its programmes and stimulates interdisciplinary collaboration in research and education, as well as transdisciplinary collaboration with stakeholders in society. The new master's programme Science for Sustainability reflects these premises.

According to the Panel, the programme's thirteen intended learning outcomes (i.e., 'final qualifications') are well phrased and formulated at the academic master's level. They are organised in five classes, following the Dublin descriptors. The information file describes how they align with Level 7 of the Dutch Qualifications Framework NLQF and the competencies for master graduates specified by the Dutch referential framework for academic programmes in Environment and Sustainability (Interuniversity Committee Environmental Sciences, 2017). The learning outcomes prescribe the minimum criteria that graduates meet, but also leave room for specialisation in topics or methodology.

The Panel appreciates the emphasis on both interdisciplinarity and transdisciplinarity as the programme's key concepts: students develop strong disciplinary knowledge bases in the natural, management and sustainability sciences, and learn to integrate them from the start (i.e., interdisciplinarity) and share actor-specific knowledge and values in a real-world context (i.e., transdisciplinarity). The resulting knowledge base is combined with skills that enable graduates to collaborate with colleagues from other disciplines and other societal actors. Although external stakeholders are central to the programme's narrative, they are currently ignored in the final qualifications. The Panel recommends including this aspect.

The programme applied a thorough approach to developing the intended learning outcomes. The final qualifications were defined by a core team with ample experience in the field of environmental and sustainability sciences. This team used the generic qualifications of the Faculty of Science as a starting point. Subsequently, the qualifications were fine-tuned in two online workshops with academic sustainability practitioners and discussions with the programme's teaching team. In addition, the programme conducted a job-market survey to gather information about the expected competencies for graduates of the programme.

The Panel spoke with representatives of various professional fields. They are enthusiastic about the proposed programme and have high expectations from its graduates. They confirmed



the – regional, national and international – need for professionals who can connect across disciplines, involve stakeholders and consider different perspectives, while keeping sustainable goals in mind. The programme's emphasis on the transition to a more sustainable society (i.e., the sustainability navigators) and the attention for methodological skills are considered to be important assets. In conclusion, these representatives clearly stated that the programme will provide students with the right tools to fulfil leadership roles in transition processes.

The teaching team stressed that continuous engagement with professional fields is required to reflect the current developments. External stakeholders are currently involved through staff members' personal networks. The Panel recommends formalising connections with external stakeholders by installing an Advisory Board that periodically evaluates the programme. Representatives of the professional fields all expressed their willingness to participate in such a board.

The Panel establishes that the new master's programme Science for Sustainability is relevant and has clearly defined intended learning outcomes. These outcomes are in line with the university's profile and ambitions. They represent the academic master's level and align with relevant national and international frameworks. Based on these findings and considerations, the Panel concludes that the programme meets Standard 1. In addition, the Panel makes two recommendations related to external stakeholders.

## 6.2 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.*

### Judgement

Meets the standard.

### Findings, analysis and considerations

The new master's programme Science for Sustainability has a study load of 120 ECTS credits. The Panel considers the fulltime curriculum to be ambitious and well elaborated. It covers all intended learning outcomes. The first year is clearly structured along the four learning lines: (1) quantitative assessment and modelling with a focus on the natural sciences, (2) governance and organisational change rooted in the management and organisation sciences, (3) interdisciplinary sustainability and (4) a skills-oriented learning line on transdisciplinarity. Each of the four learning lines consists of multiple courses. These lines are largely taught in parallel and gradually build towards interdisciplinary and transdisciplinary competencies and skills that are essential for sustainability navigators. The first-year courses, especially those of the transdisciplinary learning line and a course on research skills, importantly prepare for the thesis, which is the second year's focus. Students choose second-year electives (a total of 15 ECTS credits) to acquire in-depth knowledge and skills related to their own master thesis topic.

Initially, the Panel was puzzled on how students learn to 'integrate scientific knowledge from a variety of fields' (i.e., the programme's focus on interdisciplinarity). During the site visit, the programme management and teachers provided examples to illustrate how this will be done in the programme. For example, students learn to connect different disciplines by applying modelling and scenario techniques and making strategic decisions based on their results.

The transdisciplinary learning line stimulates students to integrate theory and practice. They learn about different roles that individuals can play while analysing or contributing to a sustainable society. Teachers explained that students will encounter different external stakeholders, including local, national and international stakeholders, throughout the

curriculum. The Panel remarks that it is vital that the programme maintains good contacts with external stakeholders to enable transdisciplinary learning.

Especially the second year students are offered opportunities to specialise in a particular direction and to create a personal sustainability-navigator profile. During the entire programme, students work on a reflection portfolio to track and reflect on their competencies in interdisciplinarity and transdisciplinarity, based on scientific literature. This portfolio results in advice on how to improve their individual role as a sustainability navigator. The Panel concludes that, although it only covers few ECTS credits, this reflection portfolio is didactically interesting and innovative.

Teachers in the programme explained that students are likely to carry out their thesis research with an external organisation. The programme will organise an annual thesis fair where students can meet organisations that are active in the field of environmental sustainability. This fair is organised before the start of the second year. Students have therefore ample time to consider and reconsider the organisation they wish to work with. The Panel supports this arrangement. The Panel regards the adequate support of students in their search for thesis topics and organisations very important. In addition, the Panel recommends providing the necessary contracts to formally arrange responsibilities for all parties involved (student, university and external organisations) if the thesis project is carried out externally.

The programme strives for a heterogeneous student population with students coming both from the natural sciences and the management and organisation sciences. The Panel agrees that this is necessary to support the envisioned interdisciplinary learning. Currently, the entry requirements include a bachelor's degree in either discipline, combined with at least 15 ECTS credits in the other. The participating faculties of Radboud University will each offer a minor of 15 ECTS credits to their bachelor's students that gives direct access to the master's programme Science for Sustainability. Each course provides information about the required prior knowledge, an entry test and complementary study materials that help students prepare to start the programme. The Panel advises effectively monitoring whether this is sufficient to follow all courses of the master's programme. The Panel also suggests explaining relevant terminology in the introductory course to ensure that students and staff have the same understanding of the programme's key terms and concepts.

The programme intends to benefit from a diverse and international classroom where students and teachers can learn from each other's disciplinary and cultural perspectives. To this end, the courses will include activities such as group discussions, presentations, group work and training in community building and intercultural skills. Students are stimulated to take individual responsibility and reflect on their individual role in a group. The programme management explained that the programme aims to attract a quarter international students, though also recognised that this is an ambitious target. Therefore, the Panel recommends developing alternative educational activities (e.g., online guest lectures or collaboration with other programmes) to ensure an international learning environment in case the programme attracts less international students and/or a rather homogenous (i.e., mainly Dutch and German) student population.

The Panel appreciates the programme's qualified and dedicated staff members. All staff members are active researchers and all teaching staff will have a university teaching qualification (UTQ) when the programme starts. The teachers are ambitious, enthusiastic and internationally recognised, and have ample experience in disciplines relevant to this broad programme.

The master's programme Science for Sustainability is the first programme that will be offered jointly by the Faculty of Science and Nijmegen School of Management. However, the Panel

clearly found that the programme is well anchored in existing research cooperations and that it benefits from best practices of other (joint) programmes at Radboud University. The staff members showed an impressive collaborative process and appeared to be a genuine team during the site visit. The teaching staff have cooperated from the inception of the programme and meet regularly to discuss the content and didactic set-up of its curriculum. The Panel is confident that staff from both faculties will work together smoothly.

The Panel is positive about the programme's clear governance structure, which involves staff members from the Faculty of Science and Nijmegen School of Management. These faculties signed a collaboration agreement for practical arrangements. Formally, the programme will be administered under the Faculty of Science, as part of the Institute for Transdisciplinary Education. Classes will, however, be taught across both faculties. A programme director, an education coordinator, a student advisor and a thesis coordinator will support students and staff members. The programme committee will consist of three students and three scientific staff members who represent both faculties.

The new master's programme Science for Sustainability will be fully taught in English and bears an English name. Initially, the Panel wondered whether this was fitting for a programme that (also) prepares students for a career at Dutch local, regional and national governments. Therefore, the Panel discussed this topic with several groups in multiple sessions during the site visit. Internal and external stakeholders convincingly argued that – although many sustainability issues seem local – they always have international relevance and it is important to put them into a wider, international context. The field of environmental sustainability has a strong international orientation and the related disciplines evolve rapidly. The programme management convincingly argued that sustainability navigators need to be able to steer these dialogues in both local and international contexts. The language choice is therefore a logical consequence of the objectives of the programme. An English-language programme will teach students relevant technical terms and prepare them for active participation in broader international science and policy debates, which the programme considers essential to understand different perspectives. Finally, the programme argues that using English as the language of instruction enables the creation of an international classroom. The international classroom adds essential international perspectives to the topic of sustainability. Language requirements for applicants are specified in the Education and Examination Regulations and teachers follow the requirements set by the Faculty of Science or Nijmegen School of Management.

Although the representatives strongly agreed with English as the programme's main teaching language, they also stressed that several graduates will be employed in Dutch settings. This means that these graduates must be also capable of professionally communicating in Dutch. Their Dutch language skills thus should not be ignored. The Panel appreciates that students who are proficient in Dutch will have the opportunity to get acquainted with local and national sustainability challenges and may do part of their writing assignments in Dutch. The Panel advises providing or co-creating a glossary with Dutch translations of English terms to/with students to support their proficiency in writing either English or Dutch (policy) documents.

The Panel concludes that the programme has adequately translated its intended learning outcomes to an ambitious and well-elaborated curriculum. It offers a broad foundation in the relevant disciplines and offers students the opportunity to create a learning trajectory based on their personal interests. The academic staff members are highly qualified and cooperate as an interdisciplinary team across the two faculties. The institution has sufficiently argued why the programme is taught in English and why it bears an English name. Based on these findings and considerations, the Panel concludes that the programme meets Standard 2. In addition, the Panel formulates two recommendations.

### 6.3 Standard 3: Student assessment

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

#### **Judgement**

Meets the standard.

#### **Findings, analysis and considerations**

The programme has an adequate and clearly documented system of student assessment and this is considered an integral part of the programme. It serves two purposes: (1) to assure that students meet the learning objectives of courses and the final qualifications of the programme, and (2) to support students' learning process through feedback and reflection. Overall, the system of student assessment is well-motivated and anchored in the institution. The information file explains how the institution's criteria regarding validity, reliability, effectivity, transparency and feasibility are applied in the new master's programme Science for Sustainability.

The Panel studied the descriptions of assessments. The programme uses an appropriate variety of assessment forms, including exams, skills tests, individual assignments and group projects. Most courses combine multiple forms of assessment. The information file remarks that the programme follows Bloom's taxonomy and Miller's pyramid by shifting from knowledge-oriented assessments at the beginning of the programme to more integrative assessment forms at the end of the programme. Students receive regular feedback to gain insight into their personal learning process.

The Panel recommends reflecting more strongly on communicating and connecting with stakeholders in the assignments and assessment forms. The teachers stressed that field validity is the programme's end goal and illustrated how this will be assessed. However, the Panel had the impression that this aspect has not yet been systematically elaborated.

The Panel noted that the programme has many assessments, which may lead to a substantial study load. During the site visit, the Panel discussed this with members of the Examining Board and the Programme Committee. They explained that the workload will be at the centre of attention throughout the year. The programme will regularly monitor the workload related to assessments for both students and staff members. The Panel finds this positive.

The programme focuses on personal and professional development in reflective portfolio assignments. The Panel appreciates the regular self-reflection and the development of feedback skills. Both support students' individual learning processes. The Panel considers the individual reflection report innovative. This report can likely also be used as an evaluation instrument to improve the programme.

Students finish the programme with a master thesis of 42 ECTS credits. This thesis is an individual academic research report on a specific sustainability challenge within a transdisciplinary context. The thesis must be interdisciplinary and include both a natural science dimension and a governance or organisational change dimension. The thesis project may be individual or group-based and requires students to analyse the challenge and to integrate the perspectives of societal actors, as well as to reflect on the implications of research results for the transition towards a sustainable society. It is also done in collaboration with external stakeholders, reflecting the transdisciplinary approach of the programme. Thus, the thesis addresses the key topics of the programme while also reflecting the academic master's level. In addition to the thesis, students provide a personal reflection report regarding their role in the transition process. The thesis and reflection report will be assessed by two independent scientific assessors, who represent the natural sciences and the management and organisation sciences. The supervisors from the external organisation will be asked for advice.

The programme has clear regulations regarding the appointment of examiners. Registered examiners are academic staff members with a UTQ, who are approved by the Examining Board. All written exams are checked for inconsistencies or unclarity by an independent content-based expert holding a UTQ. Open exams adhere to the four-eyes principle or have a procedure in place to harmonise assessment between different assessors.

The new programme will have its own Examining Board, consisting of at least five members: one external member and the other members equally divided over the Faculty of Science and Nijmegen School of Management. The Panel established that the members of the Examining Board are experienced and that the board's role and activities in safeguarding the quality of assessment are clearly defined. The responsibilities of the Examining Board in relation to the new programme are specified in the Education and Examination Regulations.

The Panel concludes that the programme has an adequate system of assessment in place. The Panel appreciates the attention for personal and professional development. The programme deploys a variety of assessment modes that supports students' learning processes. Together, they cover all intended learning outcomes. An experienced Examining Board safeguards the assessment quality. Based on these findings and considerations, the Panel concludes that the programme meets standard 3. The Panel makes one recommendation to further strengthen the assessment.

#### 6.4 Duration of the programme

In an annex to the information file, the programme explains the choice for a study load of 120 ECTS credits. During the site visit, the Panel discussed this argumentation with the programme management and representatives of the professional fields. The programme management argues that this study load is necessary to achieve the final level set by the professional fields. The programme management and representatives of the professional fields argued that a curriculum of 120 ECTS credits is necessary to provide students with sufficient disciplinary background in the natural and management and organisation sciences, a broad interdisciplinary perspective on sustainability and the necessary knowledge, insights and skills to perform interdisciplinary and transdisciplinary research. A job market survey showed that 'Collaboration in interdisciplinary (research) teams' and 'Mapping sustainability challenges together with stakeholders' are the most important competencies of graduates. The master's thesis is a substantial piece of work that gives students sufficient time to analyse a sustainability challenge in a transdisciplinary setting (i.e., involving societal actors), to reflect on the implications of the research results for the transition towards a sustainable society, and on their personal role in this context.

The Panel agrees with this argumentation. The professional fields demands a thorough understanding of multiple disciplines and training of interdisciplinary and transdisciplinary skills to prepare students for their role as sustainability navigators who are able to guide sustainability transitions. The Panel agrees that this cannot be achieved in a one-year programme. The Panel therefore agrees with the proposed study duration of 120 ECTS credits for the new master's programme Science for Sustainability, based on the requirements of the professional fields.

#### 6.5 Degree

The panel advises awarding the following degree to the new programme: Master of Science.

## Abbreviations

EB	Examining Board
ECTS	European Credit Transfer and Accumulation System
NLQF	Dutch Qualifications Framework
NVAO	Accreditation Organisation of The Netherlands and Flanders ('Nederlands-Vlaamse Accreditatieorganisatie')
SDGs	Sustainable Development Goals
UTQ	University Teaching Qualification

The full report was written at the request of NVAO  
and is the outcome of the peer review  
of the new master's programme  
Science for Sustainability  
offered by Radboud University

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Nederlands-Vlaamse Accreditatieorganisatie  
Accreditation Organisation of the Netherlands and Flanders

Parkstraat 83 • 2514 JG Den Haag  
P.O. Box 85498 • 2508 CD The Hague  
The Netherlands

T +31 (0)70 312 23 00  
E [info@nvaio.net](mailto:info@nvaio.net)  
[www.nvaio.net](http://www.nvaio.net)