

**LIFE SCIENCES AND  
NATURAL RESOURCES**

INTERNATIONAL LAND AND WATER MANAGEMENT

**WAGENINGEN UNIVERSITY**

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# CONTENTS

<b>REPORT ON THE BACHELOR'S PROGRAMME INTERNATIONAL LAND AND WATER MANAGEMENT AND THE MASTER'S PROGRAMME INTERNATIONAL LAND AND WATER MANAGEMENT OF WAGENINGEN UNIVERSITY.....</b>	<b>5</b>
ADMINISTRATIVE DATA REGARDING THE PROGRAMMES.....	5
ADMINISTRATIVE DATA REGARDING THE INSTITUTION.....	5
COMPOSITION OF THE ASSESSMENT PANEL .....	6
WORKING METHOD OF THE ASSESSMENT PANEL .....	6
SUMMARY JUDGEMENT.....	9
DESCRIPTION OF THE STANDARDS FROM THE ASSESSMENT FRAMEWORK FOR LIMITED PROGRAMME ASSESSMENTS.....	13
<b>APPENDICES .....</b>	<b>31</b>
APPENDIX 1: INTENDED LEARNING OUTCOMES .....	33
APPENDIX 2: OVERVIEW OF THE CURRICULUM .....	35
APPENDIX 3: PROGRAMME OF THE SITE VISIT .....	38
APPENDIX 4: THESES AND DOCUMENTS STUDIED BY THE PANEL .....	39

This report was finalized on 19 March 2019.



# REPORT ON THE BACHELOR'S PROGRAMME INTERNATIONAL LAND AND WATER MANAGEMENT AND THE MASTER'S PROGRAMME INTERNATIONAL LAND AND WATER MANAGEMENT OF WAGENINGEN UNIVERSITY

This report takes the NVAO's Assessment Framework for Limited Programme Assessments as a starting point (September 2016).

## ADMINISTRATIVE DATA REGARDING THE PROGRAMMES

### **Bachelor's programme International Land and Water Management**

Name of the programme:	B International Land and Water Management
CROHO number:	50100
Level of the programme:	Bachelor
Orientation of the programme:	academic
Number of credits:	180 EC
Specializations or tracks:	-
Location:	Wageningen
Mode(s) of study:	fulltime
Language of instruction:	English
Expiration of accreditation:	31-12-2019

### **Master's programme International Land and Water Management**

Name of the programme:	M International Land and Water Management
CROHO number:	60104
Level of the programme:	Master
Orientation of the programme:	academic
Number of credits:	120 EC
Specializations or tracks:	Sustainable Land Management Water, Society & Technology Adaptive Water Management
Location:	Wageningen
Mode(s) of study:	fulltime
Language of instruction:	English
Expiration of accreditation:	31-12-2019

The visit of the assessment panel International Land and Water Management to Wageningen University took place on 15 and 16 January 2019.

## ADMINISTRATIVE DATA REGARDING THE INSTITUTION

Name of the institution:	Wageningen University
Status of the institution:	publicly funded institution
Result institutional quality assurance assessment:	positive

## COMPOSITION OF THE ASSESSMENT PANEL

The NVAO approved the composition of the panel on March 7<sup>th</sup> 2018. The panel that assessed the bachelor's programme International Land and Water Management and the master's programme International Land and Water Management consisted of:

- Prof. S. (Stanley) Brul, Professor Molecular Biology and Microbial Food Safety at the Universiteit van Amsterdam (UvA) and chair of the Dutch institute for Biology (NIBI) (Chair);
- Dr. A. A. J. (Annik) Van Keer, educational advisor at the Faculty of Science at Utrecht University;
- Prof. N. (Nadarajah) Sriskandarajah, Professor Emeritus with the Department of Urban and Rural Development, Swedish University of Agricultural Sciences in Uppsala (SLU), Sweden;
- Prof. B. (Bruce) Lankford, Professor of Water and Irrigation Policy, School of International Development, University of East Anglia, United Kingdom;
- Prof. W.M. (Wim) Cornelis, Professor in Soil Physics, programme Director International Master in Physical Land Resources, UNESCO Chair of Eremology, Ghent University, Belgium;
- B. (Boas) van der Putten MSc, graduated in 2017 in Biomedical Sciences at the University of Amsterdam. He is currently working on two PhD tracks at the AIGHD/AMC (student member).

The panel was supported by dr F. (Floor) Meijer, who acted as secretary.

## WORKING METHOD OF THE ASSESSMENT PANEL

### *Preparation*

In preparation of the site visit, the panel studied several documents, amongst others: the NVAO assessment framework (2016), the institutional audit of WU and the previous programme assessments (of 2012). The accreditation system has entered its third phase (concurrently with a second round of institutional audits). Wageningen University has recently successfully passed its second institutional audit. The new NVAO assessment framework is 'geared to a quality assurance system that is based on trust in the existing, high quality of Dutch higher education'.

The last assessment of the programmes took place in 2012. In that assessment, the bachelor's programme was assessed as 'good' on all standards. The panel found that the programme's objectives were well described and translated into intended learning outcomes that surpassed the international standards in the domain of Land and Water Management. The programme's excellent staff, its variety of teaching methods, the well-organized student support and specific attention paid to multidisciplinary all contributed towards a high quality teaching-learning environment. A few minor suggestions were made to further strengthen the curriculum. These concerned the coherence and structure of the curriculum, the balance between depth and breadth and the research training provided to students. The panel was generally pleased with the system of assessment and the initiatives to strengthen the role of the Examining Board. The theses were considered to be of high quality. Overall, the panel established that the bachelor's programme had the potential of becoming a top-rated programme.

Also in 2012 the master's programme received the overall assessment 'good', with partial scores of 'excellent' for standard 1 and 2 and 'good' for standard 3. The panel established that the programme had a state of the art profile and very well described objectives. The attention paid to the professional field impressed the panel. The curriculum of the master's programme was found to be well structured and coherent, demonstrating that the programme had succeeded in bridging and integrating the underlying disciplines. The system of assessment generally functioned well and the quality of the theses was assessed as high. Overall, the panel established that the master's programme could be qualified as a top programme.

With the new philosophy of the framework and the last assessment of these specific programmes in mind, the panel does not want to elaborate too long on the different criteria of the four standards of

the limited framework. The overall evaluation of the programmes by this panel is, as it was in 2012, highly positive. In this report, therefore, the panel will concentrate specifically on developments since 2012 and on providing suggestions that might help to make the programmes even better than they already are.

QANU received the self-evaluation reports of the International Land and Water Management programmes on 23 November 2018 and made them available to the panel. The panel members read the self-evaluation reports and prepared questions, comments and remarks prior to the site visit. The secretary collected these questions in a document and arranged them according to panel conversation and subject.

In addition, panel members read recent theses from each programme. In consultation with the chair, fifteen theses per programme were selected from the academic years 2015-2016 and 2016-2017, covering the full range of marks given and all specialisations. The panel members also received the grades and the assessment forms filled out by the examiners and supervisors. An overview of all documents and theses reviewed by the panel is included in Appendix 4.

The programme management drafted a programme for the site visit. This was discussed with the secretary and chair of the panel. As requested by QANU, the programme management carefully selected discussion partners. A schedule of the programme for the site visit is included in Appendix 3.

#### *Site visit*

The site visit took place on 15 and 16 January at Wageningen University (WU). In a preparatory meeting on the first day of the site visit, the panel members discussed their findings based on the self-evaluation and on the theses and formulated the questions and issues to be raised in the interviews with representatives of the programme and other stakeholders.

During the site visit, the panel studied a selection of documents provided by the programme management. This included course descriptions, course materials, written exams, assignments and other assessments.

The panel interviewed the programme management, students, alumni, staff members, members of the Programme Committee and members of the Examining Board.

#### *Report*

After the visit, the secretary produced a draft version of the report. She submitted the report to the panel members for comments. The secretary processed corrections, remarks and suggestions for improvement provided by the panel members to produce the revised draft report. This was then sent to WU to check for factual errors. The comments and suggestions provided by the programme management were discussed with the chair of the assessment panel and, where necessary, with the other panel members. After incorporating the panel's comments, the secretary compiled the final version of the report.

#### *Definition of judgements standards*

In accordance with the NVAO's Assessment framework for limited programme assessments, the panel used the following definitions for the assessment of both the standards and the programme as a whole.

#### **Generic quality**

The quality that, in an international perspective, may reasonably be expected from a higher education associate degree, bachelor's or master's programme.



**Unsatisfactory**

The programme does not meet the generic quality standard and shows shortcomings with respect to multiple aspects of the standard.

**Satisfactory**

The programme meets the generic quality standard across its entire spectrum.

**Good**

The programme systematically surpasses the generic quality standard.

**Excellent**

The programme systematically well surpasses the generic quality standard and is regarded as an international example.

## SUMMARY JUDGEMENT

### *Intended learning outcomes*

The bachelor's and master's programme International Land and Water Management (BIL and MIL) aim to deliver graduates who can contribute to solving complex issues with respect to the sustainable management of land and water by combining knowledge and skills from the natural, technical and social sciences. While the bachelor's programme aims at multi-/interdisciplinarity, the master's programme is geared towards inter-/transdisciplinarity. The panel is very impressed by the highly relevant and ambitious profile of the programmes, which is clearly distinct from other programmes that deal with similar subject areas. An added strength of the recently internationalised bachelor's programme is its well-elaborated strategy for delivering T-shaped professionals, who have general knowledge on land and water management and can communicate convincingly across disciplines, stakeholders and organisational levels.

The ILOs of both programmes match their profile and objectives and demonstrate an appropriate level and orientation. An opportunity for further improvement is to specifically include research integrity as a topic in the ILOs and to make explicit that students need to acquire *academic* writing skills, which implies a deeper connection to theory than the current phrasing on the reporting of research findings.

The panel concludes that the professional field is involved in the BIL and MIL programmes, amongst others by way of the External Advisory Committee, which consists of relevant representatives of potential employers of BIL and MIL graduates.

### *Teaching-learning environment*

The panel concludes that the curriculum, teaching-learning environment and staff of the BIL and MIL programmes enable students to realise the intended learning outcomes. Both curricula are well-designed and sufficiently coherent, with five learning trajectories in the bachelor's programme and three specializations in the master's programme giving direction to the course content. At the same time, the curricula offer students quite a lot of freedom in designing their individual study path.

The content of the curricula is a good reflection of the current state of affairs in the domain of international land and water management. A particular strength is the high level of internationalisation, which is apparent from the composition of the student population, the course content and the high (and very valuable) exposure of students to international fieldwork. The links to professional practice have been further strengthened since the 2012 assessment, with the curricula now containing many opportunities for students to practice their professional skills. The panel particularly appreciates the inclusion of an internship in the bachelor's programme and the professional skills-driven *Sustainable Land and Water Management in Spain* course in the master's programme, which is particularly rich in learning. At master's level, the use of five professional profiles is an attractive way of steering curriculum content and ensuring a good fit with the labour market.

The close connections to practice do not detract from the programmes' academic orientation. Both curricula are clearly research-led, with the research of the relevant WU Chair Groups feeding into the course content. As is common in similar programmes elsewhere (e.g. in Europe), BIL and MIL students find it difficult to engage and contextualize practical study with theory and literature. The panel feels that this is something for the programmes to be aware of and take into consideration in course design. In the panel's experience it is helpful to gradually build students' confidence by consistently addressing theory and including short theory-led exercises throughout the courses. Academic writing is another aspect that could receive more attention.

The teaching-learning environment of the programmes is varied and rich, with ample attention for intercultural diversity and to establishing close ties between staff and students. There is an adequate number of contact hours and teaching methods are relatively small-scale and increasingly innovative.



An aspect to address is that group work is not always used in the most effective way. Both programmes have a varied system of student guidance, in which study advisers play an important role. All-in-all, the panel is convinced that both programmes offer students a good environment for developing their personal talents. The effects of growth are a WU-wide concern. The panel hopes that the current atmosphere and level of small-scale education can be maintained even if student numbers increase further as a result of internationalisation.

The panel found that the teaching staff of the programmes is motivated and qualified. Lecturers are experts in their fields and have international experience. The increasing workload of staff members requires intensive monitoring. The panel strongly feels that staff numbers should reflect the growing student numbers.

#### *Assessment*

Both programmes have developed an adequate system of assessment, which is based on the WU-wide assessment policy. The assessment strategies at course level pay sufficient attention to the validity, reliability and transparency of examinations, for example by jointly developing and peer reviewing tests, by using standardized thesis forms and rubrics and by clearly communicating assessment procedures and criteria to students. Some particular aspects, such as the consistent use of rubrics, deserve further improvement. The programmes may also wish to draw up overall assessment plans and enhance the level of individual feedback given to students, especially on written assignments. Sample tests studied by the panel indicate that the overall level of assessment is adequate.

The procedures for assessing the final product of the programmes, the thesis, are clear and the assessment itself is sound. The panel does recommend reconsidering the current practice of giving equal weight to the process and outcome in the assessment of bachelor's theses. Also, the panel would like to see a further streamlining of the procedures across Chair Groups. Finally, the panel advocates the university-wide implementation of a digital assessment system in which the subsequent steps in the thesis process are fully automated.

The panel established that the Examining Board safeguards the overall level of assessment in the programmes to the best of its abilities. Increasing the capacity of the EB, as is the intention of the Executive Board, could help to strengthen its agency in relation to the rather autonomous Chair Groups. Nonetheless, the panel feels that the central university should also critically reconsider whether the design of the current quality assurance system optimally suits its purposes.

#### *Achieved learning outcomes*

Both the sample theses that were studied by the panel and the position of graduates strongly emphasize that students achieve the intended learning outcomes of the programmes. Students produce an impressive range of real world and problem facing final products. In the panel's opinion the delivery of a whole cohort of both bachelor's and master's students with highly relevant field-informed skills makes the BIL and MIL programmes stand out when compared to other programmes worldwide. Graduates of the bachelor's programme are successful in associated master's programmes, while graduates of the master's programme quickly find employment in relevant positions. Alumni generally feel that the programme has provided them with a solid foundation from which they can benefit in their respective careers.

The panel assesses the standards from the *Assessment framework for limited programme assessments* in the following way:

*Bachelor's programme International Land and Water Management*

Standard 1: Intended learning outcomes	good
Standard 2: Teaching-learning environment	good
Standard 3: Student assessment	satisfactory
Standard 4: Achieved learning outcomes	good
General conclusion	good

*Master's programme International Land and Water Management*

Standard 1: Intended learning outcomes	good
Standard 2: Teaching-learning environment	good
Standard 3: Student assessment	satisfactory
Standard 4: Achieved learning outcomes	good
General conclusion	good

The chair prof. dr. Stanley Brul and the secretary of the panel dr. Floor Meijer hereby declare that all panel members have studied this report and that they agree with the judgements laid down in the report. They confirm that the assessment has been conducted in accordance with the demands relating to independence.

Date: 19 March 2019



# DESCRIPTION OF THE STANDARDS FROM THE ASSESSMENT FRAMEWORK FOR LIMITED PROGRAMME ASSESSMENTS

## **Governance structure of Wageningen University (WU)**

In contrast to many other Dutch Universities, WU has just one faculty: the Faculty of Agricultural and Environmental Sciences. Therefore the governance structure of WU differs from most other universities. The Rector Magnificus of the University is also the Dean of the Faculty. The Dean of the Faculty appoints the Board of Education, which consists of four professors and four students. The Board of Education is the legal governing body of the university's 18 bachelor's and 28 master's programmes. It is responsible for the design, content, quality and financing of the programmes. Each programme has its own Programme Committee, which consists of an equal number of students and staff members who are appointed by the Programme Board. Programme Committees advise the Programme Board on the design and content of their degree programmes. The Programme Board does not employ the lecturers; these are employed by the 94 Chair Groups, which generally include a Chair Holder (full professor), academic and support staff, postdocs and PhD students. The Programme Board, the Programme Committees and the Chair Groups together form the WU education matrix organization.

The Executive Board of WU has appointed four Examining Boards (EBs), each responsible for a group of related degree programmes (domain) and Chair Groups. Examining Boards are independent from the Programme Board and include staff members from the domain. The Examining Boards assess the individual study programmes of students and award student degrees. The Examining Boards also appoint the course examiners and monitor changes to the assessment strategy of interim examinations in the annual education modification cycle. The Examining Boards assure the quality of the interim examinations, and for that reason periodically visit Chair Groups to discuss the validity and reliability of the assessments.

### **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**

### *Profile*

The bachelor's and master's programme International Land and Water Management (BIL and MIL) aim to deliver graduates who can contribute to solving complex issues with respect to the sustainable management of land and water by combining knowledge and skills from the natural, technical and social sciences. The starting point of the programmes is that proper management of land and water is crucial for agriculture and food production, and therefore for addressing major global challenges such as poverty alleviation and achieving food security. Particular aspects that the programmes address are personal and household needs, the supply of food to communities and maintaining important water-dependent ecosystems and ecosystem services at household and field level, in urban and rural areas, both nationally and internationally.

At the core of the bachelor's programme International Land and Water Management (BIL) are the interrelations and interactions between people, land and water, and technology. Students gain knowledge and understanding of (1) the biophysical, agro-ecological, spatial and technical conditions, (2) the institutional environment, with its rules and regulations applying to land and water and its management and (3) the economic context. As of September 2018, the bachelor's programme is fully taught in English. The two-year master's programme International Land and Water Management (MIL) focuses on the scientific analysis of land and water management issues at various scales. Like the bachelor's programme, it aims to integrate physical, technical, socio-economic and political dimensions in coherent approaches in order for students to understand and tackle land and water



management problems. The programme covers multiple perspectives from disciplines in the environmental sciences, the plant and nutritional sciences, and the social sciences. Students are offered a choice of three specialisations: (1) Sustainable Land Management, (2) Water, Society & Technology, and (3) Adaptive Water Management. The panel is of the opinion that the three specializations cover the most important aspects of the domain. It appreciates that the specializations are continuously adapted to reflect changes in the field. The panel invites the programme management to make rainfed agriculture more visible in the programme objectives and profile.

The panel is very impressed with the unique profile of the programmes, which is multi/interdisciplinary at bachelor's level and transdisciplinary at master's level. The panel emphasizes that these are some of the few (remaining) agricultural water degree programmes in the world that approach this very important field with a relevant and necessary mix of natural and social science. The intrinsic 'real-world facing' nature of the programmes is another strength. From the documentation and interviews it became clear to the panel, that many students choose the programmes because of their international character and attention for highly topical issues such as sustainability, world food security and other future challenges. Students clearly recognize the value of the combined social and technical approach. Furthermore, they mentioned WU's excellent reputation in the field as a reason for coming to Wageningen. A critical remark made by some students concerned the fact that the programme is more agricultural in focus than is apparent from the promotional material and information sessions for prospective students. The programme may wish to better manage expectations of prospective students.

Worth mentioning is the careful attention for the future profile of graduates, which is particularly elaborate for the bachelor's programme. The self-evaluation report and programme representatives convincingly argued that this programme helps students to develop themselves as 'T-shaped' reflective professionals. It aims for graduates who are able to combine knowledge from different disciplines and from non-academic sources to arrive at an integrated understanding of issues in international land and water management.

#### *Intended learning outcomes*

The profile and objectives of the bachelor's and master's programmes have been translated into two sets of fourteen intended learning outcomes (ILOs). Overviews of the ILOs can be found in appendix 1. The ILOs of the bachelor's programme have been subdivided into three categories. The first category consists of ILOs with respect to acquiring and applying domain specific knowledge and understanding (ILOs 1-5), while the second category includes scientific learning outcomes (ILOs 6-8) and the third category contains learning outcomes with respect to reflective learning and personal development (ILOs 9-14). The ILOs of the master's programme have a slightly different format. These include eleven programme-wide ILOs and three specialisation-specific ILOs, one for each specialisation.

The panel concludes that both sets of ILOs reflect the broad, multi/inter/transdisciplinary orientation of the programmes. By linking the ILOs to the Dublin descriptors, the programmes make sure that their level and orientation are appropriate. The bachelor's ILOs are phrased at an introductory-intermediate level, while the master's ILOs aim for a more advanced level. A notable difference is that bachelor's students are expected to develop an interdisciplinary attitude, whereas master's graduates should be able to address problems from a 'transdisciplinary' perspective, which means that all relevant (not just academic) stakeholders are involved in finding possible solutions. The strong emphasis on scientific research in the ILOs underscores the academic character of the programmes.

Some aspects of the ILOs could be sharpened. While the panel was pleased to find that the ILOs address the 'ethical and value-driven aspects of research and intervention strategies, and the various roles of the specialist in the domain' (BSc ILO 13, MSc ILO 11), it feels that the phrasing could be made more concrete, by specifically mentioning the necessity of developing awareness of responsible research practices ('research integrity'). Also, the panel believes that developing an academic style

of writing is an absolutely vital ILO, which is why it would advise to slightly adjust the wording of ILO 9 (both BSc and MSc), which currently specifies that graduates have to be able to 'communicate their findings in a clear and concise manner'. The panel would prefer this to read '*academically* communicate'. While the specialization-specific ILO for the Adaptive Water Management specialization explicitly mentions the 'application of theoretical concepts' as a requirement, theory is much more implicitly included in the ILOs of the other two specializations. Considering the importance of students being able to interact with theory, the panel would recommend to emphasize this aspect in the ILOs of all three specializations.

#### *Link with the professional field*

To ensure compatibility with the demands of the professional field, the programmes are in regular contact with potential employers, as represented by an External Advisory Committee (EAC). This committee is consulted annually with regard to the ILOs, the content and quality of the programmes and the performance of graduates. The panel established that recent feedback from the EAC was mostly positive. Employers regard the multi/inter/transdisciplinary profile of the programmes as highly relevant and appropriate for the labour market in land and water management. At master's level the committee did stress the necessity for students to acquire professional skills (such as consultancy skills). With respect to the bachelor's programme, the EAC remarked that graduates at bachelor's level are not generally considered employable. This, according to the panel, is a position that may need to be revisited. It believes that the programme could take up an active role in carving out a niche for its bachelor's graduates, not just on the Dutch labour market but also on the international labour market, which is more used to academic bachelor's graduates joining the work force.

#### **Considerations**

The panel is very impressed by the highly relevant multi/inter/transdisciplinary profile of the bachelor's and master's programmes in International Land and Water Management, which is clearly distinct from other programmes that deal with similar subject areas. An added strength of the recently internationalised bachelor's programme is its well-elaborated strategy for delivering T-shaped professionals, who have general knowledge on land and water management and can communicate convincingly across disciplines, stakeholders and organisational levels. To its satisfaction, the panel found that this strategy is the starting point for the teaching and learning that takes place within the programme.

The ILOs of both programmes match their profile and objectives and demonstrate an appropriate level and orientation. An opportunity for further improvement is to specifically include research integrity as a topic in the ILOs and to make explicit that students need to acquire *academic* writing skills, which implies a more thorough incorporation of theory that is applied reflectively to the full problem solving cycle and its discussion.

The panel concludes that the professional field is involved in the BIL and MIL programmes, amongst others by way of the External Advisory Committee, which consists of relevant representatives of potential employers of BIL and MIL graduates.

#### **Conclusion**

*Bachelor's programme International Land and Water Management:* the panel assesses Standard 1 as 'good'.

*Master's programme International Land and Water Management:* the panel assesses Standard 1 as 'good'.



**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***Curriculum bachelor's programme*

Over the review period, the annual intake in the bachelor's programme has increased from 62 students in 2013 to 95 in 2018. The programme expects this upward trend to continue. As a consequence of the recent conversion to an international, English-taught programme, the pool of future students has increased.

The three-year bachelor's curriculum (180 EC, cf. appendix 3) consists of courses that explore and integrate the foundations of the relevant disciplines (120 EC), free choice courses/minor (30 EC), an international internship (18 EC) and a bachelor's thesis (12 EC). The panel established that programme cohesion is supported by five learning trajectories, which have been derived from the ILOs and run throughout the entire curriculum. These are:

1. The *conceptual trajectory*, which focuses on understanding, applying and critically reflecting on how concepts are defined and operationalized;
2. The *skills trajectory*, which deals with the variety of skills (both academic and professional) that are integral to the programme;
3. The *reflective trajectory*, which encourages students to reflect on and improve their professional attitude and performance;
4. The *integral trajectory*, which focuses on the creative process of analysing, designing, and engineering solutions and brings together the conceptual and skills trajectories;
5. The *study-career development trajectory*, which concerns study and career planning.

The various curriculum components regularly touch upon elements of these five learning trajectories. The panel is pleased with this epistemological design, which is rich, self-reinforcing and coherent to the nature of the programme. An appropriate next step would be to further clarify the connection between the ILOs, the learning trajectories and the curriculum components. Especially learning trajectories 1 and 4 could be more fully embedded in the ILOs and course content.

The panel established that the curriculum structure and underlying components reflect the broad, multi/interdisciplinary profile of the programme. In the first year, students are familiarized with the domain of international land and water management. The first semester starts with a general introduction course (*Orientation on International Land and Water Management*), followed by a number of foundational courses which also feature in other WU bachelor's programmes. These courses provide students with the basic knowledge that forms the foundation for the integrative analysis in the courses of the second semester, especially in the concluding course *Design in Land and Water Management I*. Year two focuses on designing interventions and practicing managerial skills and has a similar layout to year one. The first semester consists of advanced (multi)disciplinary courses, while the courses in the second semester (e.g. *Design in Land and Water Management II*) are dedicated to integration and application of prior knowledge. In the third year, students explore their own interests by choosing a minor or a tailor-made combination of elective courses and by doing an international internship. The programme is concluded by an individual research project resulting in a bachelor's thesis.

Students are positive about the content of the curriculum. They particularly appreciate the curriculum components in which the multi/interdisciplinary character of the programme truly comes into its own, such as the excursions, the internship and the two *Design*-courses, which are almost exclusively populated by BIL-students. In the student chapter, students do remark that the tradeoff of the broadness of the curriculum is that the curriculum is not always as in-depth as they would like. Particularly the most talented and ambitious students would appreciate to be challenged somewhat

more, which is something for the programme to consider. On the whole, however, the panel is confident that the level of the programme is appropriate as is.

During the site visit the panel studied sample courses from the second year. These included the technically oriented course *Land and Water Engineering*, the socially oriented course *Natural Resources Governance in a Complex World* (SDC-22806) and the integrative, design-focused course *Design in Land & Water Management II*. The panel concludes that the level and content of these courses is adequate, with a clear balance of natural science and social science content. Learning goals for students are suitable and match the teaching methods used. The course readings are relevant and up-to-date.

A particular strength, according to the panel, is that the content of the courses, and of the curriculum as a whole, is largely international without neglecting the Dutch situation. Courses in all three years use non-Dutch examples and case studies, while some courses (particularly in the first year) pay attention to systems that are appropriate for the Dutch labour market. As part of the programme, students also go abroad. Second-year students participate in an international excursion to Portugal, Greece or Spain, which deals with aspects of both irrigation and water management and land degradation and remediation. Third-year students complete a mandatory international internship often in countries in transition in Africa, Asia and South and Central America.

The curriculum is clearly research-led, with the research of the relevant WU Chair Groups feeding into the course content. As part of the skills trajectory that was described above, regular courses pay attention to instruction and training in research methods, academic writing and presenting (cf. ILO 6 and 9). Students also take a course on Research Methodology (in which they prepare, under supervision, the first version of their research proposal for the bachelor's thesis). Skills training is concluded by the bachelor's thesis, an individual research product in which students demonstrate, amongst others, their capacity to analyze/synthesize and interpret data and integrate knowledge from the international land and water management domain. Topics can be selected from a database of thesis topics and projects structured per Chair Group. The panel is impressed with the depth of support offered to students. This gives them a sound understanding of what it takes to be a researcher. Nonetheless, students clearly find it difficult to engage and contextualize practical study with theory and literature, which is a common problem also found in similar programmes outside of WU. More so than in other fields, theory in environmental change is fraught with difficulty because of the complexity of the field, which comprises people, technology, nature, economics, scalar and temporal dimensions and many other components that are often perspectival and cannot be controlled for in the 'normal science' way of thinking. Thus, it is fully understandable that the programme finds it difficult to teach theory in a comprehensive way. Nonetheless, the panel feels that the complexity with respect to theory could perhaps be better acknowledged in the design of the skills trajectory. Research integrity is another aspect that the skills trajectory could emphasize more. The panel feels that it is important to confront students with the ethical aspects of conducting academic research from an early stage. Students themselves indicate that academic writing should be given more attention throughout the curriculum, which is a valuable suggestion.

Although it is currently not common for bachelor's graduates to enter the (Dutch) labour market, the programme is aware of the need to prepare students for practice. The panel was pleased to find that exposing students to real-world cases is an important aspect of the current curriculum. The programme has clearly taken the suggestion made by the previous panel to strengthen the relations between the programme and the professional field to heart. The curriculum increasingly confronts students with land and water management issues in the field and invites them to carry out problem and stakeholder analyses, e.g. in the case-based project commissioned by Dutch Province of Limburg which is part of *Design in Land and Water Management I*. Students are also exposed to experiences in the professional field by participating in a variety of excursions, practicals, fieldwork, alumni presentations, and interviews with professionals. A highly valued aspect of the programme's practical orientation is the mandatory international internship in year 3 during which students work at governmental and non-governmental organisations, farmers' or users' organisations, private



businesses, consultancy firms, or research institutes, mostly outside of Europe. This sets the programme apart from most of the other WU bachelor's programmes which do not include an internship. Commonly, students link their thesis to their internship, which often means that they use the data collected during the internship in the thesis research.

#### *Curriculum master's programme*

The two-year master's programme is a relatively modest-sized programme with an average annual intake of 50 students. To qualify for admission, students must have obtained a bachelor's degree in a relevant field. Furthermore, they require a GPA of 70/100 and a sufficient level of English. Students with deficiencies can often be admitted after completion of a linkage programme. The programme also uses massive open online courses (MOOCs) to deal with specific knowledge gaps.

The panel established that the master's curriculum (120 EC) is well designed and coherent. Courses are primarily scheduled in the first year. The common core of the programme consists of three compulsory domain courses (*Issues and Concepts in International Land and Water Management; Research Approaches to Land and Water Management; Sustainable Land and Water Management*, 21 EC in total) and two skills development modules (*Modular Skills Training*, 3 EC). As part of their specialization, students take two additional compulsory courses (one of which is social sciences-oriented, the other natural sciences-oriented) as well as a restricted optional course (18 EC in total). This is complemented by three optional courses (18 EC). The second year of the programme consists of a thesis (36 EC), which is prepared at one of the Chair Groups involved in the programme, and either an internship, second thesis or minor (24 EC).

The panel appreciates that students are allowed to design an individual study path that reflects their interests. This is facilitated by study advisers, who check that all of the ILOs are covered. The Examining Board subsequently has to formally approve the study path. Students that the panel spoke with are pleased with the considerable freedom that the programme offers. Challenging, according to students, is the early choice of their specialization (in period 1). To assist students in making the right choice, the Chair Groups involved in the specializations introduce themselves to students early on. Nonetheless, some students mentioned that they would have liked more support in weighing the different options available. Currently, the programme is considering to introduce even more flexibility by allowing students to put together their own specialization. The panel likes this initiative but cautions that students should be guided to select courses that build a coherent degree that fits their interests and the 'real-world' problems they are engaging with.

From the student chapter and interviews with students, the panel established that students are positive about the contents of the curriculum. They particularly appreciate the level of (academic) skills training and international components of the programme. They also identified some aspects that could be strengthened further. A general issue that students touched upon is the balance between breadth and depth. While the specialization courses are considered sufficiently in-depth, some students feel that the general courses could be more challenging, by more frequently hitting a deeper level of understanding and by encouraging students to delve deeper into certain topics and do more background reading, for example of canonical texts from the social sciences. However, the panel established that this feeling is not unanimously shared. There are also students who feel that the programme as a whole is sufficiently in-depth as is.

The panel notes that these differences may well have to do with the heterogeneity of the student population. Students come from various backgrounds and academic traditions, and therefore have different levels of theoretical knowledge and practical experience. On the whole, students who completed the BIL bachelor's programme are more likely to experience a certain degree of repetition in the master's programme than other students. The panel is aware that in an international programme it is very difficult to align the needs and wishes of all students. To avoid a loss of quality it is important to monitor that the admission criteria sufficiently safeguard that all students are able to achieve the ILOs. This also includes students' English proficiency, which, according to students, is rather basic for some of the international students. Apart from obvious challenges,

internationalisation of the student population also offers interesting opportunities, especially with respect to international classroom learning. This aspect will be dealt with below.

During the site visit the panel studied material from three sample courses: a compulsory core course (*Sustainable Land & Water Management in Spain*) and two compulsory specialization courses (*Integrated Water Management*; *Water System Design for Water Use from Multiple Sources*). From the course materials it concludes that the content reflects the current state of affairs in the domain of International Land and Water Management. The learning goals for the courses are clear and match the teaching methods that are used. The course literature is appropriate. The fact that much of the literature used in the courses hails from the WU Chair Groups, an issue that was flagged by students, is not that surprising, since WU is widely regarded as one of the global leaders in the research of sustainable agricultural water management and governance. Even so, the panel agrees with students that it would not hurt to introduce more 'outside' perspectives. As a whole, the curriculum covers the breadth of the domain. An aspect that was missing during the 2012 assessment – the globalisation of water and the food supply chain – has now been incorporated into several curriculum components, amongst which the course *Sustainable Land & Water Management in Spain*.

Like the bachelor's programme, the master's programme is research-led. The panel regards the mutual connections between the research of the Chair Groups involved in the teaching and the MIL curriculum as a strong feature. Training of academic skills takes place throughout the curriculum, most notably in the mandatory core course *Research Approaches to Land and Water Management*. This course prepares students for the thesis by helping them understand that all knowledge is theory-laden and that a problem can be approached from different perspectives. The panel feels that theory is a vital aspect of academic training at master's level. It was therefore pleased to find that it is consistently addressed in the course notes from the above mentioned sample courses. Even so, the panel concludes from the sample of master's theses that students find it difficult to relate their own research findings to theory and position themselves in an academic debate. This is something for the programme to be aware of. At course level, the programme may wish to continuously encourage students to interact with theory, thereby increasing their confidence level. For example, inspired by the idea of Edward de Bono 'thinking hats', tutors could ask students on the field courses to see the world in theoretical ways as well as practical and problem-oriented ways. This will pay off in the individual thesis projects.

Students themselves are generally positive about the academic skills training offered in the courses. An issue that they highlighted is that quantitative data analysis could be given a more prominent place in the curriculum, especially in the components that deal with soil. Unlike other programmes, the curriculum does not include an *Advanced Statistics* course and, according to students, statistics is not a mandatory part of the *Research Approaches* course. Considering the fact that the panel found some shortcomings with respect to statistical skills and general numeracy in the theses it studied, the programme may wish to address this concern; either by more prominently including quantitative research methods in the core curriculum or by directing students towards appropriate optional courses.

The thesis (36 EC), rather than the internship, is considered the final dedicated piece of work in the programme. It consists of a scientific research project, concluded with a written report, which takes place within the framework of the student's specialization. Within certain conditions, students are free to choose the topic of the thesis. An annual thesis and internship fair showcases possibilities and introduces students to potential supervisors. Students who wish to pursue a PhD, or already have working experience, may opt to replace the internship or minor with a second thesis (24 EC). This second thesis project examines a different subject to the first thesis and preferably takes place at a different Chair Group. According to the panel, the second thesis is an interesting option, which offers possibilities for progressive learning. At the moment, however, the learning goals of the second thesis are identical to those of the first thesis. In the panel's opinion the programme could consider to set additional goals and thereby ensure that students build upon the research skills that they have already acquired.



Although the curriculum is fundamentally academic, it also offers students the opportunity to practice with real-life cases and professional skills. An excellent example of this is the course *Sustainable Land and Water Management in Spain*. In this course students work in small groups (4-5 students) on real-life land or water management issues in the region of Valencia, Spain. Local and regional land and water management organisations and research institutions help to identify relevant case studies and act as commissioners for these cases. The panel agrees with staff and students that this course could be characterized as the flagship course of the programme, in which students get a real taste of what it means to work in the domain of International Land and Water Management. Students indicated to the panel that they appreciate the balance between theory and practice and feel rather well prepared for practice. When applying for internships they usually receive positive responses to their profile. Another positive aspect is that the programme has identified five key areas of employment for graduates (research, consultancy, policy making, education, intervention design and management) and is currently exploring options for further strengthening the preparation for these specific areas in the curriculum.

#### *Teaching-learning environment*

Both programmes offer their students a rich teaching-learning environment, with sufficient attention to intercultural diversity, cohort building and close ties between staff and students. Students are highly satisfied with the open and pleasant atmosphere in the programme. They emphasized that staff usually know students by name and frequently interact with them, especially during field trips and excursions. Staff, in their turn, qualify students as reflective, determined and highly motivated. A major strength that was reported during the interviews and in the student chapters is the attention paid to intercultural communication. This helps to optimize the value of the international classroom, in which students from different backgrounds - ranging from Dutch vwo-graduates to non-European students with several years of working experience in a relevant field - learn with and from one another. In practice, students and staff find that the sharing of personal experiences by students in class adds a very welcome extra dimension to the discussion.

The panel was pleased to find that a lot of the teaching in the bachelor's programme is shaped by a specific didactic philosophy: 'concentric and action learning'. Repetition and increasing in-depth learning are key to this philosophy, which forms the basis for the *Design*-courses in particular, but also for other skills- rather than knowledge-driven courses. By mobilizing, repeating and applying the knowledge and skills students are given regular possibilities for integration. This is done at an increasingly abstract and complex level. For the master's programme no specific epistemological approach to teaching and learning was described in the self-evaluation report.

A strong feature of both programmes is that courses use a variety of teaching methods which are often student-centered, small-scale and interactive. Preferred methods in the bachelor's programme are laboratory practicals, lectures and tutorials. Some bachelor's courses also use excursions and field practicals. A positive aspect is that innovative teaching methods are increasingly catching on. A bachelor's course that is exemplary in this respect is *Design in Land and Water Management*, which includes e-learning modules and uses the principle of flipping the classroom. On the whole, students appreciate the balance between the different teaching formats. According to the student chapter they would, however, like to see more tutorials in the natural scientific courses on soil and water.

Master's courses often consist of a combination of field practicals, lectures, tutorials, laboratory practicals and lectures. A course that includes obvious best practices in terms of the learning experience offered to students is *Sustainable Land and Water Management in Spain*. The field work in this course is home to synoptic action-research, which in the panel's experience greatly benefits students. The panel feels that this course is probably the keystone to the learning and pedagogical arc of the MIL curriculum. Another master's course worth mentioning for its effective didactic approach is the specialization course *Water System Design for Water Use from Multiple Sources*, which was designed to cater to the needs of a diversified student population. The programme is currently contemplating whether this course's didactic model could be extended to other parts of the curriculum.

The share of group work in the bachelor's and master's programmes was a topic during the interviews. While students are aware that group work is potentially very instructive, some feel that there is quite a lot of it, which, in their experience, limits possibilities for individual students to go in-depth. Students also noted that some courses set clear goals for group work and offer guidance by trained coaches, while in other courses this is absent. In the panel's opinion group work has a clear function in the increasingly international classrooms of the programmes, as it helps students to develop soft skills and learn from one another. However, the panel agrees with students that clear learning goals should always be set and that group processes and individual contributions should be carefully monitored.

Bachelor's and master's students confirmed that it is feasible to complete the programmes within the designated time frame. Bachelor's students typically spend less than 40 hours a week on their studies. Master's students reported an average workload of 32-35 hours a week, although there are also students who spend 40 hours. Even so, a large part of the student population does not complete the programme within the appropriate time frame, for example because they combine the programme with other activities or wish to extend the (MSc) internship or thesis. Students particularly pointed to international internships, which are difficult to plan and involve quite some uncertainties, as a common cause for delays. Nonetheless they also indicated that students who really need/want to finish on time are able to do so. It may, however, mean that they have to compromise on the topic or destination country of the internship. The panel feels that success rates deserve continuous attention.

Students are generally pleased with the quality of guidance and supervision by staff members. Study advisers play an important role in helping students develop their own study paths. During the site visit, students described them as very involved and available. The students that the panel spoke with felt sufficiently supported in choosing a minor (bachelor's students) and specialization (master's students). A positive new development is the inclusion of joint thesis writing sessions in the bachelor's programme, which guide the thesis writing process. Peer feedback is a central principle in these sessions. The panel believes that these writing sessions play a valuable role in helping students to stay on track during the thesis process. It would like to see thesis rings introduced across the breadth of all the Chair Groups that contribute to the master's programme, and preferably WU-wide.

Students of the programmes can make use of a number of relevant, and highly valued facilities, such as the *Ir W. Genet Irrigation Tunnel*, a hydraulics laboratory and a soil physics laboratory. In the master's programme, the irrigation tunnel is used in the course on *Water Delivery* (one of the restricted optional courses in the Water, Society and Technology specialization). The course *Fundamentals of Land Management* makes use of the soil physics laboratory.

A concern for all WU programmes is the rapid increase in student numbers. While numbers in the BIL and MIL programmes are – at present – still manageable, WU-wide growth does affect the programmes, as courses are often shared with other programmes. This results in increasing pressure on classrooms, facilities and teaching staff. In the coming period, BIL and MIL are likely to experience some further growth, as the recent internationalization of the bachelor's programme will potentially attract growing numbers of international students. The panel believes that the influx of increasing numbers of international students will require careful planning and managing to avoid a loss of quality. It established that both the programme management and the Board of the University are well aware of the potentially negative side effects of growth. It was pleased to learn that the university-wide strategic plan for the coming years recognizes the necessity to preserve the small-scale education that is considered typical for WU. This involves hiring additional staff and splitting up large courses. At programme level, efforts to more efficiently organise courses are underway. Even so, there are limits to the number of students that the teaching-learning environment can sustain, especially since the management made it clear that it does not wish to compromise on the high current level of supervised field work and excursions. This may mean that a cap on student numbers should be considered at some point.



### *Teaching staff*

The panel is pleased with the quality of the teaching staff. Lecturers are experts in their fields, who actively participate in WU research projects and have international experience, not just in academic teaching and research, but often also in consultancy in the field of international land and water management. At bachelor's level 75% of lecturers have obtained a PhD, which is somewhat lower than in some of the other WU programmes. At master's level 87% of the lecturers have a PhD degree. Roughly half of the staff are members of WU Graduate Schools, which highlights the close link between research and teaching. The composition of the staff does not yet reflect the increasingly diverse student population. In the coming period, the programmes may wish to urge the Chair Groups to pay more attention to diversity in their recruitment policy.

The panel notes that didactic skills are considered important at WU. Lecturers are given opportunities to obtain a University Teaching Qualification (UTQ), either as part of their Tenure Track requirements or through tailor-made trajectories for more senior staff. For the bachelor's programme, the percentage of staff with a UTQ is on the lower end of the scale for WU (60%). The master's programme is doing better (74% UTQ). The management indicated to the panel that a new university-wide scheme ('UTQ 2.0') has just been launched to deal with the relatively low percentages in programmes like BIL and MIL. During the interviews, students of both programmes indicated that they are satisfied with the didactic skills of lecturers. Students appreciate that lecturers address them in a personal way and encourage them to ask questions. Furthermore, they value that lecturers experiment with new, student-centered teaching and assessment methods.

Once or twice a year lecturers share best practices during a 'lecturers day'. This helps to keep staff – who also teach in other WU programmes – informed on developments in the BIL and MIL programmes. Nonetheless, the programme management, quite understandably, finds it challenging to ensure that all staff involved are sufficiently aware of the specific focus of BIL and MIL. A number of measures are considered to enhance coherency.

Currently, the student-staff ratio for both the bachelor's and master's programmes is 14:1, which is appropriate for the intensive teaching methods that BIL and MIL offer. Nonetheless, staff members report an increasing workload. Growing numbers of students at WU mean that staff members experience a high teaching burden that comes at the expense of their dedicated research time. Thesis supervision in particular takes up more and more time. Currently, staff members receive 20 hours for supervising a bachelor's student and 50 hours for a master's student. The panel established that the issue of increasing teaching-loads has the attention of the programme management and Executive Board of the university. Funds are being made available to hire additional staff, including dedicated teachers without (or with little) research time.

### **Considerations**

The panel concludes that the curriculum, teaching-learning environment and staff of the BIL and MIL programmes enable students to realise the intended learning outcomes. Both curricula are well-designed and sufficiently coherent, with five learning trajectories in the bachelor's programme and three specializations in the master's programme giving direction to the course content. At the same time, the curricula offer students quite a lot of freedom in designing their individual study path.

The content of the curricula is a good reflection of the current state of affairs in the domain of international land and water management. A particular strength is the high level of internationalisation, which is apparent from the composition of the student population, the course content and the high (and very valuable) exposure of students to international fieldwork. The links to professional practice have been further strengthened since the 2012 assessment, with the curricula now containing many opportunities for students to practice their professional skills. The panel particularly appreciates the inclusion of an internship in the bachelor's programme and the professional skills-driven *Sustainable Land and Water Management in Spain* course in the master's programme, which is particularly rich in learning. At master's level, the use of five professional

profiles is an attractive way of steering curriculum content and ensuring a good fit with the labour market.

The close connections to practice do not detract from the programmes' academic orientation. Both curricula are clearly research-led, with the research of the relevant WU Chair Groups feeding into the course content. As is common in similar programmes elsewhere (e.g. in Europe), BIL and MIL students find it difficult to engage and contextualize practical study with theory and literature. The panel feels that this is something for the programmes to be aware of and take into consideration in course design. In the panel's experience it is helpful to gradually build students' confidence by consistently addressing theory and including short theory-led exercises throughout the courses. Academic writing is another aspect that could receive more attention.

The teaching-learning environment of the programmes is varied and rich, with ample attention for intercultural diversity and to establishing close ties between staff and students. There is an adequate number of contact hours and teaching methods are relatively small-scale and increasingly innovative. An aspect to address is that group work is not always used in the most effective way. Both programmes have a varied system of student guidance, in which study advisers play an important role. All-in-all, the panel is convinced that both programmes offer students a good environment for developing their personal talents. The effects of excessive growth are a WU-wide concern. The panel hopes that the current atmosphere and level of small-scale education can be maintained even if student numbers increase further as a result of internationalisation.

The panel found that the teaching staff of the programmes is motivated and qualified. Lecturers are experts in their fields and have international experience. The increasing workload of staff members requires intensive monitoring. The panel strongly feels that staff numbers should reflect the growing student numbers.

### **Conclusion**

*Bachelor's programme International Land and Water Management:* the panel assesses Standard 2 as 'good'.

*Master's programme International Land and Water Management:* the panel assesses Standard 2 as 'good'.

### **Standard 3: Student assessment**

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

### **Findings**

#### *System of assessment*

The panel established that WU has a sound assessment policy. In 2017, WU renewed its vision on education alongside its education assessment policy. This assessment policy defines why and how WU assesses and how the roles and responsibilities are distributed. Its goal is to generalize assessment rules and policies and to make them transparent to both lecturers and students.

The system of assessment that is in use within the International Land and Water Management programmes takes the WU-wide policy as its starting point. To ensure that tests are valid, an assessment strategy is drawn up for each course, linking the course specific learning outcomes to assessment methods. The assessment strategies make clear how and when a learning outcome is assessed, who is involved in assessing students and how the final grade is determined. By publishing the assessment strategies in the Study Handbook, as well as in the study guide of individual courses, the programmes ensure that students are well aware of what is expected of them. The Programme Committee keeps track of whether the ILOs for the programme as a whole are covered in the courses, and that these learning outcomes are assessed at a sufficient level. According to the panel, an



appropriate next step would be to also draw up assessment plans at programme level, linking the ILOs to learning goals, teaching and assessment methods at course level. Also, the panel would expect to see more alignment between the teaching philosophy of the bachelor's programme ('concentric and action learning') and the system of assessment. It encourages the programme to regularly evaluate whether its assessment strategies are appropriately linked to this educational philosophy.

Course examiners are responsible for test design and checking test results. To enhance reliability, test designs are usually developed by teaching teams. For the thesis and internship, rubrics are used to score results. The panel notes that this practice could be expanded to other courses that include written assignments, particularly at bachelor's level. In the master's programme it is already more common for other courses to use rubrics. Nonetheless, students feel that the rubrics do not always automatically lead to objective grading, as individual lecturers use the rubrics in different ways. The panel agrees with students that this is something for the programme to look into. Following grading, students are enabled to inspect their exam results and receive individual feedback, which helps them learn from mistakes. Overall, the panel finds that there is sufficient attention for the validity, reliability and transparency of assessment.

The panel established that the programmes use a range of assessment methods. This includes written exams, individual or group reports and presentations. Most, but not all, courses use more than one assessment method to accommodate different learning styles of students. An opportunity for further improvement that was identified by students is to introduce more written assignments, such as essays and papers. This would help students to practice their writing skills in preparation for the thesis. According to the panel written assignments are also a good way of encouraging students to discuss problems in a more conceptual way and engage with theory. Bachelor's students would also like to receive (more) individual feedback on written assignments. Master's students specifically mentioned that they would prefer to receive feedback on the final version of written assignments, not just on first drafts, as is now the case. The panel agrees that individual feedback (although labour-intensive for staff) is a powerful tool for enhancing students' learning process.

The panel concludes that staff and students are generally pleased with the assessment procedures and quality of examination. In the student chapters and interviews, students also made a number of suggestions for further improvement. Some bachelor's students feel that assessments could generally be more challenging and do not always address the needs of the better students. A related issue that was raised by both bachelor's and master's students is that the practice of giving collective grades for group work leaves individual students with little opportunities to distinguish themselves. Although some courses already include individual assignments or differentiated grades for group assignments, students would prefer to see this practice adopted in more courses. The panel understands and sympathizes with these comments and encourages the programmes to look into ways of accommodating better performing students. It was pleased to learn that the management is currently considering the option of more broadly introducing grade differentiation in group work.

During the site visit, the panel studied assessments of a number of sample courses at bachelor's and master's level. It found that these tests are generally well aligned with the learning goals and teaching methods. The overall level of the exams is adequate, but some exams could be of a more challenging level, in order to fully address the higher cognitive levels. The assessment reflects the content that was discussed during the course and sufficiently addresses the relevant cognitive levels.

#### *Internship and thesis assessment*

Bachelor's and master's students complete both an internship and a thesis. In the bachelor's programme, these curriculum components are interlinked, while in the master's programme they are separate courses. The potential concern of the interlinked bachelor's thesis and internship resulting in students being (to a minor extent) rated twice for the same work, is mitigated by the fact that both are considered and graded separately based on different learning outcomes. The thesis rather than the internship is seen as central to the successful completion of the programmes. For the

bachelor's programme internship and thesis guidelines are set out in the Bachelor Completion guide. Internships are jointly supervised by the external host supervisor and the internal WU assessor, and assessed through a standardized assessment form and rubric. The WU assessor is responsible for the assessment and uses the input of the host supervisor. A particular issue is that host organizations are not always familiar with Dutch grading practices and tend to propose very high grades for internships. This is to some extent, but not fully, balanced out by the internal WU assessment. Theses are always assessed by two assessors: the supervisor(s) and an independent examiner (second reader). These assessors jointly fill out a standardised, WU-wide assessment form, which covers a number of different aspects. The most important are the student's research competence (40-50% of the final mark for BIL, 30-40% for MIL) and the thesis report itself (40-50% of the final mark for BIL, 50-60% for MIL). Bachelor's students are also assessed on their participation in thesis rings and the presentation of the thesis (10% of the final mark), while master's students are additionally assessed on their performance in the colloquium (5% of the final grade) and the final examination (5% of the final grade). A rubric helps assessors to score the various aspects appropriately.

From the documentation and interviews the panel concluded that staff and students are generally satisfied with the (procedures for) thesis assessment. An opportunity for further improvement that was described in the self-evaluation reports is to attach a copy of the thesis rubric to the thesis assessment form, thereby enhancing the transparency of the assessment. Generally speaking, the level of individual feedback is higher in the master's programme than in the bachelor's programme. A topic that the panel raised during the interviews concerned the WU-wide practice of scoring the thesis process ('research competence') alongside the outcome ('thesis report'). Without wanting to pass an overall judgment on this practice, which is known to have upsides as well as downsides, the panel does wish to note that the process is given quite some weight, especially in the bachelor's programme. The panel was somewhat surprised to learn that, at bachelor's level, aspects such as attitude and time management skills have equal weight to research design and critical discussion of results. This is something that the programme may wish to reconsider.

A further comment concerns the variations in thesis assessment procedures that can be found across the WU Chair Groups. While the general outlines of the assessment are standardized, the panel learned that details can be filled in at Chair Group level. A prominent example is that, within a general range set by the Examining Board, Chair Groups are at liberty to define the weight they attach to the different components of the assessment. The panel furthermore observed differences between Chair Groups in whether they have implemented thesis rings as a feedback/supervision tool, or check theses for plagiarism. The panel feels that it would be preferable for all Chair Groups to adopt similar supervision and assessment mechanisms in order to avoid inequalities for students.

A general issue that needs to be addressed is the fact that the assessments of both assessors are recorded on a single assessment form. To enable external reviewers to establish that both readers have independently phrased their assessment, it is preferable to have each assessor fill out a separate form and administrate both forms. A general recommendation that the panel would like to offer is to further streamline the thesis process by digitalisation of the subsequent steps, from start to finish.

After studying a sample of bachelor's and master's theses and the associated assessment forms, the panel concludes that it largely agrees with the assessments and grades given by the supervisors. In some cases these were a little higher than the grades that the panel would have given, but always within a reasonable margin. The grades are sufficiently substantiated by qualitative comments. An aspect that should be improved is that the signatures of assessors are sometimes missing on the forms.

#### *Examining Board*

At WU there are four Examining Boards (EBs), each responsible for the assurance of the quality of examination of a group of related degree programmes. The Executive Board appoints EB members and at least one member is independent (not affiliated to the programmes). For each course a



member of the lecturing staff is appointed as examiner by the responsible EB. The examiner is responsible for the assessment strategy of the course.

Part of the responsibilities of the EB is to check whether the individual study programmes of students cover all of the ILOs, thereby assuring that students have achieved the intended end level upon graduation. The panel is convinced that the EB does this to its best ability. Another important part of the EB's assignment is to annually review samples of final products in order to safeguard the end level of the programmes under its responsibility. To ensure the quality of assessment, the EB periodically visits the Chair Groups that are involved in the teaching. Prior to these visits, which generally take place every four to five years, a delegation of EB members accompanied by an external assessment expert checks a sample of theses and internship assessments, whose validity, reliability and transparency they later discuss with representatives of the Chair Groups. Where necessary, the EB proposes improvements. The panel is not aware of any specific recommendations that were made to the Chair Groups involved in the BIL and MIL programmes. Currently, the EB does not periodically verify that the programmes as a whole sufficiently cover all of the ILOs. During the site visit, EB members indicated that they hope to add such an annual check to the EB's responsibilities in the near future. This is a development that the panel would applaud.

Although the panel has no particular reasons for concern with respect to the quality of assessment in these programmes, it does note that the current university-wide system of quality assurance poses some challenges. To start with, there is considerable distance between the EB and the Chair Groups, which operate with a large measure of autonomy. The limited means that were available to the EBs over the reporting period meant that these may have lacked agency in properly streamlining procedures across Chair Groups and following up on prior recommendations. An additional issue for WU to consider is that the current system does not seem to allow for taking a snapshot of the assessment quality in a certain programme at a certain moment. Programmes such as those in International Land and Water Management rely on a substantial number of Chair Groups, which are all visited at different times and (even) by different Examining Boards. The panel was very pleased to learn that the Executive Board of WU is doubling the resources for Examining Boards as of 2019. Even so, it does advise the university to carefully consider how these resources can be used to their optimal effect.

### **Considerations**

Both programmes have developed an adequate system of assessment, which is based on the WU-wide assessment policy. The assessment strategies at course level pay sufficient attention to the validity, reliability and transparency of examinations, for example by jointly developing and peer reviewing tests, by using standardized thesis forms and rubrics and by clearly communicating assessment procedures and criteria to students. Some particular aspects, such as the consistent use of rubrics, deserve further improvement. The programmes may also wish to draw up overall assessment plans and enhance the level of individual feedback given to students, especially on written assignments. Sample tests studied by the panel indicate that the overall level of assessment is adequate.

The procedures for assessing the final product of the programmes, the thesis, are clear and the assessment itself is sound. The panel does recommend reconsidering the current practice of giving equal weight to the process and outcome in the assessment of bachelor's theses. Also, the panel would like to see a further streamlining of the procedures across Chair Groups. Finally, the panel advocates the university-wide implementation of a digital assessment system in which the subsequent steps in the thesis process are fully automated.

The panel established that the Examining Board safeguards the overall level of assessment in the programmes to the best of its abilities. Increasing the capacity of the EB, as is the intention of the Executive Board, could help to strengthen its agency in relation to the rather autonomous Chair Groups. Nonetheless, the panel feels that the central university should also critically reconsider whether the design of the current quality assurance system optimally suits its purposes.

## Conclusion

*Bachelor's programme International Land and Water Management:* the panel assesses Standard 3 as 'satisfactory'.

*Master's programme International Land and Water Management:* the panel assesses Standard 3 as 'satisfactory'.

### **Standard 4: Achieved learning outcomes**

The programme demonstrates that the intended learning outcomes are achieved.

## Findings

### *Theses*

Prior to the site visit, the panel studied a sample of fifteen recently completed bachelor's theses. The panel is generally impressed with the level and content of these theses. It concludes that the subject choice in the theses matches the broad focus and multi/interdisciplinarity of the domain of International Land and Water Management. Furthermore, it is clear from the theses that students are being exposed to terrific opportunities for real-world empirical research. In many ways, the BIL theses stand out when compared to the theses completed by students of similar programmes. An important strength is that the theses are all consistently real-world and problem-facing. Moreover, the panel notes that the thesis format requires a high level of skills in finding, collating, analysis and synthesizing primary data, encourages the use of qualitative and quantitative data and welcomes and accommodates a social-technical / interdisciplinary view of land and water. Aside from these major strengths, the panel also identified some minor points of improvement. These concern the sometimes rather basic statistical skills and general numeracy of students, as well as their hesitance to fully engage with theory, which – to be fair – is a tall order, especially at bachelor's level. Although generally pleased with students' English proficiency, the panel feels that documents could be presented in a somewhat more professional manner, especially with respect to the graphics that are included. Also, it feels that the guidelines for the page count (30-60 pages) could be adhered to more strictly, as many of the documents were rather lengthy. All in all, however, the panel is fully convinced that students achieve the intended learning outcomes.

Largely the conclusions on the bachelor's theses also apply to the fifteen master's theses that the panel studied. These show major strengths that are quite similar to those of the bachelor's theses and mainly have to do with the fact that all students do field work, which equips them with highly valuable skills that students of similar programmes do not necessarily have. The panel did find that there are some gaps in the use of theory, as intended in the social sciences, in the sense that students generally do not relate their research findings to the literature of environmental change which as mentioned is often perspectival. In the panel's opinion, however, this should not be seen as a limiting weakness. As was mentioned above, the field of environmental change is intrinsically difficult to 'get right' in terms of the use of theory, not just for students but also for more senior researchers. The panel's comment on the use of theory, therefore, does not take away from the fact that students clearly achieve the very distinctive, subject-area appropriate intentions as expressed in the ILOs.

### *Position of graduates*

The position of graduates after completion of the programmes underlines that students achieve the ILOs. Though the panel is aware that it is currently not customary for bachelor's graduates to enter the labour market, it feels that BIL alumni would actually fare well in the international professional field. Already at bachelor's level students accumulate knowledge and skills that qualify them for many positions in international land and water management. (It is the common practice amongst employers for a master's qualification that shapes this need for further training). Therefore, and as it stands, a large majority of alumni choose to continue their studies at WU. They can either enrol in the master's programme International Land and Water Management with its similar interdisciplinary, generalist approach or in a more specialized master's programme, such as Geo-Information Science,



Development and Rural Innovation or Climate Studies, which all offer unconditional access. Students generally perform well in master's programmes.

The panel established that master's graduates are highly employable. They usually find employment at an appropriate level within six months after graduation, often in consultancy and advisory positions (almost 50%) or applied/fundamental research (27%; 16% start a PhD project). The panel was informed that the relatively small percentage of students who pursue a PhD after graduation can be explained by the currently rather limited funding opportunities for PhD research in relevant fields. Staff also mentioned that it is quite common for graduates to start a PhD after first gaining a few years of work experience. International students commonly return to their country of origin and previously held job. Master's alumni told the panel that the programme prepared them well for the labour market. Particular aspects that they profit from in their day to day working life include the fact that they have learned to approach complex problems from a multitude of perspectives and know how to build bridges between different groups of stakeholders. In turn, employers of graduates, as represented by the EAC, indicated to the programme that they are satisfied with the performance of graduates. Employers note that the programme's interdisciplinarity has much added value in preparing for the everyday reality of international land and water management projects.

A general WU-wide observation is that efforts could be made to establish more formal alumni policies at programme level. The panel noticed that existing alumni relations are mostly informal. Even so, the panel was glad to hear that, from year 1 onwards, alumni are regularly invited to take part in teaching in order to make students aware of labour market perspectives. During the site visit, alumni indicated that they would like to be even more closely involved.

### **Considerations**

Both the sample theses that were studied by the panel and the position of graduates strongly emphasize that students achieve the intended learning outcomes of the programmes. Students produce an impressive range of real world and problem facing final products. In the panel's opinion the delivery of a whole cohort of both bachelor's and master's students with highly relevant field-informed skills makes the BIL and MIL programmes stand out when compared to other programmes worldwide. Graduates of the bachelor's programme are successful in associated master's programmes, while graduates of the master's programme quickly find employment in relevant positions. Alumni generally feel that the programme has provided them with a solid foundation from which they can benefit in their respective careers.

### **Conclusion**

*Bachelor's programme International Land and Water Management:* the panel assesses Standard 4 as 'good'.

*Master's programme International Land and Water Management:* the panel assesses Standard 4 as 'good'.

## **GENERAL CONCLUSION**

The panel notes that the two programmes in International Land and Management were qualified as (near) top programmes in the 2012 assessment. Six years later, this qualification still holds. Students and staff clearly feel proud to be part of a domain in which WU has a deservedly very strong reputation. Also, they are committed to continuously improving the quality of education, keeping the programmes in tune with the grand challenges of the 21st century and with developments in the professional and academic field. An aspect that the panel particularly appreciated is BIL (and MIL's) commitment to delivering highly employable 'T-shaped' graduates, who are generalists as well as specialists. By enabling students to recognize different perspectives and mobilize various types of available expertise, the programmes clearly contribute towards solving complex land and water management problems.

So far, the programmes do not seem negatively affected by the university-wide growth in student numbers, but that could change, especially now that the bachelor's programme opened its doors to international students. One overall recommendation that the panel would like to offer is to carefully plan for (and when necessary to cap) further growth in order to maintain the high quality teaching-learning environment that the programmes currently offer students.

### **Conclusion**

The panel assesses the *bachelor's programme International Land and Water Management* as 'good'.

The panel assesses the *master's programme International Land and Water Management* as 'good'.



## APPENDICES



# APPENDIX 1: INTENDED LEARNING OUTCOMES

## ***Bachelor's programme International Land and Water Management***

After successful completion of the programme, students are expected to be able to:

*Domain specific knowledge and understanding and applying that knowledge and understanding:*

1. understand and apply the aspects of agro-ecological systems and its interlinked components, including soil, water, plants and derived products; and land and water related technical infrastructures to manage these natural resources;
2. understand the social-economic, legal, institutional and political contexts of land and water management;
3. combine basic knowledge of social and biophysical sciences with knowledge of project and design processes and use this combination to address issues regarding international land and water management;
4. distinguish the various stakeholders and analyse their interests and influence in land and water contexts;
5. distinguish and analyse the human challenges in the world with regard to the use, distribution and management of land and water resources in the world, such as poverty alleviation, achieving food security, preventing or mitigating conflicts and natural hazards and disasters;

*Scientific learning outcomes (research)*

6. formulate a problem definition, research objective, and research questions, resulting in an adequate research design, in the domain of international land and water management (research design under supervision);
7. apply appropriate methods and techniques to collect, analyse and interpret data from literature and empirical research in the domain of international land and water management (conduct a research or design project under supervision);
8. apply scientific knowledge, individually and in teams, together with relevant stakeholders of different backgrounds and nationalities, for designing land and water management alternatives at a technical, organisational and / or institutional level;

*Learning outcomes with respect to reflective learning and personal development:*

9. communicate their findings in a clear and concise manner, both in writing and verbally, geared toward various audiences;
10. recognise and describe intra- and intercultural phenomena, place them in the context of frameworks for analyses, and to have developed or be developing coping mechanisms. They should recognise several frameworks for analysing cross-cultural differences and apply these to (presented) intercultural incidents, incidents the graduates have experienced, and to the cultural backgrounds of fellow students;
11. apply a problem oriented and interdisciplinary attitude;
12. reflect critically on personal competences as well as on problems, theories and research results in the domain of international land and water management;
13. acknowledge the ethical and value-driven aspects of research and intervention strategies, and the various roles of the specialist in the domain;
14. design and plan their own learning path and define their own roles in relation to the world's major human challenges.

## ***Master's programme International Land and Water Management***

After successful completion of the programme, students are expected to be able to:

1. apply knowledge on scientific paradigms and theoretical approaches to land and water management issues;



2. formulate a problem definition, research objective, and research questions, resulting in an adequate research design in the domain of international land and water management (research design);
3. apply appropriate methods and techniques to collect, analyse and interpret data from literature and empirical research in the domain of international land and water management (carry out a research or design project individually);
4. apply interactive approaches with stakeholders and actors at the respective levels for different agro-ecological systems;
5. analyse policies and policymaking processes, the institutional contexts and the multi-faceted consequences of interventions in land and water management;
6. propose interventions for alternative management systems for land and water issues at local and watershed level;
7. have developed a cross-disciplinary attitude;
8. function in multidisciplinary and multicultural teams or groups in complex land and water management contexts;
9. communicate their research or design findings convincingly in a clear and concise manner, both in writing and verbally, geared toward various audiences with different backgrounds and nationalities;
10. reflect critically on personal competences and also on problems, theories and research results in the domain of international land and water management;
11. acknowledge and reflect on the ethical and value-driven aspects of research and intervention strategies, and the various roles of the specialist in the domain.

#### *Specialisation A: Sustainable Land Management*

After successful completion of the specialisation, Sustainable Land Management graduates are expected to be able to:

- analyse and evaluate, in a cross-disciplinary manner, the processes, drivers and consequences of land degradation, and predict and evaluate the effects of interventions;
- analyse and evaluate how physical and socio-economic aspects can be investigated in an integrated way, and how this knowledge can be applied for development purposes.

#### *Specialisation B: Water, Society and Technology*

After successful completion of the specialisation, Water, Society and Technology graduates are expected to be able to:

- analyse and evaluate, in a cross-disciplinary manner, different forms of water use and water resources management strategies applied at field, scheme and catchment level by different stakeholders;
- analyse and evaluate, interactively with stakeholders, institutional and infrastructural designs for sustainable irrigation and water management interventions in a cross-disciplinary manner.

#### *Specialisation C: Adaptive water management*

After successful completion of the specialisation adaptive water management graduates are expected to be able to:

- to critically reflect on different definitions of integrated and adaptive water management;
- apply theoretical concepts in the analysis of adaptive water management issues;
- propose and to critically evaluate adaptation strategies and innovations.

# APPENDIX 2: OVERVIEW OF THE CURRICULUM

## Bachelor's programme International Land and Water Management

	Period 1 September – October	Period 2 November – December	Period 3 January	Period 4 February	Period 5 March – April	Period 6 May – June/July
<b>YEAR 1</b>	MO PEN 10503 Ecology I WRM 12309 Orientation on International land and water management AF	AEP 10303 Intro Economics CPT 15303 Science, technology & society HWM 10303 Water 1 SGL-12803 Introduction to Soil Geography 1	MAT-14903 Mathematics 2 MAT-15003 Mathematics 3	AEW 23803 Water 2 SOQ 22803 Soil 2	CPT 11806 Technology, development and natural resources HWM 21806 Hydraulics and hydrometry	SLM 10806 Design land & water management 1 CSA 10306 Cropping systems & knowledge of crops
<b>YEAR 2</b>	MO WRM 10306 Irrigation & water management (International excursion) AF SLM 10306 Land degradation and remediation (International excursion)	SLM 20306 Land and water engineering MAT-15303 MAT-15403 Statistics 1& 2	GRS 10306 Introduction geo-information science	DEC 20306 Rural households livelihood strategies	WRM21312 Design in Land & Water Management 2 SDC 22806 Natural resource governance in a complex world	YRM 21306 Research methodology for human - environment interactions
<b>YEAR 3</b>	MO Free choice or minor AF The internship and thesis combination can be followed in period 1,2 & 3 or period 4, 5 & 6, depending on free choice or specific minors.	YEI 80812 Thesis (combined with Internship including international fieldwork experience) YEI 70318 BSc Internship (combined with Thesis including data collection)		Joint round-off phase: Writing, Peer reviewing, Presentation and defence.		

Integration courses

Natural science courses

Social science courses



**Master's programme International Land and Water Management**

	Period 1 September – October	Period 2 November – December	Period 3 January	Period 4 February	Period 5 March – April	Period 6 May – June/July (not AM-PM but 1st & 2nd half)
MIL 1	MO Free choice	SLM 30806 Land Degradation & Development	SLM 32306 Sustainable Land Management Policies	SLM 31806 Erosion Processes & Modelling	SLM 31306 Fundamentals of Land Management	WRM 60309 Sustainable Land and Water Management (Spain)
	AF SLM 30306 Issues and Concepts in International Land and Water Management	Free choice	WRM 33806 Gender and Natural Resources or QUALUS PPS 30306		WRM 32306 Research Approaches to Land and Water Management	YMC 60300 MOS Modular Skills Training
MIL 2	SLM 80336 Thesis Soil Physics and Land Management					Choose one of the following: XXX 80424 second thesis or XXX-70324 internship or Minor in courses

- Mandatory common courses
- Mandatory specialisation courses
- Restricted optional courses



## Specialisation A – Sustainable Land Management

Course code	Course title	credits	study phase	period	day part
SLM 30806	Land Degradation & Development	6 CS	M1	2	AM
SLM 31306	Fundamentals of Land Management	6 CS	M1	5	AM
SLM 80336	Thesis Soil Physics and Land Management	36 CS	M2		

### Choose 1 from RO1

PPS 30306	Quantitative Analysis of Land use Systems (QUALUS)	6 RO1	M1	3	block
SLM 32306	Sustainable Land Management Policies	6 RO1	M1	3	block
WRM 33806	Gender and Natural Resources	6 RO1	M1	3	block
SLM 31806	Erosion Processes and Modelling	6 RO1	M1	4	block

### Choose a second thesis/internship:

XXX-80424	Second thesis/ Internship XXX-70324	24 RO2	M2		
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## Specialisation B - Water, Society and Technology

Course code	Course title	credits	study phase	period	day part
WRM 34806	Irrigation and Development	6 CS	M1	2	AM
WRM 34306	Water System Design for Water Use from Multiple Sources	6 CS	M1	2	PM
WRM 80436	Thesis Water Resources Management	36 CS	M2		

### Choose 1 course from RO3

WRM 33806	Gender and Natural Resources	6 RO3	M1	3	block
WRM 31306	Political Ecology of Water	6 RO3	M1	4	block
WRM 30806	Water Delivery	6 RO3	M1	5	AM

### Choose a second thesis/internship:

XXX-80424	Second thesis/internship XXX-70424	24 RO4	M2		
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## Specialisation C - Adaptive Water Management

Course code	Course title	credits	study phase	period	day part
WRM 34806	Irrigation and Development	6 CS	M1	2	PM
WRM 34306	Water System Design for Water Use from Multiple Sources	6 CS	M1	4	block
WSG-80436	Thesis Water Systems and Global Change	36 CS	M2		

### Choose 1 course from RO5

WSG 35306	Modelling Future Water Stress	6 RO5	M1	2	AM
WSG 35806	Climate smart agriculture	6 RO5	M1	3	block
ENP 37306	Water Governance, Concepts and Practices	6 RO5	M1	3	block
SDC 35306	Natural Hazards and Disasters	6 RO5	M1	5	M
WRM 33806	Gender and Natural Resources	6 RO5	M1	3	block

### Choose one second thesis/internship/minor:

XXX-80424	Second thesis/ internship XXX-70824	24 RO6	M2		
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## APPENDIX 3: PROGRAMME OF THE SITE VISIT

### **BSc and MSC International Land and Water Management (BIL/MIL)**

<b>15 January 2019</b>		
8.45	11.15	Arrival of the panel, Preparation BIL and MIL
11.15	12.00	Interview with management (including delegation of Programme Committee)
12.00	12.45	Students BSc BIL
12.45	13.30	Lunch and deliberations panel
13.30	14.15	Teaching staff BIL
14.15	14.20	Mini break
14.20	15.05	Students MIL
15.10	15.15	Break
15.15	16.00	Teaching staff MIL
16.00	16.30	Examining Board and Study Advisor(s)
16.30	16.45	Break
16.45	17.15	Alumni
17.15	17.45	Internal deliberation panel, short recap day 1

<b>16 January 2019</b>		
8.45	10.00	Deliberations panel and documentation review
10.00	10.45	Final interview with management
10.45	12.00	Deliberations panel and formulating preliminary findings and conclusions
12.00	13.00	Lunch for the panel
13.00	13.30	Feedback of preliminary findings and conclusions BIL and MIL

## APPENDIX 4: THESES AND DOCUMENTS STUDIED BY THE PANEL

Prior to the site visit, the panel studied fifteen theses of the bachelor's programme International Land and Water Management and fifteen theses of the master's programme International Land and Water Management. Information on the selected theses is available from QANU upon request.

During the site visit, the panel studied, among other things, the following documents (partly as hard copies, partly via the institute's electronic learning environment):

### BSc International Land and Water Management

- Land and Water Engineering (SLM-20306)
- Natural Resources Governance in a Complex World (SDC-22806)
- Design in Land & Water Management 2 (WRM-21312)

### MSc International Land and Water Management

- Integrated Water Management (WSG-33806)
- Water System Design for Water Use from Multiple Sources (WRM-34306)
- Sustainable Land & Water Management in Spain (WRM-60309)