NVAO • THE NETHERLANDS

INITIAL ACCREDITATION

ACADEMIC MASTER
WATER AND SUSTAINABLE DEVELOPMENT
IHE Delft

FULL REPORT
30 June 2021

Content

1 Peer review

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

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

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

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

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

NVAO takes an accreditation decision on the basis of the full report. The NVAO decision can be positive, conditionally positive or negative. Following a positive NVAO decision with or without conditions the institution can proceed to offer the new programme.

Both the full and summary reports of each peer review are published on NVAO's website www.nvao.net. There you can also find more information on NVAO and peer reviews of new programmes.

Because of COVID-19 temporary measures apply for this peer review.

2 New programme

2.1 General data

Institution	: IHE Delft
Programme	: MSc Water and Sustainable Development
Mode of study	: fulltime
Degree	: Master of Science
Tracks	: Water Hazards, Risks & Climate; Water & Health; Water, Food & Energy; Water Resources & Ecosystem Health
Location	: Delft
Study load	: 68 EC[1]
Field of study	: Interdisciplinary ('sectoroverstijgend') (as confirmed by the panel)

Joint programmes	: Limnology and Wetland Management (LWM, joint degree), Delft, Vienna (Austria) and Njoro (Kenya);
-	Water Cooperation and Diplomacy (WCD, multiple degree) Delft, Oregon (USA), San José (Costa Rica);
-	Water and Hydropower Engineering (WHE, multiple degree), Delft, Kuala Lumpur, Malaysia.

2.2 Profile

The MSc Water and Sustainable Development is an interdisciplinary programme, aimed at talented and ambitious early- and mid-career water professionals, mainly from countries in the global South. The programme covers the broad field of water, from drinking water and sanitation to ecosystems and climate hazards, and combines a similarly broad range of disciplines, such as engineering, hydrology, social science, digital innovation and environmental science. Students follow a customized study trajectory tailored to their professional needs, either deepening their disciplinary knowledge or broadening their knowledge to adjacent water fields relevant for their career.

2.3 Panel

Peer experts

- Prof. dr. Isa Baud (*chair*), University of Amsterdam, Faculty of Social and Behavioural Sciences;
- Prof. dr. Jaap Kwadijk, University of Twente, Faculty of Engineering Technology;
- Dr. Karin Rebel, University of Utrecht, Faculty of Geosciences, Senior Fellow Center for Academic Teaching;
- Aldo Zamarroni Peralta (*student*), Wageningen University, MSc student International Land and Water Management.

Assisting staff

- Dr. Marianne van der Weiden, secretary
- Drs. Henri Ponds, NVAO policy advisor and process coordinator

[1] European Credits

Site visit
19-20 April 2021 (online) and 1 June 2021 (joint programmes, online)

3 Outcome

The NVAO approved panel has reached a positive conclusion regarding the quality of the academic Master Water and Sustainable Development offered by IHE Delft. The programme complies with all standards of the limited NVAO framework. The panel presents a positive advisory report to NVAO for decision making.

The Master programme Water and Sustainable Development targets an international group of early- and mid-career professionals in the broad field of water (from drinking water and sanitation to ecosystems and ecological hazards) and provides them with a well-designed interdisciplinary master programme to deepen and broaden their knowledge and skills. The programme offers four tracks, within which students can choose a specific profile (engineering, governance, environment or digital innovation). Based on their background and their career ambitions, students define their study path with the help of a coach and select modules in a track and a thesis topic. Between the modules, the programme offers so-called mixed weeks, which entail not only exams, but are utilized mainly for students to reflect with their coach on their personal learning goals as part of a student portfolio and to learn generic academic skills such as academic writing, group dynamics and presenting. The skills learned are then applied in the following module.
As soon as students are admitted to the programme they are assigned a coach who helps them to select an appropriate set of modules and advises them to study online preparatory courses if any knowledge gaps exist. The system of coaches and the use of portfolios are strong instruments to guide students in their individualized study paths and should be fully implemented, based on the experiences of staff members who have learned to use them well.
The staff members are well-qualified and have a wide experience across the international water sector, in both academe and professional practice. The didactic toolkit supports them in designing their courses and assessments in a unified way across the institute. Most modules have already made good use of this toolkit and the others are expected to follow.
The Exam Board actively monitors the qualifications of examiners and the quality of the assessment system. The use of external examiners ensures that theses reach levels accepted by the discipline and professional field.
The panel concludes that the Master programme Water and Sustainable Development is a student-centred in-depth programme with strong quality assurance mechanisms for teaching and assessment.

IHE offers three joint programmes: (1) Limnology and Wetland Management, a joint degree programme offered with the University of Natural Resources and Life Sciences (BOKU), Austria, and Egerton University, Kenya; (2) Water Cooperation and Diplomacy, a multiple degree programme offered with the University for Peace (UPEACE), Costa Rica, and Oregon State University (OSU), USA; and (3) Water and Hydropower Engineering, a multiple degree programme offered with the University of Kuala Lumpur (UniKL), Malaysia. The panel has studied written documentation, such as the memorandums of agreement and course descriptions, and held online discussions with the three partnerships to ascertain the level of cooperation and quality assurance. The outcome of this assessment is positive: each joint programme offers a combination of topics and disciplines that cannot be offered by one institute only. The panel feels this is a convincing argument for the joint programmes per se, and also concludes that the programmes are able to provide this added value in practice. The panel recognises that the MSc degrees awarded by IHE in the three joint programmes are formally specialisations of the MSc degree in Water and Sustainable Development.

Standard	Judgement
1 Intended learning outcomes	meets the standard
2 Teaching-learning environment	meets the standard
3 Student assessment	meets the standard
Conclusion	**positive**

4 Commendations

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

1. Interdisciplinarity – The programme provides students with knowledge in the wide domain of sustainable water management and the skills to work on projects in interdisciplinary and multi-cultural teams.

2. Student-centred programme – With the help of a coach students design their own study path based on their background knowledge and their career ambitions. Within one of the four tracks they choose a profile and select a number of modules and a thesis topic.

3. Mixed weeks – Between the modules, there is time for students to reflect with the coach on their study progress and to learn useful academic skills that they can apply and practice in the following module.

4. Didactic toolkit – Teachers use a set of didactic guidelines to design their modules and assessments. This increases the quality, alignment and coherence of the curriculum.

5. Staff – The teachers have a strong international expertise, which is based on both theoretical knowledge and professional practice, coupled with research on applications and innovative knowledge tools. This makes them strong educators in the field of water management.

5 Recommendations

For further improvement to the programme, the panel recommends a number of follow-up actions.

1. Student guidance – Make sure that the available mechanisms (coaches and portfolio) to ensure that students make informed choices when designing their individual study paths are fully implemented and meet student expectations.

2. Benchmark – Use programmes with a strong international student population and inter-disciplinary programmes at other universities (not necessarily oriented towards water specifically) to compare their approach and experiences on generic educational and teaching issues with the IHE programme.

3. Preparatory courses – Urge students to complete the preparatory courses before they start the programme if there are knowledge gaps, and utilize the new role of coaches to emphasise the importance of this.

4. Didactic toolkit – Complete the process of utilising the didactic toolkit in the design of modules and assessment across the programme for complete alignment, and support staff by training them in its use.

5. Assessment committee – Establish an assessment committee under the responsibility of the Exam Board to help the Exam Board to check the quality of module assessments.

6 Assessment

6.1 Standard 1: Intended learning outcomes

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

Judgement
Meets the standard.

Findings, analysis and considerations
The Master of Science programme in Water and Sustainable Development is an interdisciplinary programme, aimed at early- and mid-career professionals with a relevant Bachelor degree and several years of working experience, mostly coming from the global South. The panel appreciates that the programme covers the broad field of water with an associated broad range of disciplines (engineering, hydrology, social science, digital innovation, environmental science). Students are provided with a mix of disciplinary and interdisciplinary knowledge as well as transferrable skills, which will enable graduates to approach complex problems in an academically sound and ethically responsible manner, in multi-disciplinary groups and in multi-cultural settings. The intended learning outcomes describe well the level of the programme as a science- and research-based MSc degree anchored in professional practice. The strength of the programme is that it is by nature a trans-disciplinary programme, that is also strongly inter-and multi-disciplinary because of its breadth and the different disciplines combined in each defined track.

The formulation of the learning outcomes strikes a good balance between specificity and openness, so that they are able to tie in strongly to the diversity of practices and varying contexts found in the global South. They allow students to define individual trajectories during their study programme that match their needs, their educational background, and the demands of their professional working context. This implies that the research results and innovations taught in the programme focus on contextually robust designs that are best applicable in the context in which the students will work afterwards. The explicit attention to learning skills and ethics is a strong component of the learning outcomes.

The points of departure for the set-up of the programme meet the educational philosophy of the institution, as the programme is explicitly designed around a science- and research-based, professional practice-oriented education design, with the students involved in many interactive and hands-on educational processes, with a variety of examples on which to draw from around the world. This also matches the profile of the institution, which is oriented towards training and education of an international pool of young-career water professionals from the global South, as well as doing practice-oriented research and capacity building of institutions in the global South. The link to the discipline and professional field is supported by an International Advisory Group, which reflects on the relevance of the programme for IHE's target groups and strategic goals. It is also linked through the academic staff members who have a wide experience of working in (research and design solution) projects in the global South during their career, and include it in their teaching.

The panel notes that trans-disciplinarity, multi-and inter-disciplinarity are rightly indicated in the learning outcomes. Trans-disciplinarity is defined in the dossier primarily as working with professional and practice organizations concerned with water, but the recognition of

community-based knowledge contributions to the water issues studied at IHE deserves more recognition as well in the context of promoting sustainable development goals designed to reduce inequalities. The variety of the ways in which the concepts of inter-, trans- and multi-disciplinarity are defined within the IHE could usefully stimulate a discussion within the institute, and provide the basis for an institute-wide publication for promoting international discussions, based on a substantial number of research projects and practice-oriented projects of the institute.

The comparisons made with several international programmes (Tufts, Oxford, and Loughborough) are relevant in terms of comparing water-oriented MSc programmes. The panel recommends that, for comparing more generic academic qualifications, other existing programmes could be taken for comparison on their views on trans-and inter-disciplinarity, their approach to MSc thesis work, portfolios, methods of ensuring student-based learning, maintaining staff didactic qualifications, and assessment. Examples should focus on programmes with a strong international student population and inter-disciplinary programmes, preferably with applied research in the global South (e.g. the Master on International Development Studies at the University of Amsterdam, the Master on Environment and Resource Management at the Vrije University of Amsterdam, and programmes at the Wageningen University and Research for international students on development issues).

The panel concludes that the intended learning outcomes are at the level of an MSc programme, clearly express the inter-, multi- and transdisciplinary aims of the programme and tie in with the educational philosophy of the institute. They meet the expectations of the professional field and are formulated in line with international requirements.

6.2 Standard 2: Teaching-learning environment

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

Judgement
Meets the standard.

Findings, analysis and considerations
Curriculum
The educational objectives of the curriculum are well spelled out and systematically documented in the application. The objectives are strongly student-centred, recognizing the variety of the students' expertise, background and interests in the programme, and their expected working situations after completing it; this strengthens the programme's potential for delivering professionals who will have a real impact in their future working environment.

The 68 EC curriculum comprises a set of eight taught modules and a period of thesis research and thesis writing. The first module on Water and Development and the Interdisciplinary project (module 8) are followed by all students. The other modules are grouped in four thematic tracks; within a track, modules are sub-divided into four profiles: engineering and hydrology, management and governance, environment, and digital innovation. The choice of tracks and profiles provides a strong combination of pre-structuring and flexibility. The educational objectives are systematically spelled out in these four tracks of the programme, and in the possible profiles within those tracks, and are monitored by the Programme

Committee. Based on their background and professional ambitions, students select their modules within this framework. The modules are designed to be student-oriented and require students to be (inter-)active in their learning activities and engage with a variety of disciplines and approaches. Typically, each module is coordinated by two staff members from different staff groups, which contributes to the inter-disciplinarity of the curriculum. The skills built up separately in the so-called mixed weeks between modules are utilized in following modules, ensuring application of these skills. The thesis work (8.5 EC thesis proposal and capita selecta, 20 EC thesis) then applies the whole set of knowledge and skills learned. Students develop their thesis proposal in module 9, in parallel to preparatory short courses on research methods. They sign an ethics declaration before the start of their research and are allocated a mentor and a supervisor, who will have regular contact during the research phase. The panel finds that the systematic build-up of the modules in the programme aligns well into a consistent whole. The systematic introduction and proposed use of the didactic tool kit for build-up and alignment of learning objectives throughout the programme is a strength in the application. The panel recognises the use of the didactic tool kit in the majority of modules; those that do not follow that framework should be urged to do so. The IHE can stimulate this by training teaching staff in using the toolkit (as part of – updating - their teaching qualification) and by monitoring its application in the programme build-up.

Admission

In their application, candidates indicate their initial preference for a study track (track / profile combination). Applicants should have an academically strong Bachelor degree in a field that is relevant for their chosen track and profile, at least equivalent to a UK Upper Second Class Honours degree or a GPA score of at least 75% of the scale maximum, and sufficient English language proficiency. Preference will be given to candidates with at least two years of relevant work experience and a clear motivation of how the study will open up career perspectives. Once students are admitted on the basis of their academic capabilities, the process of looking for a scholarship begins. To explore the best study trajectory for their ambitions and to choose specific modules, admitted students interact with a coach, a staff member of their selected track. The outcomes of this process can be seen in the personal portfolio that will guide students through their studies. The coach indicates the scope for choice, based on the student's background, and also advises on the relevance of preparatory courses to fill knowledge gaps. These course are available online and students are advised to complete them before the programme starts. Students are provided with self-tests to assess the outcomes of these preparatory courses. Each learning path is formally endorsed by the Programme Committee. The feasibility is tested on the basis of the pre-requisites at module level.

Student coaching

The admission process is the starting point for the coaches to interact with their students. All students are assigned a coach who supports the student's personal development and provides study advice. Each coach supports 15 to 20 students, in group and individual sessions. Formalizing the system of coaches for each student is work in progress; it is based on the six years' experiences in the current MSc programme in Water Management and Governance. The panel strongly urges the IHE to complete this process soon, and to introduce a system of peer review among staff for establishing standards from practice found among staff members already using the coaching system. Significant steps forward are that the system of coaches is currently becoming formalized under the guidance of the Educational Bureau, providing a 'terms of reference' for teachers, and assessments of staff

applying for coaching positions. This formalisation of the system of coaches should be completed and coaches selected according to the internal assessment system proposed (contributing to the acquirement of an extended university teaching qualification/ UTQ+). The importance of the coaches should be recognized in terms of workload (time allocation) and promotion reviews.

From the start, students define and reflect on their personal learning goals as part of a student portfolio. Time is set aside explicitly for this in the mixed weeks. The panel recognises the portfolio as a strategic instrument for reflection of the student – together with the coach – throughout the programme. It is currently designed to be assessed formatively. The importance of the portfolio could be emphasized by introducing a qualitative summative assessment for its components as well, possibly as part of programmatic assessment (see standard 3).

The panel notes that flexibility within the curriculum pre-supposes excellent guidance for the students to make informed choices, as a good and necessary support to the educational objectives at programme level. For such guidance a variety of mechanisms is in place: strong selection criteria including motivation and guidance on educational gaps (preparatory courses), providing each student with coaches during the whole programme for making informed and reflective choices through the use of a portfolio, and having a Programme Committee assess and approve student choices. The panel considers the recognition of the variety of students and their educational needs, and the student-oriented learning pathways a strength, but observes that it can become a vulnerability if the guidance and support systems do not live up to the expectations. Because the preparatory courses suggested to students accepted for the programme are voluntary, students should be strongly urged by their coach, and incentives suggested, for completing such courses if entering a track in which their educational background shows gaps. The panel trusts that the programme will monitor students' preparatory coursework seriously, because the teaching staff emphasised the importance of adequate prior knowledge for a successful participation in the modules. The system of coaches and portfolio should be fully implemented, learning from experiences in current practice, established in the academic master programme Water Management and Governance. Given the formalisation of the process already in progress, the panel is fully confident that this will be successfully completed.

The number of EC (68) is quite high in relation to the time allocated for the programme. On average students are expected to work 41 hours per week as indicated by the programme description. Although past experience indicates students show high dedication, and do work these numbers of hours, monitoring of students should take possible stress and over-dedication into account, especially as the online-based learning may continue to be extensive in the coming years, due to COVID-19.

Teaching staff

The dossier includes an overview of the more than a hundred IHE teaching and research staff and their substantive and didactical qualifications. The teachers at the IHE have a strong international expertise which is based both on theoretical knowledge and professional practice in the global South and North, coupled with research on applications and innovative knowledge tools which make them a strong body of educators in the water field. The reorganization of the last five years has also added extensively to the number of junior staff members, which is a strength. Guest lecturers play a useful role in addressing specific topics.

The students value the input of guest lecturers not only for their knowledge, but also for the opportunities they provide to build a professional network. The physical constraints during the COVID-19-pandemic have unfortunately restricted these networking opportunities temporarily. Generally speaking, IHE has handled the COVID-19-situation quite well. Students were unavoidably faced with restrictions, but the panel did not hear from students that these compromised the quality of teaching.

Conclusion

Summing up, the panel concludes that the curriculum is interdisciplinary, well-aligned with the programme's learning objectives and truly student-centred, giving students the chance to select modules in a track and profile of their choice, in line with their career ambitions. The expertise of the teaching staff is a strong point, and the implementation of coaching and a student portfolio are well under way. Points of attention are the high study load and the voluntary nature of the preparatory courses. The panel is convinced that the student-centred character of the programme and the coaching system will ensure that these points of attention will be sufficiently monitored. The panel concludes that the programme offers, a strong teaching-learning environment to its students.

6.3 Standard 3: Student assessment

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

Judgement
Meets the standard.

Findings, analysis and considerations
For all parts of the curriculum, an assessment matrix is included in the module plan. The didactic tool used for the whole programme and its modules, provides a clear set of proposed learning outcomes and their alignment throughout the programme. This is a solid infrastructure for student assessment and also provides students with very clear indicators which will be applied. The use of and training for utilising the didactic tool kit should therefore, as mentioned above, be rolled out systematically across the whole programme and teaching staff involved in order to ensure a unifying approach to assessment and its quality standards (validity, reliability, transparency).

More emphasis will be put on progressive testing, with more attention to formative assessment throughout a module. The programme aims to use summative testing for higher level learning objectives (application, analysis, synthesis) through assignments during the module and in the final exam. The distinctions between formative and summative assessments are useful in relation to the learning outcomes specified, supporting the student-centred learning process, but do not seem to be clear yet among all involved. Internal discussions on the meaning of formative and summative assessment would be helpful to create a common level of understanding among staff and students. The programme could consider introducing a system of programmatic assessment, especially of skills, since with the stronger position of formative assessment most elements seem to be in place.

The panel notes a few points of attention. A variety of innovative assessment methods are currently becoming used; aligning them in a unified assessment system will increase their impact. It is important to clearly identify group and individual assessment at the module level, to ensure there is sufficient individual assessment at the programme level. While a certain module can mainly focus on group assessment (i.e. the integration courses), others could include more individual assessment so that the balance remains at the programme level. The question of assessment overload needs to be considered in the alignment between the different modules and within modules, so that both students and teaching staff do not become overburdened with continuous assessments.

The final examination linked to the thesis is sufficiently safeguarded by always including external examiners (i.e. who have not been involved in the thesis supervision); clear criteria have been spelled out for each level of grades across the four indicators chosen (introduction and contextual setting; originality, analysis and interpretation; organisation, style, presentation; creativity, independence, work planning and critical attitude).

The Exam Board takes its responsibilities seriously, and monitors and assesses the updating of staff teaching qualifications at different levels (the university teaching qualification UTQ, including the didactic toolkit, and additional qualifications). External examiners are called upon to assess and maintain the final master level. All assignments and essays are subjected to Turnitin-review to detect any cases of plagiarism. Rules to deal with such cases are spelled out in the examination regulations. Appeals to grades are possible and are organized in a way

that fails can be recovered. The panel advises establishing an assessment committee (under the responsibility of the Exam Board) to help check the quality of module assessments.

The panel concludes that the assessment system is well-aligned with the educational objectives and actively monitored by the Exam Board. The panel has noted some points of attention, such as the fact that assessment forms could be unified more strongly, but the panel is convinced that sufficient mechanisms are in place to safeguard the quality of assessments and the final level outcomes, and that the programme will work proactively on dealing with these issues.

6.4 Degree and field of study

The panel advises awarding the following degree to the new programme: Master of Science. The panel supports the programme's preference for the following field of study: Interdisciplinary ('sectoroverstijgend').

6.5 Joint programmes

IHE offers three joint programmes with partner institutes:

- Limnology and Wetland Management (LWM), a joint degree programme offered with the University of Natural Resources and Life Sciences (BOKU), Austria, and Egerton University, Kenya;
- Water Cooperation and Diplomacy (WCD), a multiple degree programme offered with the University for Peace (UPEACE), Costa Rica, and Oregon State University (OSU), USA;
- Water and Hydropower Engineering (WHE), a multiple degree programme offered with the University of Kuala Lumpur (UniKL), Malaysia.

Students in these programmes follow a predefined trajectory while in Delft. Students spend approximately one third of their time at IHE, Delft, when three partners are involved (LWM and WCD). In the programme with two partners (WHE), students spend about half of their time in Delft (see paragraph 6.5.3 for more details). While in Delft, students participate in the same modules as the regular master students in Water and Sustainable Development.

6.5.1 Eligibility

The panel has ascertained that all partner institutes are recognised as higher education institutions by the relevant authorities of their countries. They are subject to external quality assurance as formalized by their national governments and are formally allowed to cooperate in joint programmes. Joint design and delivery was convincingly demonstrated in the information files and during the online meeting. The terms and conditions of each joint programme are laid down in a cooperation agreement, covering the required topics (denomination of the degree(s) awarded in the programme; coordination and responsibilities of the partners involved regarding management and financial organisation; admission and selection procedures for students; mobility of students and teachers; examination regulations, student assessment methods, recognition of credits and degree awarding procedures in the consortium) and duly signed by the partners involved.

The cooperation with BOKU and Egerton started in 1975 and the joint Master programme LWM has been running since 2012.

The programme WCD with UPEACE and OSU was established in 2015.

The WHE programme with Kuala Lumpur is a young cooperation (first cohort in 2020) whose value will become visible in the next years.

The panel concludes that all joint programmes meet the eligibility criteria.

6.5.2 Standard 1. Intended learning outcomes

The learning outcomes of the joint programmes are not explicitly linked to EQF-level 7 (Master), but the Master level has been discussed between the partner institutions when the joint programmes were developed. The panel has ascertained that all components of the joint programmes are part of accredited Master programmes, with the exception of a research methodology module specifically created for students in the WCD programme at UPEACE.

The intended learning outcomes comprise knowledge, skills, and competencies recognized in the respective disciplinary fields. This became clear during the online meeting, when the panel asked each consortium what kind of needs assessment was done by the involved institutions, to underpin the initiative for starting the joint programme.

Cooperation between the LWM partners started from the professional field's need for a combination of ecology and water engineering: BOKU delivered the ecology part, while IHE joined as partner because of its water engineering background. Egerton joined the initiative because of the interest for this topic in Africa, and its capabilities in organizing relevant fieldwork settings. Since 2014, several evaluation studies have taken place to underpin the relevance of the programme and the alignment between the institutes. The external peer review report confirms that LWM is of great relevance, especially in the context of Africa and other parts of the developing world, where water resource management is often strongly biased towards engineering "solutions" and perceived economic needs with little attention being paid to environmental or conservation issues. The partners are well connected with the professional field and promote the programme in their network. In addition, Egerton assessed the stakeholders' commitment and involves external experts (from the academic discipline or professional field) in the thesis process to give feedback.

WCD has its origin in the ambitions of both the Netherlands Government and the UN-Water family to address peace and conflict prevention in the water sector. The three partners IHE, OSU and UPEACE have UN-affiliations and have as such been asked to take the initiative for developing this programme. WCD mainly targets two types of professionals: diplomats who want to know about the role of water, and people working in water management who have to work with conflicts. Students are drawn from basins with tensions (e.g. in South Asia). Graduates profit from the WCD network. The WCD curriculum incorporates the necessary variety of perspectives to address water security issues. UPEACE offers the diplomacy track, IHE the knowledge on water management and governance, while students learn about conflict management and do their research project at OSU. UPEACE is part of the UN system, which ensures the focus on the needs of the field. The panel feels that WCD is a good example of the added value of a joint programme: none of the institutes is able to provide the desired breadth and scope by itself.

WHE caters to the needs of the growing industry of small scale hydro-power enterprises in Malaysia. An extensive market analysis was done prior to requesting the accreditation of the joint programme by the Malaysian Qualifications Agency (MQA). This market analysis

demonstrated a clear need for professionals in the area of hydro-power development in Malaysia. This explains that the programme – at least in its first years – targets Malaysians only. The programme may be opened up to non-Malaysians if quality and demand criteria are met. The need for hydro-power professionals in Malaysia is confirmed by the fellowships provided by the Malaysian Government to students in the programme. Professionals normally have a hydrology or electrical background, but they need the combined knowledge and additional expertise on river basins for Malaysia's sustainable energy transition. Hydro-power and river basin development play an important role regarding sustainability and coping with climate change. This joint programme will deliver better skilled professionals who are able to combine the two perspectives.

The panel concludes that the intended learning outcomes of all joint programmes are of Master level and comprise the appropriate disciplinary knowledge and skills to achieve them, addressing the needs of the professional field.

6.5.3 Standard 2. Teaching-learning environment

Study programme
All programmes express their study load in European Credits (EC). They are all in the required range of 90-120 EC: LWM has a study load of 120 EC, WCD of 92 EC and WHE of 97 EC.

In their first year, the LWM students start at BOKU in Austria, where they have four months of course work on ecology and limnology (27 EC), prior to coming to IHE Delft. They follow three mixed week courses at IHE Delft to enhance skill development, and participate in IHE's modules 5 to 8, which includes the fieldwork/interdisciplinarity project (total 23 EC). They will then move to Egerton for further coursework on ecology and wetlands (26 EC). In the second year (44 EC), students have the opportunity to follow capita selecta courses offered either in Egerton or, remotely, across the partnership. The research phase can take place at any of the institutes involved and follows the criteria in the Exam Regulations of LWM. As per the Cooperation Agreement (Clause 6.1) "Individual students will sit for their thesis examination at the Party where they are supervised". The panel recognises that the partners within LWM have consistently worked over the years towards integration of their parts of the curriculum, on the basis of annual evaluations of the joint curriculum, leading to concrete improvements. This sets a positive example for other partnerships.

WCD students start their programme at UPEACE in Costa Rica, where they have 4 months of course work (14 EC), including modules on Environment, conflicts and sustainability, and on Water, security and peace. This ensures a broad contextual orientation on water, prior to joining IHE Delft at the start of Module 3. To ensure a smooth transition into the IHE Delft curriculum (34 EC), the students have 2-3 orientation days that cover logistical issues, but also provide them with a recap of main relevant content of IHE's introductory modules 1 and 2. They also receive information about the different thematic tracks so that they can choose which one to follow. In addition, ethics and intercultural training are offered. The WCD students do not participate in IHE's module 8 "fieldwork/interdisciplinary project", but instead are offered a separate module called "Introduction into interdisciplinary research", preparing them for their interdisciplinary courses and collaborative field research project at OSU (44 EC). Superficially, it would seem there is some overlap between courses of the different partners, but because of the large variety of student backgrounds, such recapitulation of important concepts is, in fact, considered beneficial, and even necessary.

Annual exchange of experiences seems to be strongest between UPEACE and IHE. Stronger inclusion of OSU in such exchanges could be beneficial.

WHE students start their programme online with the course 'Hydrology and Hydraulics', which they have to pass before enrolling in Module 1 of the MSc in Water and Sustainable Development programme at IHE. They complete all modules and mixed weeks of the Delft-based MSc programme (up to and including module 8 'fieldwork/interdisciplinary project') and do an extra online module on Environmental Flows delivered by IHE Delft (total 44.5 EC). They then move to Kuala Lumpur for additional specialized Hydro-power courses, field- and groupwork, research methodology and skill development courses, and thesis research (52.5 EC). The research methodology module at UniKL compensates for the 'capita selecta' module offered in Delft, while 'project management' and 'entrepreneurship' are additional competences addressed in a dedicated UniKL module. The panel is aware that WHE is still a very young programme. Cooperation between the partners for supervision and assessment is agreed upon and complementarity of courses seems well taken care of. Full integration between the two parts of the curriculum will have to adapt itself in practice.

The panel concludes that the curricula of the three joint programmes enable the students to achieve the intended learning outcomes. Each programme offers a combination of topics and disciplines that cannot be offered by one institute only. The panel feels this is a convincing argument for the joint programmes and convincingly worked out in the curricula.

Admission and recognition
For each joint programme, one partner organises the application and admission process on behalf of all partners in the programme. In practice, this is the partner institute where students start their coursework, but each institute reviews all applications. Admission is based on agreed criteria in the partnership. These reflect the toughest criteria of all partners. The recognition of prior learning or qualifications was not discussed explicitly in the online meetings, but the panel has no reason to doubt that such procedures are applied adequately. The panel expects, however, that students of these joint programmes are eager to make full use of all courses offered and generally will not apply for exemptions.

In the online meeting, the partners confirmed that, in the LWM programme, they work closely together and agree in advance about the admission of individual students. BOKU is in charge of the admission procedure, because students start there. Dilemmas are discussed with the other two partners. Annually, approximately 10 students are admitted. Currently there are 20 students in the programme.

WCD students apply directly or via the Rotary scholarship route. All applications are handled by UPEACE, but each institute has to review the applications. WCD admits 5-11 students annually. Due to covid-19 the programme was paused in 2020-2021. The programme doesn't run if student numbers are insufficient (below 5). This is based on didactical and cost-efficiency considerations. IHE emphasizes that almost all curricular activities are combined with other programmes, which enlarges the groups in which the students operate and benefits mutual learning.

WHE informed the panel that it is difficult to select enough students who meet the admission criteria. While the aim is to admit 8-16 students annually, WHE has started with 5 in the first year. Both parties explicitly agreed that they will not lower the admission criteria to admit

more students. The decision to start the programme in 2020 was based on the availability of fellowships from the Malaysian Government for Malaysian students. The prospects are that these fellowships will remain available in the coming years, which allows the partners to identify other potential sources of funding.

The panel concludes that the admission procedure in all joint programmes is a solid process. The generally low student numbers are caused by a shortage of scholarships.

Learning and teaching approach
The panel discussed the educational concepts and differences therein between the partners. The institutes handle this issue well and agree to the learning approach that fits each partner best. All confirm that cultural differences are inherent to the international classroom of a joint programme and are considered an added value.

In the LWM programme, all three partners have their own educational approach and emphasis. These differences are discussed in the joint management committee and are considered beneficial. Differences in educational approach make students stronger. In the Kenya part of the programme the focus is on practice and field skills. Calibration among the partners to avoid overlap is a regular practice, since students should build their knowledge based on an integrated curriculum. An important alignment exercise was done in 2015 at module and programme level, a serious exercise how to translate learning outcomes into appropriate learning activities. BOKU and IHE are more conceptually oriented and apply several active learning activities as group work, cases and presentations. All three institutions are starting to apply a more competence based educational concept.

The WCD staff notes that educational approaches vary per discipline rather than institute. They emphasise that students learn to appreciate different teaching styles. Students enjoy that aspect, which is actually a strength, because different learning and teaching styles provide opportunities for a wider experience. Differences are discussed between the three partners and used for learning.

Teaching at UniKL is fairly traditional. For the WHE programme, new approaches in educational methods were discussed between IHE and UniKL. Group work, presentations and blended methods are applied in both institutes. Covid-19 has encouraged this similarity.

The panel concludes that all joint programmes use the differences in educational approach to their students' advantage.

Student support
The cooperation agreements all stipulate, albeit it in different formulations, that the partners will provide the necessary administrative support and logistical facilities, e.g. in finding local accommodation and advice on the necessary immigration documents. The panel did not meet with student representatives, but feels assured that student support is adequate since it is part of what is expected from each host Master programme. All partners are used to welcoming and accommodating international students.

For all joint programmes the partners have put together information packages with details of the programme, both content-related and procedural/logistic/financially-related. Partners

have also agreed to a set of admission criteria satisfying the requirements of the code of conduct for the international student.

Resources
The panel received a list of staff involved in the WHE programme, including their qualifications. Names and teaching roles of involved staff were delivered for LWM and WCD, but with a lesser degree of detail. The panel does not consider this to be a concern since all partner institutes are fully accredited at institutional or programme level. They apply their regular staff policy and professionalization when staff is involved in the joint programmes. This is also the case for WHE. Professionalisation of staff is part of each institute's HRM policy, without a specific role for the joint programme.

In the online meetings, the partners emphasised that the mutual discussions and exchange in the joint programmes among staff contribute to peer learning from each other. The LWM partners confirm that they continually learn from each other. For WCD and WHE this could be made more explicit. WCD adds that teachers also learn from their international students. In WHE, partners rely on the current systems of both institutes. UniKL supports staff to achieve a PhD, and UniKL staff have opportunities to go abroad to learn.

Joint programme students make use of all facilities the institutions provide for their regular students. The quality of these facilities is guaranteed because the involved Master programmes are accredited. Internal facilities are e.g. laboratory and IT facilities. External facilities include access to academic and professional networks and industry, e.g. for internships and fieldwork.

The panel concludes that the resources of all joint programmes (staff and facilities) meet the standard.

Transparency and documentation
Information provision and systems are part of the host master in all partnerships. The panel confirms that information provision to potential students starts in time.

Quality assurance
All partners are subject to external quality assurance as formalized by their national governments. The panel received detailed descriptions of these accreditation bodies and procedures per joint programme.

Internal quality assurance is addressed in various ways. Joint programme cooperation agreements have a set duration of about 5 years and are reviewed and renewed thereafter. Joint management committees (JMCs) coordinate and see to the proper implementation of the programmes. They typically meet quarterly to address study progress of students and discuss operational adjustments, and yearly to agree on next year's curriculum and financial/logistic adjustments. It is agreed that all partners apply the regular quality assurance measures applicable to their home-based accredited programmes to those components that they deliver in the joint programme. Additionally, end-of-programme evaluations are done with students in the joint programmes. The JMCs reflect on the outcomes and identify follow-up actions if needed. The JMCs report to the Programme Committees of the home-based accredited programmes. Recently, it was decided to introduce permanent membership

of the IHE Education Bureau in all JMCs to enhance alignment with educational policies at IHE.

During the meetings, the cooperation of the institutions was explicitly discussed, especially regarding joint development activities and jointly achieved improvements. The LWM representatives explained that development of the programme is always on the table, with the involvement of the professional field, because partners want to keep the programme up to date. Changes have to be approved by all partners. In Kenia a curriculum review is mandatory after every cycle of four years. Since 2014, modules have evolved on a regular basis. Changes are aligned and coordinated with the JMC. LWM uses the student representatives as a sounding board. A peer review of the programme delivered useful recommendations to lower the study load in parts of the programme and to enhance academic skill development. The thesis process and assessment are seen as the real checks whether all partners are on the same line. The panel concludes that there is a continuous dialogue within the LWM partnership.

WCD is made up of regular courses of other Master programmes at the three host institutes. These are all subject to internal quality assurance. In addition, they are discussed in the JMC and, if needed for the WCD student group, changes are implemented. Examples are the involvement of all partners in academic skills development to better prepare students for their thesis research, the introduction of a joint online welcoming session shortly after the start of the programme to facilitate direct communications between students and participating institutions, and the new research methods course at UPEACE. A professor from OSU is regularly present in Delft, due to a part-time appointment at IHE. His yearly presence in Delft coincides with the period in which the WCD students select their thesis topic and kick-off their thesis proposal process. This is particularly useful as students do their research at OSU with shared supervisory teams and it allows the OSU professor to interact with both the students and the supervisors. As regards UPEACE, an IHE staff member has been teaching at UPEACE within the curriculum of WCD and used her visits to enhance curricular coherence. A joint physical meeting of all partners last year at UPEACE did not materialize due to global travel restrictions.

WHE started in 2020 with a first cohort of five students. As a consequence of the recent start the partners did not apply a peer review in the context of internal quality assurance so far, but they plan to do it jointly (UniKL and IHE) in the near future; three years after every last accreditation assessment. Mutual feedback is an option as well between UniKL and industrial partners in Malaysia. Assessors from industry can and will be added to the examination committee, since Malaysian industry plays an important role in this double degree.

Summing up, the panel concludes that the teaching-learning environment, offered by the three partnerships, fulfil all criteria: they enable the students to achieve the intended learning outcomes.

6.5.4 Standard 3. Student assessment

Exam regulations have been agreed upon in each partnership, including the responsibility for the final thesis assessment. There are no joint examination boards. As per the Cooperation Agreements, the components delivered at one partner are governed by the examination regulations of that partner and thus overseen by the examination board of that same partner.

The examination boards of the other partners approve the transfer of credits. In thesis examination committees each partner is represented.

For the LWM programme, common exam regulations are established. Students can choose at which partner institute they do their thesis work, but the decision to award the degree is a joint decision of the three partners. Individual students will sit for their thesis examination at the institute where they are supervised. The degree is first awarded by the examination board of the partner where the student does the thesis exam. Before issuing the diploma a "no-objection" from the examination boards of both other partners is required.

At WCD, assessment policy and execution, including exam regulations, are part of the host master. Separate examination boards exist. The three institutes calibrate frequently about learning and assessment topics. As mentioned above, all students do their research at OSU with shared supervisory teams.

For WHE, IHE and UniKL will discuss new assessments methods in the future. Both institutions will participate in the graduation phase (thesis project). It is agreed in the Cooperation Agreement that the thesis research topic of each student will be agreed upon by both partners and that they will jointly supervise the thesis research work of individual students. The thesis of WHE students is co-supervised by UniKL and IHE Delft. The IHE thesis supervisor will be part of the UniKL thesis examination committee. The IHE supervisor will not necessarily be physically present at the defence, but will take part in the deliberations of the thesis examination committee.

The panel concludes that all partnerships have adequate mechanisms to ensure fair and thorough student assessment, including clear regulations on issuing the degree.

6.5.5 Standard 4. Achieved learning outcomes

All joint programmes have a thesis as a final assessment of the intended learning outcomes. They have strong processes to assess the theses, with responsibility of all partners involved (see standard 3). This way of safeguarding the achieved learning outcomes gives the panel sufficient confidence in their quality, even though the panel itself has not assessed theses.

Upon graduation, LWM students are awarded an MSc degree in Limnology and Wetland Management. The degree is issued jointly by all three partners: Egerton University, BOKU Austria, and IHE Delft.

WCD is currently being offered as a multiple degree programme, wherein students are awarded degrees from each institution. This is to facilitate administrative and procedural matters in the first instance. As the programme matures, the parties intend to convert the programme into a joint degree programme for which students will be awarded one degree, conveyed jointly by the partners (Memorandum of Agreement, article 3). At the moment, graduates are awarded an MA degree in Water, Cooperation and Diplomacy by UPEACE, an MSc in Water Resources Policy and Management by OSU, and an MSc in Water Management and Governance by IHE Delft.

WHE is a double degree programme. Students who successfully complete the WHE programme will be awarded the MSc degree in Water Engineering (Hydropower Development) by UniKL and also the MSc degree in Water Science and Engineering, with

specialisation in Hydraulic Engineering and River Basin Development by IHE Delft. WHE has started so recently that there are no graduates yet.

The panel concludes that LWM and WCD convincingly show that their graduates have achieved the intended learning outcomes. WHE has no graduates yet. LWM has the longest history of the three joint programmes and not only offers a joint programme, but a joint degree as well. The panel considers this a good model for the other two programmes. The panel recognises that the MSc degrees awarded by IHE in the three joint programmes are formally specialisations of the MSc degree in Water and Sustainable Development.

The full report was written at the request of NVAO and is the outcome of the peer review of the new programme MSc Water and Sustainable Development of IHE Delft

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