

On basis of the report of the panel of experts and the discussion during the meeting of the Accreditation Commission on 18 and 19 August 2014 the commission has taken the following decision:

Decision of the Accreditation Commission of AQAS

1. The master's programme "**Integrated Water Resources Management**" (**IWRM**) provided by the Cologne University of Applied Sciences is accredited in consideration of the "Rules of the accreditation council for the accreditation of study programmes and system accreditation" („Regeln des Akkreditierungsrates für die Akkreditierung von Studiengängen und für die Systemakkreditierung“) dated 20 February 2013; provided that the conditions stated below will be met by the university. The study programme basically complies with the requirements given by the Accreditation Council and the Standing Conference of Ministers for Education (KMK); the accreditation commission is confident that the deficiencies that were stated by the experts in the report can be remedied within 9 months.
2. The study programme is an applied master's programme.
3. The accreditation is valid for seven years. Because the preliminary accreditation given by the accreditation commission on 26/27 August 2013 is drawn into account the accreditation is valid until **30 September 2020**.
4. The conditions have to be fulfilled and their fulfilment proven to AQAS by written documentation until **31 May 2015**.

Conditions:

1. Because of the changes made to the study programmes, the adopted examination regulations for all programmes must be published.
2. The required examination performances must be described in a transparent and comparable manner in the module handbook. Here, it must be made clear that the KMK requirement is implemented such that there is usually one examination per module. Exceptions must be soundly justified. If an examination for a module consists of several parts the weighting of examinations for the final mark must be transparent.
3. An overview of the essential material resources at the University of Jordan must still be provided.
4. Evaluations and workload surveys must be carried out systematically and on a regular basis. The results should be discussed with the students.

Die Auflagen wurden fristgerecht erfüllt.
Die Akkreditierungskommission bestätigt dies mit Beschluss vom 17./18.08.2015.

Recommendations:

1. It should be described to beginning students in a transparent manner that the profile of the study programme is aimed not at technical specialisation but rather at a generalist approach to the management of water resources.

2. In light of the study programme's explicit orientation towards the subject area of "water", the ITT should secure by appropriate regulations that the students have adequate competences in the area of hydrology and water resources management.
3. The descriptions of the competence-oriented learning objectives should be qualitatively harmonised in the module handbook.
4. Interchange between teachers and students on the topic of examination performances should be optimised. An exam review process was requested by the students, especially with regard to the situation in Jordan, and should be implemented if possible.
5. The information on the graduates' further career development (e.g. job list) should be collected in a more systematic way in future.
6. In view of the students' feedback, the teachers should be encouraged to undertake further training in teaching methods.



Accreditation Report

**Integrated Water Resources Management (IWRM), MSc at Cologne
University of Applied Sciences (CUAS)**

and

**Integrated Water Resources Management (IWRM), MSc (joint degree) at
Cologne University of Applied Sciences (CUAS) in cooperation with the
University of Jordan (UJ)**

and

**Integrated Water Resources Management (IWRM), MSc (franchise
programme) in cooperation with Vietnam Academy of Water Resources
(VAWR)**

Site visit on 12 and 13 May 2014

Expert Panel:

Prof. Dr. Wolfgang Bogacki	University of Applied Science Koblenz Faculty of Architecture/Civil Engineering
Prof. Dr. Markus Disse	TU München Chair of Hydrology and River Basin Management
Dr. Katja Schmitt	GIZ, Competence Centre for Water (representative of professional practice)
Michael Endres	University of Applied Science Augsburg, Urban Water Management (student expert)

Coordinator:

Doris Herrmann, MA

AQAS Head Office, Cologne



AQAS

Agentur für Quali-
tätssicherung durch
Akkreditierung von
Studiengängen

Preamble

The accreditation procedure applies to bachelor's and master's programmes at state or state-recognised higher education institutions. The accreditation of bachelor's and master's programmes is bindingly prescribed in the Common Structural Guidelines of the Länder („Ländergemeinsamen Strukturvorgaben der Kultusministerkonferenz“). The study programmes were evaluated in accordance with the Rules of the Accreditation Council for the Accreditation of Study Programmes and for System Accreditation („Regeln des Akkreditierungsrates für die Akkreditierung von Studiengängen und für die Systemakkreditierung“) in the version of 20 February 2013.

I. Stages of the Procedure

Cologne University of Applied Sciences (CUAS) is applying for accreditation of the following study programmes:

- Integrated Water Resources Management (IWRM), MSc at Cologne University of Applied Sciences (CUAS)
- Integrated Water Resources Management (IWRM), MSc (joint degree) at Cologne University of Applied Sciences (CUAS) in cooperation with the University of Jordan (UJ)
- Integrated Water Resources Management (IWRM), MSc (formerly Technology and Resources Management in the Tropics and Subtropics (TERMA)) in cooperation with Vietnam Academy of Water Resources (VAWR)

This is a reaccreditation.

The accreditation procedure was initiated on 26/27 August 2013 by the Accreditation Commission (AC) of AQAS. A provisional accreditation was granted until 30 August 2014. On 12/13 May 2014, the inspection was carried out by the aforementioned panel of experts at the university location in Cologne. This included conversations with the university management, lecturers and students. Videoconferences were held with representatives of the joint-degree study programme in Jordan, as well as with the representatives of franchise study programme in Vietnam.

This report by the expert panel is based on the university's written application documents and the results of the site visit. The descriptive sections of the report relate in particular to the submitted application.

II. Report on Programmes

1. General information

The profile of the CUAS as one of the largest universities of applied sciences in Germany is characterised by a broad academic spectrum, offering various programmes in the fields of engineering, architecture, economic sciences, language sciences, applied social sciences and restoration and conservation. More than 21,000 students and 420 professors study and teach in 11 faculties. The faculties currently offer a total of 70 courses.

CUAS is audited and certified by the European Eco-Management and Audit Scheme and in accordance with ISO 14001 Environmental Management. In its Strategic Plan 2020 (Hochschulentwicklungsplan), CUAS clearly stated the goal of strengthening its efforts at internationalisation by focusing on international students, international education and international university networks. The international focus of CUAS is reflected in its international courses,

numerous international partnerships, and about 5,000 foreign students from more than 130 countries.

The “Institute for Technology and Resources Management in the Tropics and Subtropics” (ITT) is a central scientific unit at CUAS. The central tasks of the ITT are teaching, research and capacity building within the field of natural resources management with a clear focus on tropical and subtropical countries. It was founded in 1976 and since then has offered internationally oriented educational programmes and has a high percentage of foreign students. The ITT fosters intensive contacts with universities in Asia, Africa and Latin America.

With its Center for Natural Resources and Development (CNRD), CUAS is one of five universities in Germany that is supported by the DAAD within the “Higher Education Excellence in Development Cooperation (Exceed)” programme.

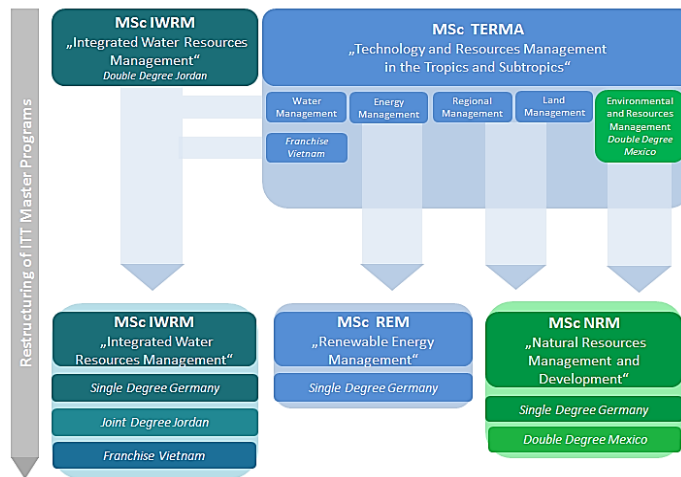
2. Goals and profile of the study programme

According to the application for accreditation, postgraduate education relating to the management and use of water resources is in high demand by various societies in both developed and developing nations of the world. There has been a growing realisation that the numerous problems of water resources management can only be addressed through a holistic approach that considers both the technical and the socio-economic problems of resource use and encompasses management issues from all water-related subsectors.

The ITT fosters intensive contacts with universities in Asia, Africa and Latin America. The ITT used to offer two master’s programmes (IWRM and TERMA) relating to natural resources management with special reference to tropical and subtropical regions. The master’s programmes are offered abroad in cooperation with partners in Jordan and Vietnam, providing students with the opportunity to study in different environments, thereby gaining insights into other cultural, environmental and social realities. Within the framework of teaching cooperation, the master’s programme “Technology and Resources Management in the Tropics and Subtropics” is exported to Vietnam (TERMA Vietnam).

In 2012, ITT started the process of restructuring the curriculum of its two master’s programmes. A curriculum commission was formed to develop a new structure that was able to implement a competence-oriented curriculum. As a result, the four key topics (water, renewable energy, land and regional planning) of the TERMA and IWRM master’s programmes were restructured and have now been converted into three master’s programmes:

- Integrated Water Resources Management IWRM (*currently the subject of reaccreditation*)
- Natural Resources Management and Development NRM (*to be accredited at a later stage*)
- Renewable Energy Management REM (*to be accredited at a later stage*)



Joint programme

Since 2006, the IWRM master programme has been offered jointly between Cologne University of Applied Sciences (CUAS) and the University of Jordan (UJ). IWRM has been so far implemented with substantial financial support from the German Federal Ministry for International Cooperation and Development (BMZ), and recently also with support (scholarships) from the Arab Fund and the OFID (Office of International Development of OPEC). CUAS and UJ signed a Cooperation Agreement in 2008 (and renewed this in 2012).

The language of instruction is English throughout the study programme. However, students are encouraged to study Arabic and German, respectively, and are given support in doing so. Language courses are not organised by the programme.

Franchise programme

Since 2009, the ITT has been offering the TERMA master's programme, with a focus on "Water Resources Management", in Vietnam as a franchise version of its programme in Cologne. The partner offering the master's programme is Vietnam Academy of Water Resources (VAWR). The first three intakes were supported by the German Academic Exchange Service (DAAD). The funding expires in mid 2014, and the program has been financed through tuition fees since the intake of 2012.

With about 1,487 staff, VAWR is a public research institution working under the management of the Vietnamese Ministry of Agriculture and Development. The academy is the main national scientific water resources centre, with high-quality human resources and advanced faculties that provide research services, technology development and training and can look back on 20 years of experience.

In this reaccreditation, the experts evaluated IWRM as a national programme in Cologne, as a joint programme in cooperation with the University of Jordan (UJ), and as a franchise programme with the Vietnam Academy.

In §10 of examination regulation of ITT the recognition of competences and examinations according to the Lisbon Convention is defined.

Study objectives

According to the application for accreditation, experts for IWRM are in high demand in almost all sectors of the economy, as well as in non-governmental organisations and associations, ministries, and national and international organisations. The programme therefore intends to educate experts who, in addition to their professional knowledge, are able to analyse, describe

and assess complex systems in the field of IWRM. The study objectives focus therefore on broadening scientific knowledge in the field of natural science, socioeconomic and cultural disciplines that are essential for understanding the complexity of environmental and resources management. Answering complex environmental and water-related problems requires economic and managerial competences going beyond the classical technical knowledge. The ITT has defined seven fields of competence. The profile of the master's programme is application-oriented („anwendungsorientiertes Profil“).

The objective of TERMA Vietnam with a focus on “Water Resources Management” is to provide participants with appropriate knowledge and skills for analysing current problems relating to the usage and management of water resources in Vietnam and the South East Asia region. Each module is coordinated by ITT professors and lecturers, who also teach part of the modules either in person in Vietnam or via videoconferencing systems. Professors and tutors in Vietnam support the implementation of each module in Vietnam. The students receive a German degree without the high costs involved in studying abroad.

Students

The programme is aimed at holders of a bachelor's degree in any discipline, with experience in the field of water, who aim to deepen their knowledge in relation to integrated water resources management and wish to acquire management and leadership skills, as well as regional and intercultural competences. According to the application for accreditation, these bachelor's graduates should have a sound knowledge base in one of the many fields of water resources management. Participants are required to: 1) hold a bachelor's degree that is relevant to the topics covered in IWRM: science, engineering, agriculture, economics, social sciences; 2) provide proof of proficiency in English (TOEFL PBT 550 points, IELTS Band 6.0). English-language skills represent a bottleneck for admission to the international programmes.

The student body is international. In the years 2007 to 2012, students came from 13 countries, including 11 non-European countries. Most students already have work experience. The share of female students is about 40%. So far, there have been 69 graduates in the last five graduation years. The intended number of participants is 20. About 55 people apply to the joint programme, but only 15 to 20 students actually start the course. In Vietnam, 30 to 40 people apply and there is an annual student intake of up to 20 students. The master's course starts in the winter term of each year.

Cologne University of Applied Sciences is currently working to develop a concept for gender equality, which is nearing approval by the steering committee. So far, it has not been possible to achieve equal participation by all status groups at CUAS. For students with children, however, the student administration (Studentenwerk) offers support on different levels, e.g. childcare programmes. The ITT is exemplary in implementing equal participation by all status groups. The proportion of female students hovers at about 40% in IWRM, and the number of women employed at ITT is as high as 52% (the percentage of women among the assistants is as high as 62%). The ITT has an Equality Officer, who collaborates on various gender issues in the application process.

Assessment

With its international orientation and concept, the study programme is an important element of the internationalisation strategy at CUAS. The experts view the existing cooperation with the University of Jordan and the compulsory semester abroad as a strength of this study programme and expressly recommend that this cooperation be continued.

In accordance with the intended occupational field and the competences that can be expected of experts in the area of integrated water resources management, the profile of the application-oriented IWRM master's study programme is consistently geared towards interdisciplinarity and

internationality. The claim of interdisciplinarity is reflected, in particular, in the admission of graduates of bachelor's degrees in practically all disciplines. Although the experts are aware of the problem of students having a highly heterogeneous technical background, this is assessed positively because precisely this situation will be encountered in the subsequent occupational arena.

Integrated water resources management intrinsically includes tackling, among other things, socioeconomic and development-policy questions relating to the sustainable and just use of resources. Through the interaction between the internationally oriented and multicultural students and their teamwork in the various project modules, the study programme promotes in particular personal development and the ability to engage in civil society.

The IWRM master's programme streamlines the double degree IWRM master's programme previously offered with the University of Jordan and consolidates the Technology and Resources Management in the Tropics and Subtropics (TERMA) master's programme with regard to "water". Restructuring the ITT's range of courses not only simplifies its organisation, but also further raises the study programmes' profile, in the field of "water" in the case of IWRM, which is a positive effect for both prospective students and future employers. Furthermore, the experts gave a particularly positive assessment of the lengthening from three to four semesters, which was a response to the complaints of previous students. As suggested by the students, the experts recommended highlighting more clearly that the profile of the study programme is aimed not at technical specialisation but rather at a generalist approach to the management of water resources. **(Condition 1)**

The IWRM master's programme is intended to be offered not only as a national study programme at CUAS, but rather also as a joint-degree study programme with the University of Jordan. There is a corresponding MoU/Cooperation Agreement in the field of Integrated Water Resources Management of 23 January 2012. The changes in the curriculum with respect to the previous double-degree programme are presented in the application and appear well-founded.

The entrance requirements are clearly established in the draft examination regulations (as at 1 February 2014) for the programme at CUAS, but the experts have not yet received an adopted set of examination regulations. The experts assume that the same examination regulations, and therefore also the entrance requirements, will apply to the franchise programme in Vietnam. Since the previous double-degree study programme, with two sets of examination regulations, is now to be transferred into a joint-degree programme, the joint examination regulations must be presented in their adopted version. **(Condition 2)**

The entrance requirements documented in the present examination regulations are such that the students will be able to meet the requirements placed on them in the study programme. The present examination regulations define a selection procedure in § 3(3). The criteria are documented in a transparent manner and are appropriate to the study programme.

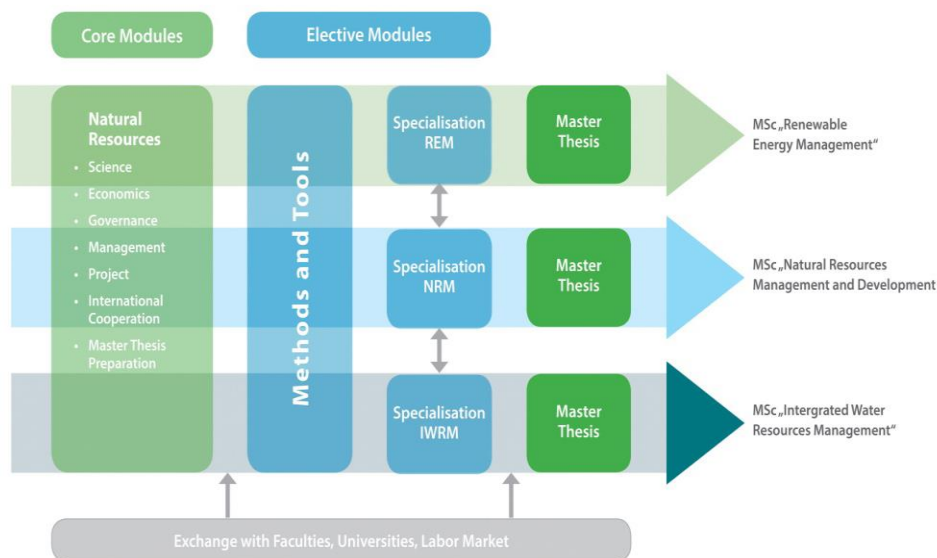
The franchising programme in Vietnam, which is replacing the TERMA programme in Vietnam, is identical in terms of content to the national IWRM study programme at CUAS. All assessments the experts make of the profile, aims and curriculum therefore apply equally to the course offered in Vietnam. CUAS awards the graduates of the franchise programme the German degree of "Master of Science".

At the CUAS, the usual instruments are present for achieving gender equality and promoting equality of opportunity for students, such as an advancement plan for women, a day nursery, certification as a family-friendly university, special programmes for students with disabilities, etc. The study programmes also benefit from these instruments. Currently standing at approx. 40%, the proportion of women is relatively high for a technical study programme. For students with

disabilities or chronic illnesses, § 18(5) of the examination regulations allows for extension of the completion time or for the use of adapted forms of examination.

3. Quality of Curriculum

After accreditation in 2008, some changes were made to the concept and content of the curriculum; these are described in the application for accreditation and include, for example: extracurricular training on soft skills, the inclusion of the basic “Water Science” module in the first semester, the inclusion of “Water Policy and Legislation” in the “Water Governance” module, and the introduction of the elective modules “Irrigated Agriculture”, “Water Supply” and “Sanitation and Health”. The duration of the programme was changed from three to four semesters (120 CP).



The first, second and third semester consist of core and elective modules, the fourth semester is dedicated to the master’s thesis. Core modules (compulsory modules) cover 40 CP, elective modules (compulsory option modules from the “Methods and Tools” catalogue and the “IWRM”, “REM”, “NRM” subject catalogues) cover 50 CP, and the master’s thesis and colloquium cover 30 CP.

The new concept for ITT’s master’s courses allows the same core modules to be taught to students of all master’s courses (IWRM, NRM and REM):

- In the module “*Management of Natural Resources Systems*”, students are taught about key elements and processes of natural systems and natural cycles on different scales.
- The module “*Natural Resources Economics and Governance*” introduces principles of socio-economic systems.
- Through group work and excursions, the module “*International Cooperation and Development*” aims to provide students with an understanding of the institutional setup of bilateral and multilateral development cooperation with special reference to the water sector.
- In the module “*Project and Business Management*”, students learn about the important phases of project management and how to explain them.

- The module “*Master Thesis Preparation*” discusses questions of scientific ethics and, in particular, the responsibility of each student for their individual research (including discussion on issues of intellectual property and plagiarism).
- The modules “*Project I, II, III*” require multicultural student groups to prepare an interdisciplinary and practice-oriented case study.

The elective modules are organised into “Methods and Tools” and three thematic blocks: “Integrated Water Resources Management IWRM”, “Natural Resources Management and Development NRM”, and “Renewable Energy Management REM”. Students select a total of 10 elective modules from: a minimum of 25 CP from the respective IWRM module catalogue, a minimum of 10 CP from the Methods and Tools module catalogue, and a maximum of 15 CP modules from the two module catalogues of the adjoining master’s programmes (NRM and REM). The programme provides numerous methodological skills.

The fourth semester is dedicated to the master’s thesis research, which addresses a current research or management problem. To register for the master’s thesis, students must achieve 85 CP and pass all core modules. The thesis can be carried out abroad.

The IWRM programme follows the principle of sustainable development, which can only be achieved by considering ethical and social aspects. Such aspects therefore play a fundamental role during the studies.

Different teaching methods are possible thanks to the relatively low number of students per module (max. 20).

Module descriptions are updated regularly. The current version of the handbook is available to the students via either the online learning platform ILIAS or the programme website.

The **joint programme** has a clear international orientation towards the MENA region. The main focus lies on the acquisition of regional and intercultural knowledge. In accordance with its international orientation, the programme targets both foreign and German applicants. In each semester, students undertake coursework amounting to 30 CP. At the beginning of the attendance phase in Jordan, a two-week introductory programme is organised to prepare the students thematically and culturally. This includes a workshop on intercultural communication and a workshop on scientific work. A sociocultural field trip takes place at the end of the introductory programme.

The programme is organised in block modules, allowing the exchange of lecturers between universities. Each module was designed by a team of lecturers from both the German and Jordanian universities.

As a result of the restructuring of the curriculum at ITT, the TERMA master’s programme in **Vietnam** will in future be offered as an MSc IWRM. This transfer from TERMA (Water) to IWRM allows the ITT to combine all water-related courses into one master’s programme, to reduce administration work and to support the sustainability of the master’s programme. There is no difference in the programme’s target competences, but the case studies are regional. Some grants are provided for three students from Vietnam so that there is an option to come to Cologne in the third semester.

Assessment

The experts assess the curriculum – especially after the restructuring of the study programmes – to be demanding and of a good technical standard. The changes made to the curriculum were described by the ITT in a transparent manner in the application for accreditation. The curriculum imparts, in particular, interdisciplinary knowledge. The students become familiar with the various fields of integrated water resources management (IWRM). In this regard, the focus lies more on

questions of management than on engineering details. These management skills are learned through project studies („Projektstudien“) that are worked on in groups. In addition to the technical knowledge, the students can also learn methodological and key competences (e.g. group work, presentation).

In accordance with the requirements of integrated water resources management, the curriculum offers a coherent mix of compulsory modules (core modules) of a more interdisciplinary and management-related nature, along with technical/scientific methods (tools) and technical specialisation (compulsory electives) in the field of Integrated Water Resources Management (IWRM). A very positive assessment is made of the broad range of elective modules from the parallel study programmes of Natural Resources Management and Renewable Energy Management, allowing the students to individually consolidate competences according to their interests or the orientation of their specific occupational field.

However, because of the more-explicit orientation towards the subject area of “water” in connection with the restructuring of the previous study programmes, the ITT should secure by appropriate regulations that the students have adequate competences in the area of hydrology and water resources management. **(Condition 3)**

The curriculum meets the requirements defined for the master’s level in the Qualification Framework for German Degrees („Qualifikationsrahmen für deutsche Hochschulabschlüsse“).

The study programme’s qualification objectives are aimed at the acquisition of expert knowledge in the field of IWRM and the acquisition of management skills for international cooperation projects, familiarisation with various technical and non-technical requirements for water as a resource, the development of practical solution proposals based on theoretical background knowledge, and the acquisition of intercultural communication skills. Depending on the choice of modules, these objectives are met to varying levels of depth.

The provided forms of teaching and learning are appropriate to the study programme.

The competences and content are, for the most part, well described in the module handbook, as are the literature recommendations. However, it is recommended firstly that the learning objectives be qualitatively harmonised with regard to the description of the competences **(Condition 4)** and that the modes of examination be described in a more transparent manner **(see Condition 5)**. In addition to a clear definition of the examination weightings, a solution should be found that allows individual differentiation of group work (see section: Study Organisation). The application explains that the module handbook is regularly updated on the university’s intranet, where it is accessible to all students. The expert panel found no problems in this regard.

Student mobility is emphasised at the ITT. In the IWRM study programme, the third semester is expressly available for exchange programmes. The credits acquired at the 11 partner universities are recognized without difficulty.

4. Study Organisation

The ITT has long experience with the exchange of students and teachers with partner universities in developing countries. Arrangements regarding the mutual recognition of examinations and credits have been agreed upon together with the University of Jordan and are included in the examination regulations. Different credit-point systems are evaluated based on discussions of workload and according to the content of module descriptions. The decision on credit recognition is made by the examination board.

Credits are given based on the estimated student workload. It is assumed that 850 man-hours (up to max. 900) and 30 credits can be achieved in one semester. One credit relates to 30 hours of

student work. A universal size for modules is desirable in order to allow module exchange. Within CUAS, it is defined that each module has 5 credits. As a result, students take 6 modules per semester, each with a workload of approximately 150 hours.

So far, the workload has not been validated in a statistically reliable manner. The problem is that the small numbers of students result in relatively low statistical reliability. In addition to the 'official' evaluation of each module by the university, a detailed course evaluation is carried out at least once a year by the student representatives. The results of the evaluation are reported to the director of the ITT.

One major point of criticism by the students was the large number of module examinations, e.g. a written exam, a report, an oral presentation and a term paper. With this in mind, the number of examinations per module was reduced by about 40%, so that there is now usually a maximum of 2 items per module examination. Module examinations are usually held after the completion of a module course. In the case of module examinations that include a combination of several types of examinations, the total examination load for students shall not be greater than if there was only one examination. Where several types of examination are combined for one module, the module is passed if the average of the examination results corresponds to a grade of "sufficient". Module examinations can be retaken if they are failed. In addition to written and oral exams, module examinations can also consist of term papers, a report or an oral presentation. On average, students complete their studies with good results. The ITT submitted statistical data relating to students and examination marks.

The programme's examination regulations are based on the general examination regulations of CUAS.

The master's thesis research takes place in a MENA country over a period of several months under academic supervision. Although the majority of the foreign students select their home country to write their master's thesis, this is not a requirement. In Germany, the master's thesis is mainly supervised by professors, instructors and research assistants working at the institute. If necessary, professors from other universities with cooperation agreements (University of Cologne and University of Bonn, among others) are consulted to assist in the supervision.

The academic supervision abroad is provided by partner universities, research centres and research institutions. Normally, the three projects and the master's thesis are oriented towards the Jordan region or related countries. 90% of the students in the international IWRM programme with UJ complete their master's thesis abroad.

In the other international programme, German and Vietnamese lecturers collaborate on teaching and examinations. The lecturers from the ITT teach alongside their Vietnamese colleagues for a whole week. Exams take place at the end of the semester and are supervised in any case by a lecturer from Germany. The exam questions are prepared in binational teams. Videoconferences are held if the respective lecturer from Germany cannot travel to Asia.

At the core of the programme activities, the project directors ensure that an appropriate institutional environment is created for the master's programme. The Course Coordination Committee (CCC) is the central institution of the IWRM master's programme. It is responsible for implementing and managing the programme and for communicating between students, lecturers, advisory board members, donors and other interested parties.

The coordinators of the international study programmes guide the students through administrative processes and ensure the necessary communication with the partner universities. The ITT employs one research assistant with responsibility for scholarships.

All of the aforementioned projects and programmes support the exchange of lecturers. Lecturers also receive support from the course coordinators with regard to modules' scientific content, as well as support in administrative issues.

Students with disabilities or chronic illnesses can submit a special application for programmes with restricted admission. Moreover, there are numerous other provisions for barrier-free studying, such as offers of financial support, compensation measures in exams, or personal advice. All information can be found on the CUAS website. The published examination regulations include provisions for disabled persons.

Assessment

In the experts' estimation, the universities (CUAS, University of Jordan, Vietnam Academy of Water Resources) provide adequate guidance for students. The students assess the technical guidance and the availability of their professors as good but there are still differences in the availability of the lecturers.

Foreign students that complete a semester abroad in Germany receive several documents and guidelines ("Cologne just arrived") before their stay commences, and they are offered language courses and courses on Microsoft Office at CUAS. Cultural characteristics are handled separately in specially prepared presentations in order to promote cultural exchange between students.

Furthermore, German students that complete a semester abroad have the option to attend language courses (e.g. Spanish, Portuguese and French). Students that hope to go to Jordan receive the brochure "Amman just arrived", which is produced by the ITT in close cooperation with former students. In Jordan, an orientation workshop is also held for students. According to the University of Jordan, there are a few challenges for the students to overcome at the start of the semester. However, the students also help one another so that these problems can be resolved quickly. The university should provide a reliable student counselling.

The extension of the duration of study from three to four semesters makes it possible to integrate introductory events (formerly e-learning) into the curriculum. This concept allows students to receive ECTS points for events that were previously provided as events prior to the official start of studies.

Information on the study programme is sufficiently available via the ITT website, as well as via brochures or information events. The module handbook is published online, as well as via other channels. The experts consider that the ITT meets the multitude of requirements for student information and orientation.

Subject-specific counselling and guidance is provided for the study programme. The Central Student Advisory Service of Cologne University of Applied Sciences provides interdisciplinary academic counselling, as well as special counselling services for students with a disability and for students in special life situations. In the experts' estimation, the universities provide adequate guidance services for the students. The students assess the technical guidance and the availability of the professors as good.

The recognition of achievements at other universities is regulated in § 10 of the draft examination regulations. It is possible to recognize achievements outside of universities as an academic achievement. The awarding of credits is stipulated for the practical elements included in the study programme.

Overall, the experts consider the frequency and organisation of examinations to be adequate. However, even after the discussions during the inspection, it remains unclear whether the

requirement of the KMK¹ that usually only one exam be planned per module is consistently implemented. With regard to the organisation of the examinations, it is comprehensible from a technical point of view that, in some modules, the acquired competences sometimes cannot be verified with a single final examination and that, rather, the module examination consists of several parts (e.g. a written examination and a presentation). The module descriptions lack transparency, however, and the number of partial achievements („Teilprüfungen“) is unclear, as is the weighting of individual examination performances. The required examination performances, as well as the weighting of examinations for the final mark, must be described in a transparent and comparable manner in the module handbook. Exceptions from the KMK requirement must be soundly justified. **(See Condition 4)**

In the case of group examinations, it is difficult to verify individual performance. Overall, good marks appear to be awarded more frequently for group work (not possible to differentiate between the students). In this context, the students also voiced criticisms with regard to a comparative grading. The experts had the impression that the grade scale at high levels was very closely spaced. The ITT should ensure that the marks awarded reflect the natural range of abilities.

In the meeting with the students, they said they would like more feedback regarding their academic achievements. The persons responsible for the study programme should check how the students' request can be complied with and, if possible, also offer feedback opportunities at the University of Jordan. The students' criticisms in relation to examinations and academic achievements suggest that the ITT should reinforce its interaction with the students on this topic. Feedback in both directions (teacher/students) at both universities is important for optimising the modes of examination. **(Condition 6)**

According to the university, the concerns of people with disabilities, as well as those of students with children, are taken into account. The examination regulations include provisions (§ 18 (5)) for the compensation of disadvantages for students with disabilities.

The regulations on which the study programmes are based contain all of the relevant provisions for admission, progression and completion of the course of study. They have been subjected to a legal review and, in part, implemented. At the time of the inspection by the expert panel, only a draft of the new examination regulations was available. The experts consider it necessary that a current and adopted version be submitted of the examination regulations for the German IWRM study programme, as well as those for the future joint-degree study programme with UJ. **(See Condition 2)**

Although there are evaluation sheets at CUAS that also ask questions about the workload, the set student workload was not systematically and continually checked for plausibility; corresponding measures must therefore be stipulated for this purpose (see section: Quality assurance).

The course of study, examination requirements and entrance requirements, including the regulations for compensation of disadvantages for students with a disability, are documented and published.

5. Employability

According to the application for accreditation, IWRM experts are in demand in almost all sectors of the economy, as well as in non-governmental organisations and associations, ministries and national and international organisations. **Potential employers** include: national governmental or public organisations and foundations, national and multinational private companies and

¹ Standing Conference of the Ministers of Education and Cultural Affairs

consultancies, academic institutions worldwide, national and international non-governmental organisations and unions.

Monitoring the past and current work of ITT **alumni**, and their profiles, is part of the institute's overall alumni strategy and is achieved using a regularly updated alumni databank. In this sense, the further career development of IWRM graduates is investigated on a regular basis through the use of different methods such as career history surveys or interviews with ITT alumni on the sidelines of networking events. As of 2013, 106 students have so far registered for the IWRM master's programme; 96% have successfully graduated from the programme. According to the application for accreditation, graduates of the IWRM master's programme receive a high level of acceptance due to the international recognition of the study programme.

During the site visit, the ITT submitted a short handbook with the student profiles of the 2013/14 intake and a book of abstracts of the graduates' master's theses.

The necessary competences and qualification goals have been discussed with experts from different national and international organisations that represent **potential employers** for the graduates (BMZ, KfW, GIZ). According to the application for accreditation, the graduates should be able to analyse complex economic and technical processes, taking into account relevant resources and ecological problems. In addition to their technical knowledge, the students also have a grounding in economics, as well as expert knowledge on the appropriate use of technologies and management strategies.

In the discussion with the expert panel during the site visit, the responsible stakeholders from Vietnam pointed out that the graduates benefit from a German master's degree and go on to build a career. The graduates from the Arab countries are – according to the Jordanian representatives – also successful at finding a job.

Assessment

Overall, the “Integrated Water Resources Management” study programme at CUAS, leading to a “Master of Science” degree, can be evaluated as very successful with regard to its orientation towards the occupational field, and it aims to enable students to take up qualified employment. With the recent changes to the study programme's concept, this claim is fulfilled to an even greater extent.

The reprofiling and lengthening of the study programmes from three to four semesters in response to the feedback from graduates, as well as from the expert panel for the initial accreditation, seems sensible in order to allow consolidation of the content, as well as greater focussing. According to the university management, the restructuring was also tackled explicitly with regard to the requirements of the labour market. The aim is to raise the profile and to aid identification with a subject area. In the new study programmes, it becomes clearer both for the graduates and for potential employers what competences will be acquired. Furthermore, the exploitation of synergies between the programmes allows increased flexibility for students of the three master's programmes at the same time as clearer specialisation thanks to the elective modules on offer.

The IWRM study programme must, however, continue to be seen more as a form of further education (especially for preparing to take on management positions). The job prospects therefore also depend strongly on the students' prior training (Bachelor).

The analysis of the Alumni Survey 2012 by the GIZ showed that 76 per cent of all Arab students and 82 per cent of all German students had found a job – and almost all of them in the water sector – within a year of completing the IWRM study programme. This is extremely pleasing,

especially given the high unemployment rate among young people in Arab countries, and suggests that the study programme meets labour-market demand.

Thematically, the ITT has now adapted its range of courses even more strongly to the current demand on the labour market. The topics are future-oriented: in particular, a cross-sectoral perspective and the nexus between water, energy and food security will increase in importance in coming years and will therefore also experience greater demand on the labour market. It can therefore be assumed that the demand for skilled workers with a background in IWRM will continue to increase in future. Water remains a market of the future.

The study programme helps to ensure that the graduates are able to apply the knowledge acquired at university to matters outside university. Suitable forms of teaching, work and/or examination establish mutual cross-referencing between theory and practice. With the programme on offer, the ITT is following the approach of competence-orientation – i.e. study programmes are planned and organised with regard to competences. Here, competence-oriented examination still represents a new field. The promotion of intercultural and interdisciplinary group work (e.g. within the framework of the projects) represents good preparation for the requirements of the labour market. The systematic development of methodological skills (e.g. SWOT) also provides valuable building blocks for professional practice.

The university has taken appropriate measures to inform itself on potential occupational fields (e.g. GIZ information event). Within the framework of the study programme, incentives are given to participate in external lecture series and excursions to potential employers (GIZ, KfW, DIE, UN). In some cases, these are an integral part of modules. An intensive examination is made of the requirements of different employers with regard to the necessary graduate profiles (more technical/engineering-oriented vs. social science-oriented). The ITT collaborates with various organisations, and the master's thesis is almost always written in cooperation with a potential employer. The students usually establish this contact themselves and also choose the topic for the master's thesis themselves in cooperation with the partner organisation. In some cases, possible topics are also proposed by the partner organisations (e.g. GIZ) in order to ensure their applicability and practical feasibility. By looking at selected master's theses, as well as the 'Book of abstracts 2013', one can conclude that, as a result, the students produce practically relevant, interdisciplinary and scientifically sophisticated master's theses.

The job list from November 2013 shows that almost all of the 68 graduates of the double-degree study programme "Integrated Water Resources Management", leading to the degree of "Master of Science", at CUAS in cooperation with the University of Jordan (UJ) are pursuing a water-related activity. The study programme is characterised by a high degree of demand-orientation, since IWRM is an important topic in Jordan, as well as in the entire Arabian region. Especially with regard to management aspects, there is a high level of demand in the country, which until now has largely had technical experts at its disposal. This gap can be slowly closed thanks to the IWRM study programme. According to representatives of the University of Jordan, the majority of the Jordanian graduates of the study programme find employment in managerial positions in the Jordanian water sector (ministries and other public institutions) after completing the study programme.

With regard to the franchise study programme "Technology and Resources Management in the Tropics and Subtropics" (TERMA; in future: IWRM Vietnam), leading to the degree of "Master of Science", at CUAS in cooperation with the Vietnam Academy, the study programme's international recognition should firstly be mentioned in a positive light. According to the university cooperation partners in Vietnam, the high training quality of the study programme's graduates is valued and appreciated by the majority of the Vietnamese institutions. This translates into, among other things, higher salaries after completion of the study programme, as well as promotions. According to VAWR, most graduates find employment in state or international organisations.

Following the TERMA master's programme, some graduates received doctoral grants in Germany and other European countries. However, the job list of graduates of the former TERMA study programme is incomplete, and there is no information on many current employment relationships. This information should be systematically collected in future **(Condition 7)**.

6. Resources

There are currently 65 people working at ITT: 7 professors (2 on temporary contracts), 23 scientific researchers, 8 administrative employees and 27 student and research assistants. Furthermore, 29 PhD candidates receive co-supervision from professors and postdocs of the institute.

Two professors (C2) and three professors (W2) from the ITT teach in the IWRM programme. Furthermore, one W2 professor with a limited contract (until 2017) and one guest lecturer (W2) are involved in the programme. In addition, some professors from other faculties teach in the ITT programmes. The equivalent of 4.75 members of staff is available for student consultation and coordination. Ten external lecturers teach within the IWRM master's programme. The ITT explained that, based on continuous evaluation of the lectures, some modifications have been made. If poor evaluation results continue, guest lecturers are replaced.

From the Vietnamese side, 11 lecturers are involved in the programme. Some of them also teach at one of the universities in Vietnam.

The application for accreditation explains that well-qualified teaching staff are required. The instructors must therefore fulfil all of the following quality criteria: a) international experience (in MENA countries); b) interdisciplinary lecturing experience and abilities; c) interdisciplinary and international research experience; d) practical professional experience (preferably), e) language skills, especially in English, f) intercultural communication abilities and g) familiarity with the national and international institutions that deal with environmental and resources problems (through research, projects or funding)

CUAS has built up an internal team of experts for didactics in the field of higher education. With a variety of workshops and training sessions for project-oriented, problem-based and researcher-based learning, the higher-education didactics team supports the "Shift from Teaching to Learning" that is defined as one of the key strategic objectives of CUAS in the area of teaching and learning.

The ITT has a computer lab, which can be separated with a mobile wall into two smaller rooms with 10 and 15 workplaces respectively. All workspaces are equipped with the required software. Furthermore, the ITT has two servers, various printers and scanners, and an A0 plotter. In addition, the ITT has various smaller tools for field research such as infiltrometers, GPS, pads, photometers, etc.

Assessment

With regard to technical qualification and the number of existing posts, the teaching staff at the ITT are, without doubt, suitable for ensuring the quality of teaching in the study programme. Overall, the restructuring of the offered courses into the three parallel study programmes of IWRM, NRM and REM brings about further optimisation of the ITT's available resources. The university management also provided assurances in the discussion during the site visit that the professor posts that are currently occupied on a temporary basis will be restaffed.

The available human resources for the organisation of the study programme or for providing guidance to the students are assessed as exceptionally good. The ITT explained that it has

obtained third-party financing elsewhere to compensate for the DAAD funding that will cease at the end of 2014.

Based on the list of teaching staff in this study programme at the University of Jordan, which was provided after submission of the application, it is clear that the human resources are adequate in terms of quantity and technical competence to cover the teaching. The teaching staff usually undertook their academic training at a foreign university. Most of them hold a professorship at the University of Jordan or at another Jordanian university.

Similar is true of the human resources for the franchising programme in Vietnam. Some members of the Vietnamese teaching staff obtained a PhD and teach either at Hanoi Water Resources University or at Vietnam Academy for Water Resources. Furthermore, parts of each module are taught by German lecturers in the form of block courses.

The premises and material resources at the ITT and/or CUAS are sufficient for implementing the study programmes. The experts advise that the students should be given the opportunity, where applicable, to get to know other freely available software (e.g. MODFLOW, SWAT, WASIM, R, ...).

The premises and material resources, especially the computer equipment, in Vietnam are assessed as adequate based on the corresponding list. In addition to the existing programs ArcGIS 10 and MIKE Basin, the advice regarding freely available software also applies here.

No information was available on the material resources and premises at the University of Jordan. However, based on knowledge of the general resources at UJ, and since no complaints were voiced by students in this regard, it can be assumed that they are adequate. An overview of the essential material resources must still be provided. **(Condition 8)**

7. Quality Assurance

According to the application for accreditation, the quality of the MSc IWRM programme is assured using four internal mechanisms: 1) the selection process of students, scholarship holders and lecturers; 2) regular evaluation by students; 3) course-coordination meetings; 4) an annual lecturer meeting.

All modules and lecturers with significant contributions to the programme are evaluated by students using „EvaSys“. The online evaluation consists of two parts: the students evaluate the overall module with regard to concept and content, and the individual lecturer is also evaluated with regard to competences and teaching methods. Lecturers and module evaluations are discussed within the course-coordination committee before subsequent measures are taken or the lecturers involved are addressed in person.

External evaluation: the master's programme is evaluated externally by way of the accreditation committee/agency, the advisory board and active alumni members. In all three instances, the focus lies on the quality of the content and the integrity of the curriculum. At CUAS, accreditation took place in 2008, with reaccreditation scheduled for 2014; at UJ, the master's was accredited in 2011.

Furthermore, the master's course is approved by both universities, as well as by the management boards of the WEEC and ITT.

The Advisory Board consists of external members connected with the water sector in Germany and the Arab region. One member represents the alumni and is elected by the group of former students. The board meets annually.

Assessment

Cologne University of Applied Sciences has a set of evaluation regulations that regulate the carrying out of the evaluation. Central elements of this are the surveying of students at various stages of their studies, a survey of graduates, and the student course evaluation (including workload surveys).

In the experts' view, the quantitative and qualitative data collected and analysed within the framework of quality assurance is, in principle, suitable for providing information on the academic feasibility of the present study programmes. On an initial basis and in terms of its approach, the experts consider the described quality assurance concept to be a very good basis for contributing to the further development and constant improvement of the present study programme.

They learn from the students, however, that they feel insufficiently integrated into the quality-assurance measures. There was – with some exceptions – no interchange between teachers and students regarding the results of the evaluation. For example, graphs from the analysis were shown but no discussion is said to have taken place.

The students' workload was probed by means of a scale in the CUAS evaluation sheets but, according to teachers and students, an analysis did not reliably take place. According to the students, the first two semesters in particular were very labour-intensive. The third semester, which is used for preparation of the master's thesis, leaves more freedom in terms of time. The expert panel considers it necessary that evaluations and workload surveys be carried out systematically and on a regular basis. The results should be discussed with the students. **(Condition 9).**

CUAS offers measures for human resources development and further training on teaching methods both independently and in conjunction with NRW Hochschulen (Universities of North Rhine-Westphalia). According to the students, the quality of the teaching staff varies widely. It is said that they are all well qualified from a technical perspective but that there were problems in the didactic communication of the taught content. Because of the students' feedback, the experts recommend encouraging the teachers to undertake further training in teaching methods. **(Condition 10)** The students' feedback related to teachers regardless of their technical qualifications and was not restricted to one study location.

Conditions and Recommendations:

1. It should be described to prospective students in a transparent manner that the profile of the study programme is aimed not at technical specialisation but rather at a generalist approach to the management of water resources.
2. Because of the changes made to the study programmes, the adopted examination regulations for all programmes must be published.
3. In light of the study programme's explicit orientation towards the subject area of "water", the ITT should secure by appropriate regulations that the students have adequate competences in the area of hydrology and water resources management.
4. The descriptions of the competence-oriented learning objectives should be qualitatively harmonised in the module handbook.
5. The required examination performances must be described in a transparent and comparable manner in the module handbook. Here, it must be made clear that the KMK requirement is implemented such that there is usually one examination per module. Exceptions must be soundly justified.

6. Interchange between teachers and students on the topic of examination performances should be optimised. An exam review process was requested by the students, especially with regard to the situation in Jordan, and should be implemented if possible.
7. The information on the graduates' further career development should be collected in a more systematic way in future.
8. An overview of the essential material resources at the University of Jordan must still be provided.
9. Evaluations and workload surveys must be carried out systematically and on a regular basis. The results should be discussed with the students.
10. In view of the students' feedback, the teachers should be encouraged to undertake further training in teaching methods.

III. Recommendation of the experts

Criterion 2.1: Qualification objectives of the study-programme concept

The study-programme concept is geared towards qualification objectives. These include specialist and interdisciplinary aspects and relate in particular to the following areas:

- *scientific or artistic ability,*
- *ability to take up qualified employment,*
- *ability to engage with society,*
- *personal development.*

Based on the above assessment, the criterion is considered to have been met.

Criterion 2.2: Conceptual classification of the study programme within the academic system

The study programme meets the following:

- (1) the requirements of the Qualification Framework for German Degrees ("Qualifikationsrahmen für deutsche Hochschulabschlüsse") of 21 April 2005, as amended;*
- (2) the requirements of the Common Structural Guidelines of the Länder for the Accreditation of Bachelor's and Master's Programmes ("Ländergemeinsamen Strukturvorgaben für die Akkreditierung von Bachelor- und Masterstudiengängen") of 10 October 2003, as amended;*
- (3) region-specific structural guidelines for the accreditation of bachelor's and master's programmes;*
- (4) the binding interpretation and summary of (1) to (3) by the Accreditation Council.*

Based on the above assessment, the criterion is considered to have been met.

Criterion 2.3: Study-programme concept

The study-programme concept involves the imparting of specialist and interdisciplinary knowledge, as well as technical, methodological and generic competences.

In the combination of the individual modules, it is structured consistently with regard to formulated qualification objectives and provides appropriate forms of teaching and learning. Practical components, where stipulated, are structured so that credit points (ECTS) can be acquired.

It defines the entrance requirements and, where applicable, an appropriate selection procedure, as well as accreditation rules for achievements at other universities in accordance with the Lisbon Recognition Convention and achievements outside of universities. At the same time, rules are put in place for the compensation of disadvantages for students with a disability. Mobility windows, where provided for, are integrated into the curriculum.

The study organisation ensures the implementation of the study-programme concept.

Based on the above assessment, the criterion is considered to have been met.

Criterion 2.4: Academic feasibility

The academic feasibility of the study programme is ensured by:

- *taking account of the expected entrance qualifications;*
- *designing a suitable curriculum;*
- *checking the plausibility of the stated student workload (or, in the case of initial accreditation, estimating it based on experience);*
- *establishing an adequate and workload-appropriate examination frequency and organisation;*
- *providing corresponding guidance services;*
- *specialist and interdisciplinary academic counselling.*

The concerns of students with a disability are taken into account.

Based on the above assessment, the criterion is considered to have been met.

Criterion 2.5: Examination system

The examinations are used to determine whether the formulated qualification objectives have been met. They are module-specific and knowledge- and competence-oriented. Each module usually concludes with an examination that incorporates the entire module. Compensation for disadvantages is ensured for disabled students with regard to time-related and formal guidelines in the studies, as well as in all final performance tests and those during the studies. The examination regulations have been subjected to a legal review.

Based on the above assessment, the criterion is considered to have been met with restrictions.

The expert panel concludes that the following changes are required:

- The required examination performances must be described in a transparent and comparable manner in the module handbook. Here, it must be made clear that the KMK requirement is implemented such that there is usually one examination per module. Exceptions must be soundly justified.

Criterion 2.6: Study programme-specific cooperation

If the university involves or engages other organisations to carry out parts of the study programme, it ensures the implementation and the quality of the study-programme concept. The extent and type of any existing cooperation with other universities, businesses and other establishments are described and the agreements on which cooperation is based are documented.

Based on the above assessment, the criterion is considered to have been met.

Criterion 2.7: Resources

The adequate implementation of the study programme is ensured with regard to the qualitative and quantitative human and material resources and premises. At the same time, combinations with other study programmes are considered. Measures are available for human resources development and training.

Based on the above assessment, the criterion is considered to have been met with restrictions.

The expert panel concludes that the following changes are required:

- An overview of the essential material resources at the University of Jordan must still be provided.

Criterion 2.8: Transparency and documentation

The study programme, course of study, examination requirements and entrance requirements, including the regulations for compensation of disadvantages for students with a disability, are documented and published.

Based on the above assessment, the criterion is considered to have been met with restrictions.

The expert panel concludes that the following changes are required:

- Because of the changes made to the study programmes, the adopted examination regulations must be published.

Criterion 2.9: Quality assurance and further development

Results of the university's internal quality management are taken into account when further developing the study programme. At the same time, the university takes account of evaluation results and investigations into student workload, student success and the further career development of graduates.

Based on the above assessment, the criterion is considered to have been met with restrictions.

The expert panel concludes that the following changes are required:

- Evaluations and workload surveys must be carried out systematically and on a regular basis. The results should be discussed with the students.

Criterion 2.11: Gender equality and equality of opportunity

The university's concepts for gender equality and for the promotion of equality of opportunity for students in special life situations, such as students with health impairments, students with children, foreign students, students from a migrant background and/or students from strata remote from education, are implemented at the level of the study programme.

Based on the above assessment, the criterion is considered to have been met.

The expert panel formulated the following recommendations for the further development of the study programmes:

1. It should be described to prospective students in a transparent manner that the profile of the study programme is aimed not at technical specialisation but rather at a generalist approach to the management of water resources.
2. In light of the study programme's explicit orientation towards the subject area of "water", the ITT should secure by appropriate regulations that the students have adequate competences in the area of hydrology and water resources management.
3. The descriptions of the competence-oriented learning objectives should be qualitatively harmonised in the module handbook.
4. Interchange between teachers and students on the topic of examination performances should be optimised. An exam review process was requested by the students, especially with regard to the situation in Jordan, and should be implemented if possible.
5. The information on the graduates' further career development (e.g. job list) should be collected in a more systematic way in future.
6. In view of the students' feedback, the teachers should be encouraged to undertake further training in teaching methods.

The expert panel recommends that the accreditation commission of AQAS accredit, subject to conditions, the national study programme "**Integrated Water Resources Management**", leading to the degree of "**Master of Science**", at CUAS.

The expert panel recommends that the accreditation commission of AQAS accredit, subject to conditions, the joint-degree study programme "**Integrated Water Resources Management**", leading to the degree of "**Master of Science**", at CUAS in cooperation with the University of Jordan (UJ).

The expert panel recommends that the accreditation commission of AQAS accredit, subject to conditions, the franchise study programme "**Integrated Water Resources Management**", leading to the degree of "**Master of Science**", offered by CUAS in cooperation with Vietnam Academy of Water Resources (VAWR).