

## **Evaluation Report**

Certification at the

### **Renewables Academy (RENAC), Berlin „Especialización en Energías Renovables“**

#### **I Procedure**

**Date of Contract:** 20 July 2017

**Receipt of self-evaluation report:** 29 August 2017

**Date of the on-site visit:** 29 / 30 January 2018

**Standing Expert Committee:** Engineering

**Attendance by the ACQUIN Office:** Dr Anne-Kristin Borszik

**Decisions of the Accreditation Commission:** 26 March 2018, 24 June 2019

#### **Members of the expert group:**

- **Prof Dr Rainer Elsland**, Dean of Studies – energy economy and management, Dean of Studies – Engineering Economics Energy Engineering, Principal investigator at Fraunhofer Institute for Systems and Innovation Research ISI; subject areas: energy economy and energy systems, Wilhelm Büchner University of Applied Sciences Darmstadt
- **Prof Dr-Ing Georg Kleiser**, Dean of Studies – Energy Systems Technology; subject areas: thermodynamics, rheology, radiative transfer, energy consumption and energy efficiency, Ulm University of Applied Sciences
- **Prof Dr-Ing Carsten Lüders**, specialties: renewable energies, electrical energy supply, Department of Electrical Engineering and Computer Science, Luebeck University of Applied Sciences
- **Dipl-Ing Sebastian Preuß**, chief executive, 30°-SOLAR GmbH, Berlin
- **Laura Witzenhausen**, student of the master program „Business Administration and Engineering“ (M.Sc.), specialty: electrical engineering, RWTH Aachen University

The **Evaluation Report** of the peer group is based on the self-evaluation report of the HEI and extensive discussions with the head of the programme, staff representatives, students, alumni and employers.

Evaluation Criteria have been the “Standards and Guidelines for Quality Assurance in the European Higher Education Area” (ESG) in the latest official version. At the same time the national contexts (Germany and Costa Rica), particularly the national rules regulating the establishment of programmes, have been taken into account.

## **II Introduction**

### **1 Short Profile of the program provider**

RENAC AG, based in Berlin, Germany, was founded in 2008 as a public limited company under German law (registered with the District Court of Berlin Charlottenburg under Reg. No. HRB 111679 B). RENAC provides education and training in the fields of renewable energy and energy efficiency. As a specialist in the renewable energy sector, RENAC transfers know-how on green technologies, supporting individuals, companies, institutions, organizations and education facilities in Europe, Africa, Asia and America with tailored educational packages. Beyond educational training, the RENAC services include capacity needs assessment, the design of curricula or training materials, the qualification of customers' training personnel, the setting up of training centres as well as market development services. Since its foundation more than 7,500 professionals from more than 145 countries have participated in RENAC's programs.

For the study program "Especialización en Energías Renovables", RENAC collaborates with the EARTH University, located in San José, Costa Rica. The EARTH University was established in 1986 as a private, non-profit, international University thanks to the support of the Costa Rican Government, U.S. Agency for International Development (USAID) and the W.K. Kellogg Foundation. EARTH University's educational approach has been to prepare professionals from Latin America, the Caribbean and other regions including Africa and Asia, to contribute to the sustainable development of their countries. EARTH offers a four-year undergraduate program in agricultural sciences and natural resources management. Since November 2006, EARTH's curriculum has been accredited by the Costa Rican Higher Education Accreditation System. In addition, EARTH has its academic program certified regionally as part of a pilot program of the Ibero-American Network of Accreditation Agencies (RIACES).

### **2 Brief information about the programme**

"Especialización en Energías Renovables", i.e. Specialisation in Renewable Energies, is a one year online program on renewable energy technologies and renewable energy project planning and development offered annually and entirely in Spanish to a maximum of 50 students from Latin America. Tuition fees amount to 2.600 EUR for the entire program.

### **III Evaluation**

#### **1 Objectives**

##### **1.1 Overall objectives of the provider**

With the “Especialización en Energías Renovables”, the program provider – RENAC in cooperation with the EARTH University, San José, Costa Rica – is pursuing the primary goal of promoting the use of renewable energies in Latin America by way of advanced training. RENAC currently employs approximately 30 full-time employees. With a current annual turnover of approx. € 4 million, RENAC claims to be one of the leading international providers of educational programs in the field of renewable energies and energy efficiency. These programs include solar thermal energy, photovoltaics, concentrating solar thermics (CSP), wind energy, bioenergy, hydropower, hybrid technologies, electricity grids and energy efficiency. An integral part of RENAC’s activities is the cooperation with universities, both at the national level (e.g. Technical University Berlin, Beuth University of Applied Sciences Berlin) and at the international level (e.g. EARTH University Costa Rica). As part of such cooperation, RENAC also offers complete master programs. RENAC also provides a range of consulting services. Beyond this, the company organizes foreign business travels in cooperation with the Federal Ministry of Economics.

To implement these services and programs, RENAC disposes of an in-house training centre, which was also built with funding from the Federal Ministry for the Environment. Recently, it has been well utilized.

Against the background of the steadily grown business operations RENAC is currently planning a further, continuous expansion of its educational offer. As part of this expansion, the currently rather technically oriented services will be expanded and will also include training offers focussing more on finance issues than on technical aspects. An example of this is the cooperation with the Berlin School of Economics and Law, which is currently in the planning stage and which is expected to produce a joint degree program called “Green Energy Finance” in the foreseeable future.

As regards the cooperation with the EARTH University in Costa Rica and the further training program “Especialización en Energías Renovables”, RENAC pursues the primary objective of dissemination and increased use of renewable energies in Latin America. It concerns an online program which should have a number of 20 students to ensure economic viability; 20 students is also the ideal group size with regard to the program design and the manner of how it is implemented. With less than 11 students the program cannot be offered. There is no maximum number of students defined, though with significantly more than 50 students the range of courses would have to be adapted logistically and structurally accordingly.

After its introduction in 2015, the program had around 20 participants which was also due to lower tuition fees. The current cohort is composed of around 10 students. An acceptable rate of dropouts is due to family responsibilities, career or financial reasons.

## **1.2 Program objectives with regard to qualification**

The training program “Especialización en Energías Renovables” has as its main qualification objectives the imparting of knowledge, skills and competences in the field of renewable energies. Basically, the aim of the program is to teach students the technical as well as the business and financial aspects of all current renewable energy technologies.

The program is intended to provide students with knowledge on a broad spectrum of different energies; this is also among the program’s ‘unique selling points’ as similar programs in Latin America focus photovoltaics. Though photovoltaics are most readily available in Latin America, the other forms of energy production are relevant to professionals in this sector, also in the future.

Graduates should be able to know and independently apply most prevalent and proven methods and tools for the planning and project development of renewable energy projects. More concretely, after having completed the further education program, students should be able to describe, compare and contrast the different renewable energy technologies. Moreover, they should be able to identify the respective key technical components of the particular technologies and describe their respective functionality. In addition, students should be able to chart the path from generation to consumption for these technologies. In addition, students should be able to list and describe the individual phases of a renewable energy project – from planning and project development through installation and commissioning to ongoing operation and maintenance.

Beyond the rather technical aspects, students should also be able to describe and compare the marketable financing ratios for the commercial evaluation of renewable energy projects. Another objective is that students should be able to describe and assess the policy and funding mechanisms available for renewable energy and its support and dissemination.

In addition to the special technical expertise described above, the students should also be able to effectively work in a team and successfully communicate with others in the field of renewable energies. In addition, the program is intended to promote student initiative and independent work, which results in particular from the fact that the further education program is offered as an online program.

The target groups for the program and the above-mentioned qualification goals include installers, engineers and network operators as well as bank employees and scientists, but also decision-makers from politics and administration.

As far as the occupational fields of program graduates are concerned, they range – in accordance with the above mentioned target groups – from private enterprises, network operators and banks to scientific institutions and the public sector. Consultancy activities and evaluation tasks are considered as well as working on concrete renewable energy projects, e.g. during system design, installation or maintenance of the systems.

The program “Especialización en Energías Renovables” has a special profile insofar as it is explicitly aimed at those who are currently working. Naturally, it is exactly this target group which has only limited time capacities; therefore, the online basic concept of the program seems to be particularly suitable to them. It is also a further training program, offered to participants having completed at least one year of professional experience (cf. section 1.4 (3) of the study and examination regulations).

Another special feature of the program – especially when compared to Germany in particular and Europe in general – is the type of degree obtained. The degree “Specialist” (= “Especialista”) is very common in Latin America; there is currently no equivalent in Europe or elsewhere. It is not an academic title, but referred to as a postgraduate degree – and in this sense a state-regulated vocational qualification – as admission usually requires obtaining a Bachelor degree in advance. The goal of “Especializaciones” is usually knowledge acquisition in a specific thematic field without prior qualification in this field: “Generally, these courses require a final work, thesis or case, in which the student poses a complex problem, points out possible solutions, or solves a very specific case, related to the topics of the course”<sup>1</sup>. In terms of scope – with regard to content and workload (30 ECTS credits) – “Especializaciones” are a reduced educational offer when compared to master programs where 120 ECTS credits are usually awarded and advanced scientific competences and skills are acquired. Nonetheless, the “Especialización en Energías Renovables” – as “Especializaciones” in general – provides that students reach Level 7 of the European Qualification Framework for Lifelong Learning (EQF).

### 1.3 Résumé

The “Especialización en Energías Renovables” program has, in principle, a coherent basic concept and a clearly defined objective: the further training and / or consolidation of knowledge, skills and competences in the field of renewable energies. It is appropriate to teach students from Latin America in an overview not only photovoltaics, but also other forms of renewable energy production. It is also useful that besides the basic technical details, the financial and business aspects are

---

<sup>1</sup> Cf. Wikipedia for “Posgrado”, for instance in Argentina: “Especializaciones. Generalmente, estos cursos requieren un Trabajo Final, Tesina, o Caso, en el cual el alumno plantea un problema complejo, señala posibles soluciones, o resuelve algún caso muy específico, relacionado a las temáticas de la cursada.” [https://es.wikipedia.org/wiki/Posgrado; accessed 23 February 2018]

treated as well. The goals of the program are well defined in the study and examination regulations.

## **2 Concept**

### **2.1 Entrance criteria**

In accordance with the study and examination regulations, admission requires a university degree in any discipline. Accordingly, the program is structured in such a way that the degree “Especialización en Energías Renovables” can be obtained without prior subject-specific knowledge. A graduate previously working in microfinance confirmed this during the on-site visit. Also the insight into the curriculum and the presented teaching material made clear that completing the program without subject-specific previous knowledge is possible. For applicants proving a non-academic vocational training to RENAC, a case-by-case review is carried out for possible admission. Due to the fact that prior knowledge in the field of renewable energy is not defined as compulsory in the study and examination regulations and applicants without university education may be admitted, starting conditions are certainly not optimal for all applicants, which may also impact negatively on the intended “Level 7 of the European Qualifications Framework for Lifelong Learning (EQF)” to be achieved by graduates of the program (cf. below).

In addition to the previously mentioned criteria, at least one year of professional experience – but not necessarily subject-specific – and language competences of Spanish (B2 level) are required. Besides these criteria, applicants must fill in a registration form, send their CV and personal identification documents and submit a motivation letter. During the on-site-visit it became clear that in the motivation letter applicants need to prove their interest in the field of renewable energies and also their current professional activity in this field. In order to increase transparency, the entrance criteria should be specified with regard to the requirements concerning the motivation letter.

The completeness of the application documents is closely examined and the general admission procedure carried out by the EARTH University. Telephone interviews are deployed for a more appropriate selection of participants.

### **2.2 Structure of the programme**

Typically, the one-year study program starts in September and ends in August. It is divided into three trimesters, corresponding to the prevalent calendar of universities in Latin America. The modules convey fundamental knowledge in the field of photovoltaics, solar thermal energy, wind

energy, biogas, hydropower, financing, economic efficiency and various possible uses of photovoltaics (grid coupling and island grids). Each module consists of several units – also referred to as courses. The following modules are offered:

- M01 Renewable Energy Fundamentals Part 1 (units: introduction to energy, Introduction to the solar resource, Introduction to electricity and electricity grids, PV applications, PV technology, Solar thermal fundamentals, 3 ECTS credits)
- M02 Renewable Energy Fundamentals Part 2 (units: PV-diesel fundamentals, Wind fundamentals, Biogas fundamentals, 4 ECTS credits)
- M03 Financial evaluation of Renewable Energy Projects (units: introduction to renewable energy projects, Methodology of project valuation, 3 ECTS credits)
- M04 Renewable Energy Project Development Part 1 (units: support mechanisms for renewable energy projects, Small hydro fundamentals, Small hydro project development, 5 ECTS credits)
- M05 Practical Implementation (0 ECTS credits) (see below)
- M06 Renewable Energy Project Development Part 2 (units: solar thermal project development, Medium biogas project development, 5 ECTS credits)
- M07 Renewable Energy Project Development Part 3 (units: PV-off-grid project development, PV-diesel hybrid project development, PV grid planning, 6 ECTS credits)
- M08 Individual Project (5 ECTS credits)

In total, 30 ECTS credits are obtained. The experts wish to highlight three aspects with regard to this structure.

1) Module M05 concerns a *semana presencial* – a presence week at EARTH University consisting of practical exercises, laboratory work and site visits. The *semana presencial* is not a compulsory module for students of the program “Especialización en Energías Renovables” and no ECTS credits are awarded. This is due to the fact that travel and accommodation must be paid by students, which is not feasible for all of them. Usually, around 50% of inscribed students take part in the *semana presencial*. Photos are taken and material documenting the practical exercises is uploaded in the moodle platform (cf. section 2.4) for those who didn’t participate. Also information on the Individual project – provided first to those present during the *semana presencial* – is communicated afterwards to those not having attended. During the on-site visit at RENAC, the timing of this week was explained and photos were shown to the experts. The experts consider this a profitable event for the participants, the non-awarding of ECTS credits is acceptable.

2) In module M07 students become acquainted with a great variety of technologies; for instance, storage systems are discussed in this module. According to RENAC, this module enables students to also design systems involving storage. The experts come to the conclusion that this goal cannot be achieved, taking into account the module descriptions. Generally, module descriptions convey a lower level of knowledge and competences as those intended by the providers (cf. section 2.3).

3) Module M08 involves the elaboration of a scientific project. However, not all students have completed a Bachelor qualification previously, and knowledge and competence to work scientifically cannot be assumed for all students. Therefore, in order to guarantee the scientific quality of both assignments and examinations as well as the final project (cf. also section 2.5), an introduction to scientific work must be integrated into the curriculum.

The structure of the program is generally coherent with regard to its goals. The acquired knowledge in the field of renewable energies necessary for the occupational fields of planning, consulting etc. is largely achieved with the program, in particular for Central and South America. Students argued that the program is thematically broad and that it will enable them to position themselves more advantageously in the sector of renewable energies, to strive for higher positions in companies and to contribute to sustainable development in poorer regions of their countries where renewable energies may be relevant alternatives for energy production.

Nevertheless, possibilities of knowledge acquisition are limited, because in three trimesters only basics can be taught and the relevant technical depth – which corresponds to competences acquired at Level 7 of the European Qualification Framework – cannot be reached. In particular, if an applicant without an engineering degree obtains only the knowledge of three trimesters in the area of renewable energies, it becomes obvious that the planning of complex energy systems cannot be expected. Though the contents of the programme – as derived from module descriptions and from insights during the on-site-visit – predominantly correspond to the Bachelor level – and must be classified partly even below the Bachelor level –, RENAC and EARTH University formulated during the on-site visit their intention to maintain the program's goal to offer a qualification at Level 7. The experts come to the conclusion that this must become clear from the module descriptions (cf. section 2.4).

### **2.3 ECTS compatibility and workload**

All modules except M05 – the *semana presencial* – are awarded ECTS credits. This is appropriate. The total work load is defined as 360 to 720 hours (cf. appendix 1 – 'Curriculum summary' – of RENAC's documentation. Since a total of 30 ECTS credits are awarded, this workload corresponds to 12 to 24 working hours per ECTS credits. As it concerns a part-time programme offered to participants working at the same time, the workload is appropriate. Experts consider subject-specific prior knowledge to have considerable influence on the work load required for the program.

Workload is shown as variable (e.g. 60 – 120 hours). The workload calculation must be displayed transparently. Students find the program time-consuming but feasible in terms of workload. In section 1.5 of the study and examination regulations a work load of 10 to 20 per week is defined, depending on students' prior qualification. From the on-site visit resulted the insight that without a previous subject-specific qualification at the Bachelor level, students actually tend to consider 20 hours per week not to be sufficient.

## **2.4 Module descriptions and suitability of qualification goals**

The module descriptions provide information on awarded ECTS credits, the approximate workload (e.g. 50-100h), module aims and trained competences, prerequisites, level (position of module within the curriculum), teaching and learning methods, status as compulsory or elective, frequency of module offer, duration of the module, methods and duration of assessment, calculation of module grade, applicability of module for other modules and study programmes, further reading (bibliography) and content of individual units. In this sense, module descriptions are extensive and informative.

The experts see, however, the need to further revise and specify the module descriptions. By obtaining the certificate, the students are intended to obtain competences in the field of renewable energies at the Master level. Through the analysis of the module descriptions and in the course of the on-site visit experts became convinced that this is not realistic. The learning objectives listed in the module descriptions are situated at the lower levels of the learning taxonomy "know, explain, etc.". The online courses, individual projects and examination documents presented during the on-site review confirm this assessment. In order for the acquired ECTS credits to be recognized for a Master program, the learning objectives must also include higher levels of the learning taxonomy as required in Master programs. Therefore, the learning objectives must be formulated more competence-oriented and the fulfilment of the requirements of Level 7 of the European Qualification Framework must be clearly recognizable in the module descriptions. As soon as learning objectives are formulated as corresponding to Level 7 of the European Qualification Framework, also the formulated study contents and aspired professional qualifications will be adequate to the intended Level 7 of the European Qualification Framework, too.

Besides this, the student workload must be broken down into contact and self-study times in the module descriptions. The experts also welcome revised bibliographical references.

## **2.5 Teaching methods**

The "Especialización en Energías Renovables" program is based on distance learning. Students and teachers meet only occasionally physically or simultaneously in virtual spaces.

Students acquire the contents essentially by working through the provided teaching materials (course texts; as online screen pages or downloadable pdf documents). These are presentations, detailed textbooks and training videos that are available in Spanish (partly translated from English). Also self-text exercises are provided for each unit. Sufficient material is provided to achieve the learning targets. Mainly the animations and videos (for instance on hydropower; length of 20 to 60 minutes per unit) are helpful for a better understanding of technical contents. Nonetheless, the students argued during the on-site visit that there should be more practical exercises for them to better internalize contents.

The main communication channel for students and teachers is the online moodle platform where forums are set up according to demand and in line with the modules. All participants of a cohort as well as the lecturers have access to the respective forums. Students can exchange ideas here which may improve team work competences. Also, teachers can get involved in the discussions. Students find it desirable that teachers become more involved in communication in the online forum, and also give more feedback on assignments. As an alternative to the forum, emails are regularly exchanged between students and teachers.

The technical knowledge acquired is deepened on a monthly basis within the framework of virtual classrooms, organized by EARTH University, where students and teachers meet in a virtual space during approximately one hour. Here, they are introduced to selected topics which are discussed subsequently. The virtual classroom is an interactive forum for learning; according to students, the exchange is helpful. RENAC observed that in the virtual classroom more questions are asked than in the online forum. Participation in the virtual classrooms – mostly occurring in the evening – is compulsory; students who don't attend need to submit a certificate. Compulsory participation is considered important by RENAC for students' learning success, but also as a motivational tool teachers and students. The lessons are recorded for reworking and for those who could not attend.

Another learning format is the "Individual Project" – the final exam –, where students work on an individually defined case study. Tasks are worked out based on scientific methods. In the context of the preparation, an exchange takes place with the teachers, but not necessarily between the students.

## **2.6 Examinations**

Examinations are carried out in the "Especialización en Energías Renovables" program as follows. Within modules, assignments are prepared (one assignment in module 1, 2 and 3; two assignments in module 4 and 6; 3 assignments in module 7). Assignments on unit or module contents are sent to the providers every 3 to 4 weeks. They imply, as an example, working with the profit-

ability calculator in order to understand sensitivity analyses, to try out variants, to answer questions. At the end of each trimester an online examination across the completed modules is carried out. The program is finalized with a project work, the "Individual project". This project is a small research on an individually chosen topic and aims to design a resolution for a real life problem.

Examinations can be repeated once; it concerns predominantly practice-oriented contents. RENAC aims to offer an educational program that 'swims against the tide' in Latin America where "much theory, little practice" ("mucha teoria, poca practica") is typical for academic education. Failure rates in the program are low so that both lay people and professionals may pass. According to the experts, this is due to the moderate difficulty level of questions and to the comprehensive support given to students during exam preparation. Students considered module on finances (M03) to be particularly difficult, even with an engineering background; in general, they found the level appropriate after having obtained a Bachelor degree in a closely related discipline.

When submitting the examination results, there is no examination of the identity of persons. RENAC argues that this is a general challenge for providers of online programs and that during an online examination period of 90 minutes with a high number of exam questions it is not possible to consult experts in the thematic field covered by the exam or to research answers on the internet or the like. Both when preparing assignments and participating in online examinations, there is no control as to whether the preparation was done independently and without outside assistance by the student. Therefore, the experts argue that forms of identity verification must be developed and implemented with regard to the provision of examinations. Additionally, the experts recommend that besides online examinations written exams as face-to-face examinations should also be offered. It would also be desirable to include in the study and examination regulations a note on students' obligation to add a signed statement to their documentation that they used no sources other than those indicated nor aids other than those permissible, and have appropriately declared all citations.

During the on-site visit, representatives of RENAC presented selected examination questions, topics of house work or questions with regard to learning progress control. A significant proportion of tasks is, according to the assessment of the experts, designed to reproduce knowledge rather than aiming at knowledge transfer. Furthermore, the experts were critical of the examination forms of multiple choice questions as well as drag and drop tasks, since they are hardly suitable for checking the competence of knowledge transfer which is crucial at the Master level. The students participating in the conversations during the on-site visit confirmed this. In addition, the inspection of tasks has shown that the level of difficulty has to be classified in many cases as below Level 7, for instance due to the fact that the examination questions often correspond to a sample of self-test exercises with changed numerical values.

Except for the presentation accompanying the project work, no oral examinations are provided. However, almost entirely written examinations – most of them as online examinations – do not cover all envisaged competences. Accordingly, the examination forms must be more competence-oriented and more diverse.

As part of the on-site visit, papers on project work were also viewed randomly and discussed with regard to content and scientific quality. It became apparent that even well or very well graded papers displayed significant weaknesses with regard to scientific orientation (for example structure and proportioning of the contents, approach to the elaboration of the task). Accordingly, experts come to the conclusion that an introduction to scientific work must be integrated into the curriculum in order to guarantee the scientific orientation of assignments and project works.

## **2.7 Résumé**

The conception of the program is only partly suitable for achieving the defined goals. This refers to the technical profoundness of knowledge acquired, but also to the acquired capacity to transfer knowledge. While the study and examination regulations provide graduates' capacity to "design renewable energy systems to meet specific needs" (cf. section 1.3 (1) of the study and examination regulations), students with a non-engineering background estimate their competence to lie rather in the fields of project management and consultancy. Nevertheless, the certificate program is particularly useful for Central and South America, as it introduces students to diverse technologies in the sector of renewable energies and because the availability of such programs is limited.

## **3 Implementation**

### **3.1 Resources**

RENAC in Berlin covers most of the organization and administration work. Its most important tasks with regard to this program are to provide the online content for self-studies (videos, textbooks), to bear responsibility for providing the required IT platforms, to develop a marketing strategy for the program and to provide assistance to students in terms of organizational issues.

The EARTH University in San José has, according to the students participating in the program, a good reputation in offering educational training in renewable energies. It maintains contacts with all Latin-American stake-holders and integrates the special needs of the Latin-American market into the curriculum. The main responsibilities are to adapt and develop the curriculum to the special needs of the Latin-American region, to acquire lecturers and to organize their work, to assess students' applications before enrolment in cooperation with RENAC, to organize dates and content of the virtual classrooms (in cooperation with lecturers), to provide assignments, themes for

projects and thesis (in cooperation with students and lecturers, respectively) and to provide practical training in an in-house seminar (voluntary for students).

The workload at RENAC is currently covered by a program coordinator and a program administrator who manages the course software and data. Both employees are also working for other online programs of RENAC. Further co-workers at RENAC temporarily assist the program manager in organization, translation and consultancy work. A total of 5 staff members works at RENAC, another 3 staff members work at EARTH University in the context of the program; further 5 course tutors are contracted for the program. Course tutors are responsible for teaching specific modules or module units, respectively. These lecturers are predominantly professional experts from the field of designing or financing renewable energy projects. Most of them finished their university education with a Master degree. Only one professor with a PhD is part of the lecturer team. While the number of personnel responsible for the implementation of the program is appropriate, the experts recommend that the qualification of the teaching personnel should be ensured on a scientific level, i.e. possibly more lecturers holding a PhD should teach in the program. The expert group appreciates that all lecturers have participated in training courses (especially “train the trainers” offered by Earth University) before or during their teaching activity.

The application process for new lecturers is based on a RENAC workflow, which comprises the standard screening methods for applications. However, the criteria for acceptance in the workflow might be elaborated. The expert would welcome clear guidelines on the demanded education level of the applicants (e.g. Master degree or PhD) and the demanded practical experience (e.g. 5 years professional experience in the specific subject) as part of the decision tree.

Previously, about 10 to 20 students have enrolled in the program. With this number of students, communication between course administration, lecturers and students seems to work properly. The experts assess the number of lecturers to be sufficient for handling the program.

The moodle platform used for communication and the provisioning of teaching materials was demonstrated to the experts and apparently works very well. In this sense, the technical and material equipping of the program is appropriate.

Establishing the program was funded as part of a capacity building program for Latin America by the German Ministry for the Environment, Nature Conservation and Nuclear Safety. This funding included courses to train the lecturers. Also a fee reduction for students was financed out of this program at the beginning. As there is now no further external funding for the program, financing the entire course is based on students' fees; 90% of them pay the fees by themselves. According to the management board of RENAC, the admission of 20 students is required to redeem the operating costs of the program.

### **3.2 Processes of decision-making, organisation and cooperation**

As mentioned above, the program's administration is carried out by RENAC. The cooperation between RENAC and the EARTH University is recorded in a bilateral contract concluded in 2015, which also describes the services carried out by the EARTH University and the corresponding remuneration, offered by RENAC. The work of all lecturers is recorded in a Lecturer Agreement between RENAC and each individual lecturer. The Lecturer Agreement settles all services the lecturer is obliged to deliver as well as the corresponding remuneration and payment conditions.

The study and examination regulations are defined in a joint document of RENAC and EARTH University. The documents contain the admission requirements, the required courses, their workload including a crediting scheme, and examination regulations. Compared to standard regulations, as it is demanded for European Bachelor or Master study programs, the regulations are quite short. Information on how to handle – and which board or council handles – complex issues (as for instance illness of students within the exam phase, handling of students' appeals against grading of exam, cancelling of the registration in case of failing) are not transparently defined in this document. Furthermore, there is no clear documentation on how the selection of students is handled in case there are too many applicants. Therefore, the experts welcome further elaboration of the regulations.

The final certificate with the title "Especialización en Energías Renovables" and also including the list of modules, grades and marks (cf. transcript of records) is issued as a joint document from RENAC and EARTH University, signed by representatives of both institutions.

### **3.3 Transparency and documentation**

Guiding the students through the course and providing consultancy is done with a hands-on approach. RENAC offers the required services and answers students' questions usually via the internal learning platform. After the discussions with students, the expert group has got the impression that the students are pleased with the information and consultancy provided by RENAC, but also by EARTH University; they are supported intensively, attentively and cooperatively. However, the fact that the modules are offered as representing Level 7 of the European Qualification Framework for Lifelong Learning (EQF) while their contents do currently seem to represent rather Level 6 might be more transparently communicated to students in order to foster their succeeding professional qualification more appropriately.

The teaching and examination concept is working quite well with a relatively limited number of students. The course administration claimed that so far problems with students who are for instance failing the exams, appealing against a lecturer's decision, or having to be expelled, did not occur. As this is likely to change with a greater number of students, experts would welcome the

regulations to be further elaborated, also in order to avoid arbitrary decisions by the course administration.

### **3.4 Gender justice and equality of opportunities**

Currently, only male students are participating in the program. The experts argue that measures to attract and integrate more female students should be assessed. Though the subject usually attracts more male than female students, it is important to have this issue in mind and to facilitate access to female students, for instance by adding statements of female professionals from the field to the program's internet presence.

Issues with regard to adverse balancing for students in special life situations are regulated in point 2.6 of the exam regulations.

### **3.5 Résumé**

The necessary resources and organizational prerequisites are in place to consistently and purposefully implement the program. The resources (personnel, material resources, equipment) are adequately available for achieving the goals and are put to good use.

## **4 Quality Management**

RENAC and EARTH University have established different instruments in order to assure a certain quality within this program. EARTH University has implemented a full control cycle including quality assurance from planning and implementation to evaluation and review. The key element of this cycle are the evaluations by students. Each course or unit is evaluated and longer evaluations are implemented after each trimester. Thus online feedback sessions have been implemented in the online platform.

An important aspect of quality assurance is the *semana presencial*, where the students can then demonstrate how much they have learned in the previous courses. Their work within this week is a strong indicator on how sustainable the knowledge of the individual students is.

In both the *semana presencial* and the monthly virtual classrooms, and the discussions within the online forums the small number of students facilitates the dialog between students and lecturers. The students' feedback can be integrated in the course in an instant.

The program coordinators then use the results of the different surveys to further develop the course; minor changes are implemented immediately. RENAC's quality management has been recertified in December 2017 with regard to ISO 9001 and ISO 29990.

## 5 Conclusion

While in terms of its general structure and with regard to defined goals, content breadth, teaching methods as well as human and material resources, the “Especialización en Energías Renovables” is a convincing program – especially for the envisaged target group in Latin America –, it also displays, from the point of view of the experts, several shortcomings, notably the adequateness of the envisaged learning objectives, the scientific orientation of exams and the competence-orientation of examinations. The persons responsible for the program assured the experts that these shortcomings can be remedied within a reasonable timeframe. Against this background, the experts are sure that this attractive program will be successful in the future.

## 6 Evaluation according to the „Standards and Guidelines for Quality Assurance in the European Higher Education Area” (ESG) in the latest official version

The programme „Especialización en Energías Renovables” has been assessed on the basis of the *“Standards and Guidelines for Quality Assurance in the European Higher Education Area” (ESG)*.

## 7 Certification proposal

The expert group proposes the program to be certified with conditions.

The expert group proposes the following conditions:

1. The module descriptions have to be revised and specified with regard to the following aspects:
  - a. The learning objectives must be formulated more competence-oriented; the fulfilment of the requirements of Level 7 of the European Qualification Framework must be clearly recognizable in the module descriptions.
  - b. The student workload must be broken down into contact and self-study times.
2. An introduction to scientific work must be integrated into the curriculum.
3. The examination forms must be more competence-oriented and more diverse.
4. The workload calculation must be displayed transparently.
5. With regard to the provision of examinations, forms of identity verification must be developed and implemented.

## IV Decision of the Accreditation Commission of ACQUIN<sup>2</sup>

### 1 Accreditation decision

Based on the evaluation report of the expert group, the statement of the HEI and the statement of the Standing Expert committee, on 26 March 2018 the Accreditation Commission made the following decision:

Ab hier Einfügen des entsprechenden Protokollteils einschließlich Empfehlungen sowie Abweichungen von Gutachterempfehlungen mit Begründung!

**The programme „Especialización en Energías Renovables“ is certified for the first time with the following conditions:**

- **The module descriptions have to be revised and specified with regard to the following aspects:**
  - **The learning objectives must be formulated more competence-oriented; the fulfilment of the requirements of Level 7 of the European Qualification Framework must be clearly recognizable in the module descriptions.**
  - **The student workload must be broken down into contact and self-study times.**
- **An introduction to scientific work must be integrated into the curriculum.**
- **The examination forms must be more competence-oriented and more diverse.**
- **The workload calculation must be displayed transparently.**
- **With regard to the provision of examinations, forms of identity verification must be developed and implemented.**

**The certification is valid until 30 September 2019.**

**The Higher Education Institution must submit documents that prove the fulfilment of the conditions by 24 January 2019. If the Accreditation Commission comes to the conclusion that the conditions are fulfilled, the certification will be extended until 30 September 2023. If the Higher Education Institution fails to prove the fulfilment of the conditions in due time, the certification will not be extended.**

---

<sup>2</sup> *Gemäß Ziffer 1.1.3 und Ziffer 1.1.6 der „Regeln für die Akkreditierung von Studiengängen und die Systemakkreditierung“ des Akkreditierungsrates nimmt ausschließlich die Gutachtergruppe die Bewertung der Einhaltung der Kriterien für die Akkreditierung von Studiengängen vor und dokumentiert diese. Etwaige von den Gutachtern aufgeführte Mängel bzw. Kritikpunkte werden jedoch bisweilen durch die Stellungnahme der Hochschule zum Gutachterbericht geheilt bzw. ausgeräumt, oder aber die Akkreditierungskommission spricht auf Grundlage ihres übergeordneten Blickwinkels bzw. aus Gründen der Konsistenzwahrung zusätzliche Auflagen aus, weshalb der Beschluss der Akkreditierungskommission von der Akkreditierungsempfehlung der Gutachtergruppe abweichen kann.*

**The certification procedure may be suspended for up to 18 months after response from the Higher Education Institution, with the expectation that the Higher Education Institution will remedy the deficiencies within the given time frame. This statement must be submitted until 24 May 2018.**

For the further development of the programme the following recommendations are given:

- The qualification of the lecturers should be ensured on a scientific level.
- Online face-to-face examinations should be integrated into the examination system.
- The entrance criteria should be specified with regard to the requirements concerning the motivation letter.
- Measures to attract and integrate more female students should be assessed.

## **2 Fulfilment of conditions**

The Higher Education Institution has submitted the documents that prove the fulfilment of the conditions in due time. These documents have been forwarded to the Standing Expert Committee with request for examination. The Standing Expert Committee came to the conclusion that the conditions are fulfilled.

Based on the statement of the Standing Expert Committee, on 24 June 2019 the Accreditation Commission of ACQUIN took the following decision:

**The conditions of the programme “Especialización en Energías Renovables” are fulfilled.**

**The certification period is extended until 30 September 2023.**