



AIR

Academic Initiative
for Renewables

AIR Newsletter

12 – 2017



The Project in Brief

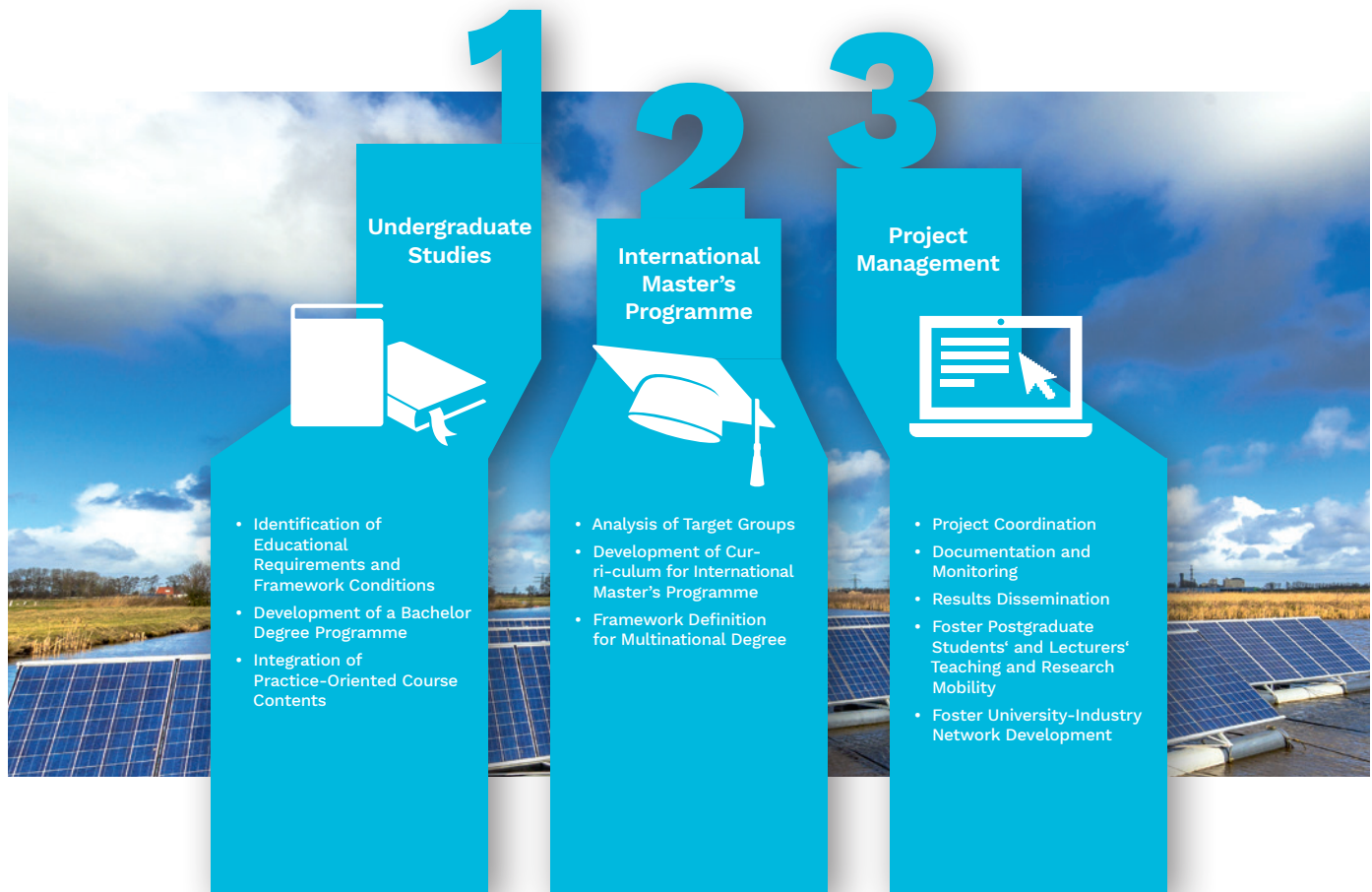
The Academic Initiative for Renewables -AIR - project addresses the problem of untrained manpower by **promoting higher education in the field of Renewable Energies (RE) in Southern Africa.**

Eight universities from Botswana, Germany, Malawi, Mozambique, South Africa, Zambia and Zimbabwe join forces to develop new study courses in the field of RE. The higher education network also includes **industrial stakeholders from each country** in order to integrate the needs of the local labour market. **The know-how of both the industry and higher education institutions provides the optimum basis** for developing a more practice-oriented academic education in the field of RE.

Team Members

All 16 project members from the **eight participating partner institutions** meet twice per year in different project countries in order to further **develop the Bachelor's study programme and the framework** for a joint International Master's Degree in the area of RE.

Also **industry partners** are part of the project consortium in order to receive **valuable feedback from the industry** which will be considered when developing the Bachelor's and Master's programme in RE.





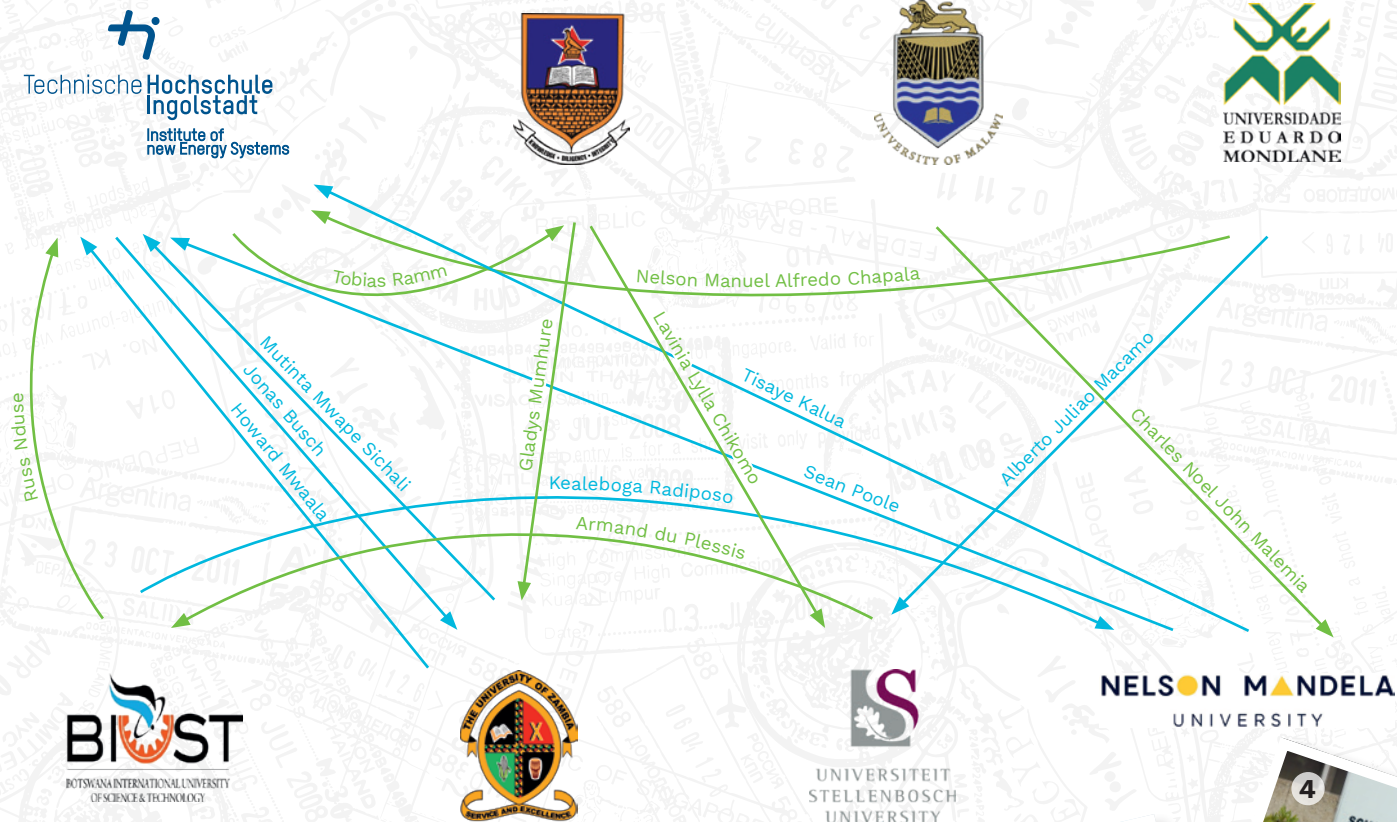
→ 2016
→ 2017



Postgraduate Mobility Programme

Each year the project promotes postgraduate students from the AIR partner universities to take part in the international student exchange programme. Thereby, students are involved in the work of faculties and institutes abroad that work on various topics in the area of RE, participate in dedicated courses and

give lectures. This allows them to gain vital insights into the processes and contents of studying, teaching and doing research abroad and to put the lessons learned and experiences into practice in their home countries.



- 1 PhD student Nelson Manuel Alfredo Chapala participated in laboratory workshops and tested heat exchanger and the collector efficiency characteristic curve.
- 2 Nelson Manuel Alfredo Chapala from Mozambique and Russ Nduse supported THI's laboratory engineers in building up a thermodynamic hydraulic testing rig.
- 3 UNIMA's student Charles Noel John Malemia was involved in laboratory tests at NMU during his student exchange programme.
- 4 Gladys Mumhure from UZ had the chance to visit UNZA and worked on a computer controlled photovoltaic solar unit in the laboratory.



The first Project Years



01.01.2016

Project Launch

The Institute of new Energy Systems (InES) of THI received funding for the AIR project which will run until the end of 2019. The funding body is DAAD (German Academic Exchange Service).



30.05. – 04.06.2016

Kick-Off Meeting at THI, Ingolstadt, Germany

A total of 12 professors and lecturers from Southern African universities took part in the meeting in order to work on the project targets. The focus was on the exchange about existing study courses at the partner universities as well as the identification of stakeholders to be included when defining the specific educational requirements in the respective countries.

Besides the workshop sessions, the project partners were able to gain valuable insights into the state of teaching and research at THI by visiting the campus and its laboratories. The team members also had the chance to go on excursions to RE plants which showed the practical implementation of the theory that students get to know at THI. Thereby, the team visited a photovoltaic and a biogas plant as well as a wind power station which are located next to the city. A visit to THI's industry partner Citrin Solar GmbH was helpful for the partner universities to get to know the learning requirements for university graduates from an industry's perspective.



14.11. – 18.11.2016

1st Project Meeting at NMU, Port Elizabeth, South Africa

The focus of the meeting was to analyse and evaluate the results of the stakeholder consultation based on a questionnaire that was designed to identify the target group of the new Bachelor Degree programme as well as the requirements of the local labour markets. This questionnaire was sent to various stakeholders in the target region such as industries, energy departments, consumer associations, NGOs, consulting agencies, students and professors in the countries of all partner universities. The team received feedback from a total of 121 stakeholders. This feedback was valuable to understand the needs of the various stakeholders in order to design new courses for Bachelor students at the partner universities (UEM, UNZA, UNIMA, UZ, NMU and SU) that fit their demands.

The team decided to develop a complete Bachelor's degree programme, thereby, partner universities can either adopt the whole programme or just select individual courses and include them into their existing Bachelor's programmes. Hence, the next step was to define a specific competence profile covering the requirements based on the questionnaire's feedback. This profile would help to structure the programme by defining the required course modules, credits, duration of courses, teaching modes etc.

As the cooperation with industry partners is an integral part of the AIR project, the team members conducted various excursions such as to the self-sustaining off-grid and zero waste house built by the company "Rhino Energy Solutions". A very interesting fact was that the house also harvests water from the rain via the roof and even from the driveway. Also, the visit to the "Metro-wind Wind Farm" (27 MW) located on the coastal line of Port Elizabeth was impressive as the generated electricity can power the equivalent of about 12,300 households per month.



⑤ The AIR project team visited NMU's laboratories in order to see how NMU organises students' practical involvement into applied research projects.

⑥ During the project meeting in Mozambique the team conducted an excursion to a small-scale electrification project by photovoltaic systems for the community in Mahubo.

- 7 The site visit to the 27 MW "Metrowind Wind Farm" was an interesting experience for the project team as the founders also support surrounding communities by contributing to their economic development.
- 8 The project partners followed the invitation to visit the Phakalane Photovoltaic Station in Gaborone which was established by the Ministry of Minerals, Energy and Water Resources of Botswana.

06.02. – 10.02.2017

2nd Project Meeting at BIUST, Gaborone / Palapye, Botswana

A one-week workshop was held in Gaborone, Botswana, from 06. – 10. February 2017, where 14 members of the AIR project met again to further promote their objectives of developing new study programmes in Renewable Energies in Southern African countries. During the internal part of the meeting in Gaborone the focus was put on the development of the framework for the Bachelor's programme. The team agreed to offer a common first year programme at all partner universities and further elaborate individual suggestions for the second, third and fourth year. An 80% compatibility of the programme at all partner universities is envisaged in order to allow students to move from one AIR partner university to the other without having difficulties in receiving the correct number of credits. Within the process of developing a curriculum proposal for a joint international Master's Degree (second work package of the AIR project), the project members determined to offer a two-year programme, thereby, students would have one year of teaching and one year of research activities. Furthermore, the Master's programme will not include a compulsory internship semester as local students usually come back from the industry with practical experience to continue studying.

During the external part of the project meeting, the team members followed the invitation to visit local Renewable Energy (RE) facilities in order to gain vital insights into such projects in Gaborone. The excursions started with a visit to the Phakalane Photovoltaic Station in Gaborone followed by the Jatropa Plantation which are both projects of the Ministry of Minerals, Energy and Water Resources (MMEWR) of Botswana. Furthermore, fruitful discussions on the country's strategy in the field of RE with the Energy Department in Gaborone took place. A tour through the company Solar Power (Kgalagadi Resources Development Company Ltd.) which manufactures products in the field of solar energy enriched the project meeting. Lastly, the project partner BIUST invited all team members to visit the new campus in Palapye where the team went on a campus tour and visited the laboratories.

13.11. – 17.11.2017

3rd Project Meeting at UEM, Maputo, Mozambique

16 AIR team members and a number of guests, including the Songo Higher Education Polytechnic Institute's Vice President Prof Francisco Vieira, met for a one-week workshop in which further decisions on the structure of the Bachelor's programme were set. Firstly, the team agreed on the competence profile which will be used for further defining the outcome of the programme. Furthermore, the courses for semesters one to five were jointly defined and each partner university took over a number of courses and will work on module descriptions which will then jointly be agreed by the team in April 2018.

In order to get to know the country and its RE possibilities better, the team went on various excursions such as to the mini hydro power station at Pequenos Libombos and a small-scale electrification project for the community in Mahubo. Also the solar modules factory of the Energy Fund (FUNAE) in Beluluane gave the partners insights into the production facilities and projects in the area of Maputo.

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Annual progress report about the Bachelor's & International Master's Programme in RE

Bachelor's Programme

- Local stakeholder consultation in order to receive feedback on educational requirements in RE programmes
- Definition of a competence profile
- Definition of courses for year one, two and three

International Master's Programme

- Decision on a two-year structure which comprises one year teaching and one year research

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**Botswana International University
 of Science and Technology**
 – **BIUST** –
 Palapye
www.biust.ac.bw

Industry Partners
 Videre Global (Pty) Ltd Botswana,
 Peritus Investments (Pty) Ltd



University of Zambia
 – **UNZA** –
 Lusaka
www.unza.zm

Industry Partners
 Thomro Biofuels,
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University of Zimbabwe
 – **UZ** –
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www.uz.ac.zw

Industry Partners
 Practical Action
 Sothern Africa/ Zimbabwe,
 Rural Electrification Fund



University of Malawi
 – **UNIMA** –
 Blantyre
www.poly.ac.mw

Industry Partners
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 EREL-ATSM

**NELSON MANDELA
 UNIVERSITY**

**Nelson Mandela
 University**
 – **NMU** –
 Port Elizabeth
www.mandela.ac.za

Industry Partners
 MICROCARE,
 GeoSun Africa

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BMZ



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DAAD

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 German Academic Exchange Service

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