

The **BERLIN-NAIROBI EXCHANGE**

by
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Abstract

Upon the kind invitation of Hezron Gikang'a, Regional Environment Program Coordinator of the Heinrich Böll Foundation's office in Nairobi, I would like to present the Berlin-Nairobi Exchange. Mr. Gikang'a requested this presentation in order to be able to determine whether certain activities of the Berlin-Nairobi Exchange are worthwhile to be funded by the Heinrich Böll Foundation. In case such activities will be identified, I could then produce a detailed proposal for funding of those selected activities. I am most grateful to the Heinrich Böll Foundation for giving me the opportunity to introduce the Berlin-Nairobi Exchange.

Background

During my internship at UNESCO in 1995, I wanted to contribute to UNESCO's call to integrate more effectively the sciences in Africa into the worldwide science community. This integration is paramount for development in Africa, especially in the light of the increasing globalization. I therefore devised an exchange of physics students between a German university and an African university. The partner universities eventually became the Free University Berlin and the University of Nairobi. The physics student exchange between those two universities began operating in 1998 and has since been funded by DAAD. Due to the strong relations between Berlin and Nairobi that developed over the past nine years the physics student exchange is now creating new collaborative projects. Currently, there are four collaborative projects at various stages of their development. These projects are on solar cells research, Interactive Screen Experiments (ISEs) in partnership with UNESCO, on energy infrastructure modeling in partnership with AFREPREN, and on air quality monitoring in Nairobi. The Heinrich Böll Foundation might be interested in supporting the last two collaborative projects. The physics student exchange and the four collaborative projects are presented below.

Physics Student Exchange: The backbone of the Berlin-Nairobi Exchange

It is more common that African physicists spend some time in Europe or North America than vice versa. We therefore focused on allowing Berlin physics students to study at the University of Nairobi. As a result, ten Berlin physics students have since 1998 each spend an academic year at the University of Nairobi during which time we could fund them with DAAD scholarships. The presence of Berlin physics students at the University of Nairobi is having the effect that has been hoped for. One is that it first raises awareness and then appreciation in Germany of physics in Africa. I felt a need for this, after the dean of the physics faculty of a German university (not the Free University of Berlin), asked me in 1995 whether physics is taught in Africa. Another is that it motivates the Nairobi physics students because they no longer have the impression that physics education in Africa is much inferior to the German one

because German physics students are coming to Africa to study physics. The latter fact exemplifies a part of the philosophy of the Berlin-Nairobi Exchange: I often read of the failure of collaborative projects because German specialists assume that they know what Africans need. The Berlin-Nairobi Exchange therefore puts a strong emphasis on learning from Africa and this is embodied in Berlin physics students coming to Africa to study physics and to *learn* from Africa. This has resulted in the various collaborative projects currently under development. These projects are summarized below.

Projects

a) Solar Cells Research

In the academic year 2003/04, DAAD granted us, for the first time, funding to support postgraduate physics students of the University of Nairobi. Thus, the physics student exchange became finally truly mutual. Two Nairobi physics students, Robinson Musembi and Alex Ogacho, are currently at the Hahn-Meitner Institute, a large solar energy research institution in Berlin affiliated with the Free University Berlin, conducting research on the development of low-cost solar cells. Their supervisor there, Dr. Dittrich, wants to remain involved in their research once they return to Nairobi, an initiative that was welcomed by the University of Nairobi. We will seek DAAD funding for Dr. Dittrich to visit Nairobi and also apply for DAAD funding to purchase additional equipment, which will allow Mr. Musembi and Mr. Ogacho to continue their research in Nairobi. Both are on the Staff Development Programme of the University of Nairobi. Once they have completed their training, the University of Nairobi wants to appoint them as lecturers to develop and run an MSc programme on renewable energies. Such an MSc programme has been suggested by the growing renewable energy industry in Kenya, which is in need of highly trained employees. A special DAAD programme funds the development of such an MSc programme in collaboration with German educators and scientists.

b) Interactive Screen Experiments (ISEs) in Partnership with UNESCO

Interactive Screen Experiments are a multimedia software which allows the user to interactively study physics experiments shown on the computer screen. Several physics lecturers in Nairobi have expressed an interest in using this software, especially because of the lack of real experiments. Falko Ueckerdt, one of our current Berlin physics exchange students, is working at the UNESCO Nairobi Office, besides his studies at the University of Nairobi, to establishing a partnership between the Berlin-Nairobi Exchange and UNESCO to first promote and eventually distribute ISEs to African institutions.

c) Energy Model in Partnership with AFREPREN

In May 2003, Falko Ueckerdt and Marko Förstel, both current Berlin physics exchange students, approached Stephen Karekezi, Director of AFREPREN, at a conference in Germany to enquire in what way the Berlin-Nairobi Exchange could make a contribution to AFREPREN's efforts in renewable energies. Mr. Karekezi readily suggested a collaborative project to develop an energy model of the East-African region in order to identify the biggest potential for the implementation of

renewable energies. In this collaborative project, the Berlin-Nairobi Exchange could identify German experts willing to provide modeling expertise, while AFREPREN could primarily provide the required data and contacts to policy makers in the region.

Mr. Karekezi's idea coincided with a call by the Volkswagen Foundation to submit general suggestions of collaborative projects with Africa that it could fund within its new Africa Initiative. The Berlin-Nairobi Exchange formally suggested the area of renewable energies, which was welcomed by the Volkswagen Foundation and is now part of its sub-programme on "Resources and Sustainable Development". There will soon be a call for applications for funding by this sub-programme. It will support primarily capacity building in Africa in collaboration with German experts. AFREPREN began to draft a proposal and the Berlin-Nairobi Exchange is trying to find a suitable German partner for AFREPREN.

Our collaboration with AFREPREN could be formalized and extended which might make it interesting to the Heinrich Böll Foundation.

Regarding a suitable German partner for AFREPREN, Dr. Fabian Wagner has identified various German research groups who all expressed an interest. These research groups must be visited. I visited one recently and was given a series of lectures on their work which allowed me to give Mr. Karekezi an informed report when I met him in Nairobi. Conversely, Marko Förstel, one of our current Berlin physics exchange students in Nairobi, is also an intern at AFREPREN with the objective to obtain a clear picture of the activities of AFREPREN. Upon his return to Germany, Mr. Förstel intends to visit research groups to inform them about AFREPREN. Also, Dr. Wagner will soon be at a conference in Tanzania and could come to Nairobi to visit AFREPREN. The Heinrich Böll Foundation could support our various travels in order to help AFREPREN establish fruitful and long-lasting relations to German research groups.

It is a challenge to find the best partner for AFREPREN. A research group could be linked with the nuclear industry and thus disqualify as an AFREPREN partner or it has developed an energy model which it is keen to apply to and market in Africa but which Mr. Karekezi finds unsuitable. Mr. Karekezi has repeatedly expressed an interest in individual German researchers that could help develop an energy model from scratch, tailor-made for Africa. These researchers could be employed by the Berlin-Nairobi Exchange. Our organisation is suitable because we have no ties to the nuclear industry, no agenda to promote a certain energy model, and experience with establishing and maintaining relations between Germany and Kenya. The Heinrich Böll Foundation might therefore be interested in funding our own research efforts.

d) Air Quality Monitoring in Nairobi

Dr. Kenneth Kaduki of the Department of Physics at the University of Nairobi is setting up a research group in optics. We are assisting him by making a call for donations of optical equipment through a large network maintained by the Association of German Engineers (VDI). Dr. Kaduki intends to apply his research in optics to measuring air quality in Nairobi. In this regard, we realized that there have been and currently are several attempts by the Department of Meteorology and the Department of Chemistry of the University of Nairobi to measure air quality.

Furthermore, there is an instrument (DOAS) stationed on the grounds of UNEP in Nairobi, which is run by a research group in Bremen, Germany, and which has not yet been utilized to also measure air quality in Nairobi. The research group in Bremen would welcome the involvement of local scientists in Nairobi and an application of its instrument to local air quality. There have been plans of a research group at the Free University Berlin to station another type of instrument (LIDAR) in Kenya, which could also be used for air quality measurements. All these various parties in Kenya and Germany and their potential contributions should be meaningfully united.

Joannes Berque, an atmosphere scientist, who will receive his PhD in October, joined the Berlin-Nairobi Exchange recently to assist in developing the air quality project. Mr. Berque will soon be appointed by the Department of Meteorology at the University of Nairobi to be the coordinator of the air quality project for about six months starting this October. His first task will be to bring together all the parties that show an interest in air quality in Nairobi in order to devise a plan on how monitoring air quality in Nairobi can be best achieved by a concerted effort. Prior to his stay in Nairobi, Mr. Berque might travel through Germany to meet with various parties there. Mr. Berque will volunteer his time and expertise. In return, the University of Nairobi will provide him with free accommodation. The Heinrich Böll Foundation might be interested in funded his travels.

We are currently also thinking of offering Faith Wanjiru, a multi-talented physics student in her final year at the University of Nairobi, a Berlin visit of a few months after her graduation next academic year in order to identify in what way Berlin institutions could help establish an air quality monitoring system in Nairobi. This could be a follow-up of Mr. Berque's work in Nairobi.

Funding of the Heinrich Böll Foundation that would be most useful

I have presented above the various activities and plans of the Berlin-Nairobi Exchange. If there were some aspects the Heinrich Böll Foundation consider worth supporting I would produce a detailed proposal for funding.

Funding would mainly be sought for projects c) and d) above

- 1) to help the Berlin-Nairobi Exchange to find the ideal partner for AFREPREN in Germany in order to develop an energy model, to help AFREPREN to coordinate any future collaboration with Germany, and/or to obtain its own expertise in energy modeling by funding an energy modeling expert.
- 2) to help the Berlin-Nairobi Exchange to bring together the various parties in Kenya and Germany to begin to develop an air quality monitoring system in Nairobi.

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