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fosters
TRAINING and EDUCATION
at various skill levels

# ANSOLE News 2 / 2014

Dear ANSOLERs,

Dear friends and network partners,

with information on Renewable Energy (RE) issues in Africa we send you the second "*ANSOLE News*".

Thanks to all who sent us their contributions.

ANSOLE network members were again actively working and networking in many countries and ANSOLE was present at several conferences. Please feel free to contact us, send us reports of your work, contributions related to renewables in Africa, conference reports, or information on upcoming events.

*ANSOLE News* is not meant to be read in one day.

Take your time to read each contribution.

*ANSOLE News 2* appears with a supplement. The supplement is a historical document in which Dr Kate Showers gives an account of her travel as a young American female exchange student in and across West Africa in the 1960s and her second trip to Ghana more than 46 years later in 2014. The concept of "paying forward" is illustrated. It is worth reading this piece of African history narrated in "story" form. All of us love "stories" and so the supplement is your "story" for the summer vacation. Enjoy it! Please send us your feedback at editorial@ansole.org and/or send us your own story so that *ANSOLE News* develops a human face.

Kind regards,

your editorial team

*Dr. Bettina Schmidt, Dr. Kate B. Showers*

*Esther Mukooza (PhD Student University of Vienna), PD Dr. Daniel A. M. Egbe*

***Publishing date: 7 August 2014***

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# ANSOLE - Report

*by Daniel A. M. Egbe (with contributions from Bettina Schmidt)*




In my main contribution *to ANSOLE News 1*, I reported on the various historical stages of ANSOLE from its initiation to the beginning of 2014. Despite all the effort made to write down every important event of ANSOLE during its first three years of existence, I later realized that I left out some very important information viz the media coverage based on an interview in German on the theme "Renewable Energy for All" which made the headline of the 2012 September issue of the "*Rundbrief-Bildungsauftrag Nord-Süd*", a publication of the German Committee of the World University Service (WUS), and my trip to Tunisia in Feb 2013.

## In the mist of the Tunisian Revolution

In both functions as researcher and coordinator of ANSOLE, I was invited from the 6th to the 13th of Feb 2013 by Prof. Samir Romdhane (cofounder of ANSOLE) researcher at the Laboratoire des Matériaux Avancés et Phénomènes Quantiques, Faculté des Sciences de Tunis, Université Tunis El Manar and lecturer at the Faculté des Sciences de Bizerte, Université de Carthage, to give a series of scientific lectures and presentations on ANSOLE at various institutions in Tunisia.

I landed in Tunis on the 6 th of Feb 2013 around midday, a few hours after the assassination of the leftist politician Chokri Belaid and found myself in the middle of a revival of the Tunisian revolution, which was due to the location of my hotel in the centre of the Tunisian capital, where demonstrations were taking place. It was scary to watch demonstrators running in all directions with police forces chasing and firing tear gas at them.



*Revival of the Tunisian Revolution in February 2013 triggered by the assassination of the leftist politician Chokri Belaid*

The days after the assassination of Chokri Belaid were hard for tourists lodging in the centre of Tunis. This was marked by a scarcity of food. Hotels were not able to provide meals for two days and the shops selling bread were opened just for a few hours during the day…

I lectured at three Tunisian institutions, namely the *Faculté des Sciences* de Bizerte (7 th of Feb), the *Faculté des Sciences de l´ Université de Tunis El Manar* (9 th of Feb) and *the Centre National de Recherche des Sciences de Matériaux de Borj Cédria* (12th of Feb). The lecture on Friday the 9th was one of the lectures held in the frame of '***ANSOLE Mini-Symposium in Tunisia'*** in the presence of the renowned Tunisian Physicist Prof. Dr. Habib Bouchriha, author of many textbooks on quantum mechanics. The presence of three ANSOLE members from Algeria gave an international character to the gathering. The other two lectures were presented by PhD students from Tunisia (Ms Aida Ben Chabane, University of Tunis El Manar) and from Algeria (Ms Nassima Bouguerra, University of Bejaia, Algeria).

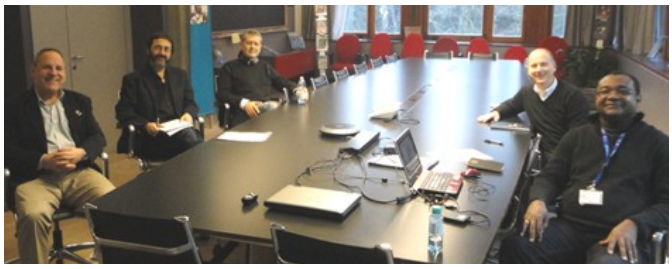


*f.l.t.r: Participants at the lectures on the 7th, 9th and 12th of Feb 2013 in Tunisia*

## February 2014

Apart from the day-to-day coordinating activities, the first highlight of 2014 was the ANSOLE report visit to the International Centre for Theoretical Physics (ICTP) in Trieste from the 6 th to the 7 th of Feb, during which a written report and an oral report through power point presentation were delivered. The presentation was attended by Prof. Dr. Fernando Quevedo, Prof. Dr. Joseph Niemela, Dr George Thompson, Dr. Ralph Gebauer and Dr. Nicolai Serani. After the presentation the attendees debated on how to encourage ANSOLE members to be involved in the various activities of the network to ease the burden of the coordinator and the very few active members. Among other things, it was suggested that incentives be given to laboratories ready to be involved in the student exchange programmes, and to further develop the ANSOLE website to become a strongly interactive platform. As a result of the first suggestion, an "***Information Sheet of Host Laboratory*** was drafted and emailed to ANSOLE members. So far four laboratories (from Cameroon, Morocco, Netherlands and Estonia) have filled out the sheet.

ANSOLE has been adopted to be the 73rd ICTP network. ICTP celebrates its 50th anniversary in Oct this year.



*ANSOLE Report meeting on the 7th of February at the ICTP in Trieste, Italy*

On the 12th of Feb DSTC Solar Training Centre in Accra Ghana (www.dstc.org) joined ANSOLE as the second institutional member following the International Science Programme of the University of Uppsala Sweden.

Towards the end of February ANSOLE was contacted to publish on its website the call for applications for various academic positions at the Pan African University Institute for Water and Energy Sciences (including Climate Change) (PAUWES). Many ANSOLERS submitted their applications. The final outcome of the selection procedure will be published in our next *ANSOLE News*.

## March 2014

ANSOLE was invited to attend the "Atelier International sur les Energies Renouvelables et l' Efficacité Energetique" at the Sidi Mohamed Ben Abdallah University of Fes from 19th to the 20th of March. This was followed by the signing of a Memorandum of Understanding between ANSOLE and ENS-UM5A on the 21st of March. Both events have received detailed reports in *ANSOLE News 1*. In that issue, the name of the present president of the University of Fes Prof. Dr. Assobhei Omar was confused with that of his predecessor, Prof. Dr.. Esserrghini Farissi. I apologize for that.

## April 2014

### Participation at the SSA Solar Conference in Accra, Ghana from the 23-24. April 2014

In my function as ANSOLE coordinator, I was invited to act as chairman of the SSA Solar 2014 (23-24 April 2014, Golden Tulip Hotel, Accra, Ghana) and to lecture on the two following topics:

1. How will the adoption of solar energy in sub-Saharan Africa be accelerated by local manufacturing of components
2. The business case for the industrial application of solar energy in meeting the electricity needs of the country's manufacturing sector: Case study of German breweries and how the success can be replicated in Africa.

The meeting was organized by Singapore-based Magenta Global PTE LTD and drew an audience of 120 attendees from 25 countries. The event report can be downloaded here.

ANSOLE was one of the supporting organizations of the event. During the event ANSOLE gained two personal members and an institutional member. The two personal members are Mr Louis Seck, former Minister of Renewable Energy of Senegal, and Mr William Bangurra, board member of Environmental Protection Agency of Sierra Leone. Mr Bangurra accepted to act as the national representative of ANSOLE in Sierra Leone, making Sierra Leone the 37th African country with an ANSOLE representative.

Ms Nyker Jasander, speaker at the event, and CEO of *BioTherm Energy*, South Africa, (www.biothermenergy.com) decided to register her company as an institutional member of ANSOLE. *BioTherm Energy* is a renewable energy investment and independent project development platform focused on sub-Saharan Africa. *BioTherm Energy* is operating its three renewable projects as part of Round I of the South African

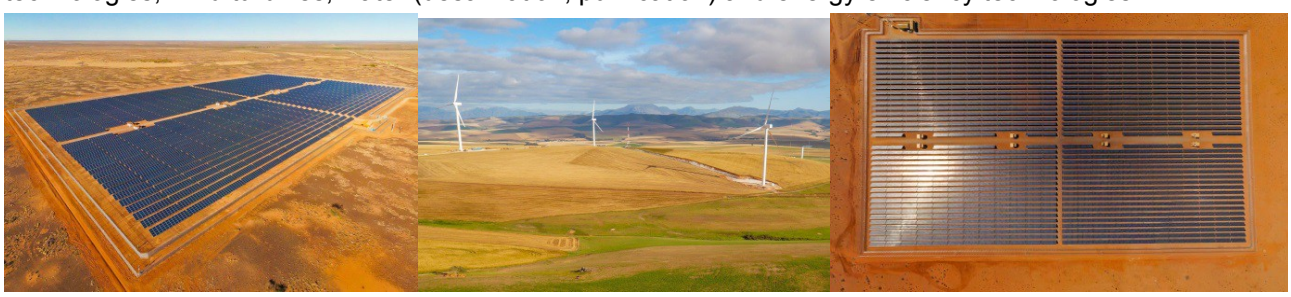
Renewable Energy Independent Power Producers Program ("REIPPP"), and is the only South African company to have secured three projects. It has also recently secured four PPA's (Public-Private Agreement) in Zambia as part of its sub-Sahara African strategy.

Prior to her job as CEO, Ms Nyker managed the direct investment portfolio on behalf of the PCG Clean Energy and Technology Fund, a $680mn global energy and clean technology investment fund. She played an integral role in transaction sourcing, due diligence, investment execution and post - investment management.




*Ms Nyker CEO of BioTherm Energy (www.biothermenergy.com)lecturing at SSA Solar 2014*

As part of this role, she reviewed and evaluated over 700 investment opportunities and invested in 13 companies across multiple sub - sectors, technologies and geographies. The portfolio included investments in green infrastructure (sugar ethanol, co-generation, wind projects and solar base-load applications), solar technologies, wind turbines, water (desalination, purification) and energy efficiency technologies.



*BioTherm Energy RE projects in South Africa: f.l.t.r: Aries Solar, Dassiesklip and Konkoonsies Solar*

Ms. Nyker holds an MBA from the London Business School, where she was a Merrill Lynch Scholar, and a Business Science degree in Finance from the University of Cape Town. She was recently nominated as a 2012 Young Global Leader by the World Economic Forum and is currently part of the Global Agenda Council on New Energy Architecture

## ANSOLE Regional Meeting in West Africa 2014 (ARMWA 2014) at KNUST Kumasi

ARMWA 2014 is closely linked to SSA Solar 2014 because it was organised based on the invitation I received from Magenta Global. I am grateful to Maggie Tan, CEO of Magenta Global for indirectly sponsoring ARMWA 2014, which was held from the 25th to the 26th of April at the Kwame Nkrumah University of Science and Technology (KNUST). Dr. Kate Showers, ANSOLE national representative in Canada, presented a history-focused lecture that strongly caught the attention of the audience. She succeeded in relating renewable energy to the slave trade. This paper provided a contrast to the many and diverse technical papers that prompted lively discussion. Dr Emmanuel Ramde and his local organizing team did everything to demonstrate the hospitality for which Ghanaian people are famous. The report of Dr Emmanuel Ramde (see below) provides further details on the event.



*Participants at ARMWA 2014 at KNUST, Kumasi, Ghana*

## May 2014

### Ms Safae Aazou, ANSOLE´s ANEX student defends her PhD

The 20th of May, which is my birthday, was spent with the family of Ms Safae Aazou, the first person to use the ANSOLE student exchange program ANEX (Africa –North Exchange) to complete the experimental part of her PhD. I was a jury member of her defense, which took place on the 21st of May at the University of El Jadida, Morocco. Ms Aazou had used the ANEX program to spend two months at the Linz Institute for Organic Solar Cells. The research accomplished during this time led to two high quality publications, including a *Nature Photonics* article (*Nature Photonics* **2013**, *7*, 811-816).The PhD exam, which lasted more than 4 hours because of the numerous questions from the 9 examiners, obtained the highest appraisal given by the University of El Jadida.





*Left: 20.05.2014: 48th birthday celebration of D.A. M. Egbe with the family of Safae Aazou. Right: 21.05.2014: PhD exam of Safae Aazou at the University of El Jadida, Morocco*

## June 2014

### ANSOLE participates at German-African Campus

*by Bettina Schmidt*

From the 19th to the 21st of June, Dr Bettina Schmidt and PD Dr. Daniel A. M. Egbe attended the"German African Campus" in Berlin organized by the Partnership with Africa Foundation (Stiftung Partnerschaft mit Afrika (SPA) based in Potsdam, Germany

**"Research Together, Learn from Each Other, Establish Partnerships!"**, the motto of the conference, was chosen in order to identify, discuss and further design and structure future models for German-African partnerships in the university sector.

Dr. Katja Böhler first chairperson of SPA and Holger Ehmke of the Ministry of Economic Cooperation and Development, BMZ (photo) welcomed the guests and outlined the importance of the initiative.

Prof. Mayunga Nkunya, chief executive of the Inter-University Council of East Africa, gave an overview from an African perspective on the various areas of cooperation between Germany and African universities with over 400 partnership programmes.




*f.l.t.r: Dr. Katja Böhler, Holger Ehmke, Prof Mayunga Nkunya, Cay Etzold, PD Dr. Daniel Egbe*

At the conference, ideas and innovative models for German-African partnerships were presented. As requested by SPA, Daniel Egbe and Bettina Schmidt presented their ideas of "one" webportal for German-African partnerships in higher education and discussed with the participants how it could become an important tool for networking, as well as to support and facilitate partnerships. The feedback of the workshops participants was taken into account in the final document. Another concept focused on how universities can support business start-ups as part of German-African cooperation.

Cay Etzold from the German Academic Exchange Agency (DAAD) outlined the achievements of many years of cooperation with universities in Africa and outlined how SPA and DAAD can work together in future.

The German-African Campus provided a unique opportunity for having exchanges with like-minded individuals from Germany and the African continent and to source potential new partners.



*f.l.t.r.: Dr. Karine Ndjoko Ioset, PD Dr. Daniel Egbe, Dr. Bettina Schmidt; conference participants; Prof. Dr. Arnold van Zyl speaking with PD Dr. Daniel Egbe*

We were able to make a number of valuable contacts with colleagues for ANSOLE. Prof. Mayunga Nkunya brought ANSOLE in contact with the Vice-Chancellor of the Nelson Mandela African Institution of Science and Technology in Arusha, Tanzania, Prof. Dr. Burton L. M. Mwamila, Prof. Dr. Arnold van Zyl, rector of the Chemnitz University of Technology, with whom Daniel Egbe shared a round table discussion on German-African partnerships in higher education, and Dr. Karine Ndjoko Ioset, Coordinator of the Förderverein Uni Kinshasa e.V. (fUNIKIN), who agreed to engage her institution in cooperation with ANSOLE. Furthermore, ANSOLE was also represented at the event by Dr Zivaye Chiguvare, Director of the newly created Namibian Energy Institute and ANSOLE regional representative in Southern Africa.



*Participants at the German-African Campus from the 20th to the 21st of June 2014 in Berlin*

The event was a very successful get-together for all those wishing to demonstrate their interest in the future of the German-African university projects and other ventures: researchers, lecturers and other university staff, students and alumni, as well as representatives from industry and commerce.

More information

## July 2014

## ANSOLE signs cooperation agreement with *f*UNIKIN

*by Bettina Schmidt*

On the 9th of July, ANSOLE signed a cooperation agreement with *f*UNIKIN in Würzburg, the German headquarter of *f*UNIKIN. Its chairperson, Prof. Dr. Dr. h.c. mult. Gerhard Bringmann, is the acting director of the Institute of Organic Chemistry of the University of Würzburg.



*Signing of the Cooperation agreement between ANSOLE and fUNIKIN*

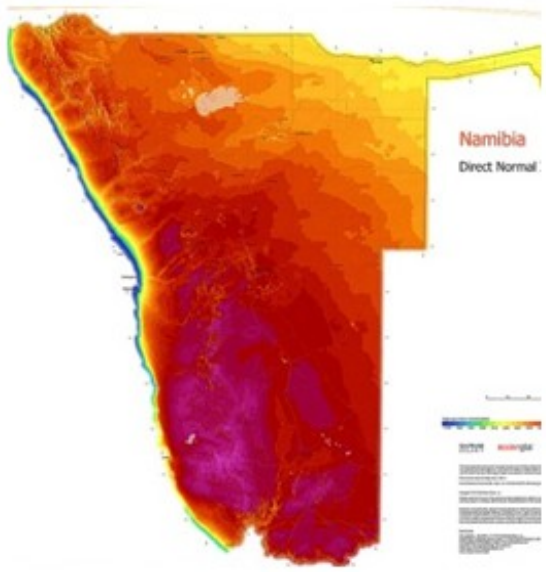
For many years, Gerhard Bringmann, professor at the Institute for Organic Chemistry at the University of Würzburg has been engaged in activities supporting cooperation with African universities, such as the BEBUC scholarship programme. "*Bila elimu hakuna manendeleo na amani*" (without education no wealth and peace) is the motto for his involvement together with his colleagues Virima Mudogo at the University of Kinshasa (DRC) and Karine Ndjoko Ioset. During our first meeting with Karine at the SPA's German-African Campus in Berlin (see article above) we found common ground of action.

On the 16th of July, Mr Mutiu Kolade Amosa, based in Malaysia, became an ANSOLE member. He was later appointed the ANSOLE´s national representative in Malaysia, making Malaysia the 20th non-African country with an ANSOLE representative.

## Renewable Energy in Namibia

*by Zivayi Chiguvare*

Renewable energy (RE) refers to the natural flows of energy abundantly available at any given location. Namibia has enough natural resources to go the renewable energy route, and is working towards a renewable energy economy. There are considerable efforts and Government will in this direction. However, to accelerate this endeavour, financial and human resources, capacity building for relevant expertise (including research and development), a critical mass of industry players, development of the market for the renewable energy products, suitable regulations, enforcement of standards, etc. are required. Namibia is already moving in the right direction by channelling more resources towards this effort. International support is welcome, and the government has provided an enabling environment with fair regulations.




Namibia is endowed with one of the highest world annual solar energy regimes, above 2200 kWh/m$^2$ direct normal irradiation, wind energy regimes that can qualify for large wind turbines along the coast, and about 24 million ha of invader bush (~10 tons/ha) that can be used for biomass energy production.

*DNI map of Namibia (© Polytechnic of Namibia. The study that produced the radiation map was commissioned by the RE and Energy Efficiency Institute, REEEI)*

Namibia is one of the countries that have embraced renewable energy technologies as a pathway towards sustainability. The government, through the Ministry of Mines and Energy, has various programmes running, and regulations are at various stages of development to ensure a smooth introduction of widespread use of renewable energy technologies.

### Key stakeholders in Namibia

Various stakeholders that include the Ministry of Mines and Energy (MME), Centre for Renewable Energy and Energy Efficiency (CREEE) at the recently launched Namibia Energy Institute (NEI) of the Polytechnic of Namibia, Electricity Control Board (ECB), Namibia Power Corporation (Nampower), Ministry of Environment and Tourism, etc., are at the forefront of championing the renewable energy endeavour. The renewable energy technologies however have a high upfront cost, and Namibia needs to partner with other international institutions such as the UNDP, and development agencies like DANIDA, GIZ, DFID, ADA, IRENA etc., to study and develop the relevant technologies and regulations, as well as developing the country's human resource capacity in this respect.

### Policy interventions

The White Paper on Energy Policy of 1998 is currently under review. The mandatory use of solar water heating in government buildings was proclaimed through the Cabinet directive on solar water heaters: – all public buildings had to meet their water heating requirements with solar water heaters. Feed-in tariffs are a topic under discussion for larger independent power producers. Examples include plans under way to establish a 50 MW concentrated solar power plant within 3 to 4 years from now, and 30 MW PV procurement from independent power producers. Regulations for procurement are now being developed by a Project Steering Committee set up by the Minister of Mines and Energy.

### Off-Grid energisation master plan

The Tsumkwe mini grid is a typical example of how communities far away from the main electricity supply grid can be provided with power from a hybrid solar energy – diesel generator system. A second minigrid is currently under construction, with over 290 kWp capacity at Gam. The experience gained could be used to power other communities in similar circumstances in the country.



The MME has a solar revolving fund for individuals to procure Solar Home Systems, solar pumping systems, and solar water heaters, at a subsidized loan with 5% annual interest.

The Government is establishing energy shops around the country as hubs or contact points of the revolving fund in order to increase rural access to sustainable modern energy. Another loan scheme was launched towards the end of 2013 by the SME bank together with the Environmental Investment Fund, where clients are charged interest at the prime rate minus 5 %.

*202 kWp photovoltaic - diesel minigrid at Tsumkwe (© courtesy of Mr. Abraham Hangula, an Energy Efficiency Specialist at the REEEI)*

### Feed-in Tariff policies in Germany

Renewable Energy Feed-in Tariff (REFiT) policies are a promising mechanism to unlock renewable energy development in Africa. Best example of REFiT is Germany which has set the benchmark since 1992. Initially the feed in tariff was higher than the cost of energy generated from conventional sources, as an incentive to develop the industry. A lot of success has been scored in Germany in this regard. Just recently it was announced that grid parity could be achieved in the very near future. Germany has been reducing the difference between the grid tariff and the REFiT, and could be in a position to eliminate it all together. What is needed in a country like Namibia is to create a level playing field so that if conventional energy sources receive a subsidy, renewable energy sources would too.

### Conclusion

Namibia is going in the right direction to harness renewable energy resources which are abundant, by working towards enabling policies and establishing regulations and standards for the industry. This will not only reduce dependence on externally generated energy, but also improve the quality of life of all Namibians in the near future. I say to the Government of Namibia “We should not lose the impetus”, and to the Namibian population “Learn as much as you can about renewable energy, and keep your eyes and ears open for projects that may benefit you, too”. To industry: “There are great opportunities for business in Renewable Energy, don’t get left behind”.



**Dr. Zivayi Chiguvare** is the ANSOLE national representative in Namibia and the regional representative in Southern Africa. He is currently the Director of the Renewable Energy and Energy Efficiency Institute, a government funded national institute, at the Polytechnic of Namibia (Namibia University of Science and Technology). He originates from Zimbabwe, has a MSc in Applied Physics degree from the University of Zimbabwe, studied in Cuba and holds a Doctor of Sciences degree in Physics attained at the University of Oldenburg in Germany with a Magna Cum Laude completed in 2005, where he specialised in photovoltaics. He worked on various programmes on PV, published extensively, and, in 2008, he joined the University of the Witwatersrand, Johannesburg, as a lecturer, where he participated in the setting up of solar cell and nanotechnology research laboratories. **Contact**: zchiguvare@polytechnic.edu.na

Renewable Energy & Energy Efficiency Institute

## Accelerating the adoption of RE technologies to enhance the socio-economic development of Sub-Saharan Africa

*by Samuel Adu-Asare*

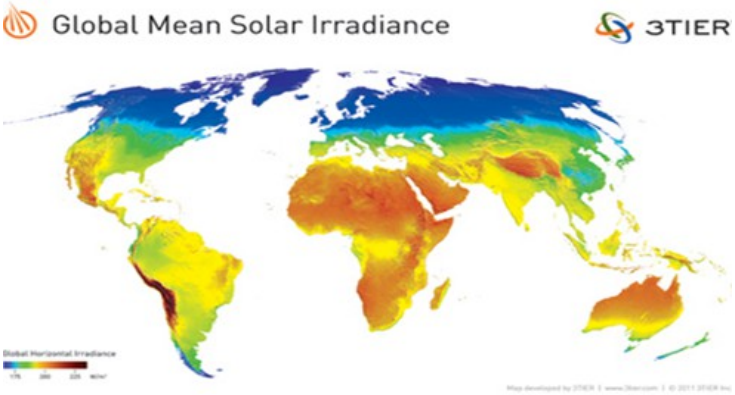
Sub-Saharan Africa is a sub-continent full of countless opportunities and has the capacity to raise its economic profile. With an abundance of both human and natural resources, such as conventional and renewable energy, great possibility exists to use these resources to turn its social and economic future around within this century.

### Solar Radiation in Sub-Saharan Africa

The African continent is blessed with high solar radiation making it possible to deploy solar energy systems everywhere and generate more electricity for socio-economic development (map source).

As shown in the above figure, many African countries experience a very high number of sunny days per year, with bright sunlight in dry areas and the deserts in particular. The distribution of solar resources across Africa is fairly uniform, with more than 85% of the continent’s landscape receiving 2000kWh per $m^2$ year” (*link*). This gives solar power the potential to bring energy to virtually any location in Africa without the need

for expensive large scale grid level infrastructural developments. Yet an estimated 68% of the population living in sub-Saharan Africa lacks access to electricity (*link*).




## Mineral resources in Sub-Saharan Africa

Sub-Saharan Africa's mineral resources are being exploited for development that does not benefit and/or improve the livelihood of the majority of its population. Every country has a share of valuable minerals that can and should be used to reverse the lack of progress that has plagued the continent for ages. These include: oil, gas, coal, copper, bauxite, gold, diamond, uranium, chromium, cobalt, manganese, phosphate, platinum and palladium.

## Current situation of energy development in Sub-Saharan Africa

The general outlook of sub-Saharan Africa appears to be dark and gloomy - a continent that has low energy generation for socio-economic development. One of the challenges facing sub-Saharan Africa is the low access to reliable electricity. Unreliable power generation and supply means that businesses do not invest in the region unless they have to. Local economies remain nascent and poverty persists. Indicators, with respect to sub-Saharan Africa are astonishing:

- 599 million people (68 percent of the population) do not have access to electricity
- 695 million people (79 percent) burn wood, shrubs or cow manure to cook their food. (link)

The absence of affordable, reliable electricity in sub-Saharan Africa is estimated to constrain economic growth by 2-5% per year.

## The fundamentals

In contrast to the 'dark and gloomy' image is the area's potential. Sub-Saharan Africa is as big and vast as a continent and has quite a lot of natural resources. These include conventional energy such as oil and gas, coal and hydro as well as renewable energy sources. Solar, wind and biomass abound. However, harnessing these natural resources for socio-economic development has been difficult for a majority of the countries, thus relegating the continent to a position of the most challenged as far as poverty alleviation is concerned. Out of the total number of 42 most poor countries in the world, sub-Saharan Africa has the biggest share - 36 (85.7%)

There is no place where extreme poverty is more evident than sub-Saharan Africa. Almost 50% of the population lives on under $1 a day. Sub-Saharan Africa is one of the few places that is not making progress on the Millennium Development Goals - the number of impoverished people has doubled since 1981 - and is perhaps the most important region in the fight against poverty.

"Access to electricity is particularly crucial to human development as electricity is, in practice, indispensable for certain basic activities, such as lighting, refrigeration and the running of household appliances, and cannot easily be replaced by other forms of energy. Individuals' access to electricity is one of the most clear and un-distorted indication of a country's energy poverty status", according to the World Energy Outlook (source).

The electrification rate in sub-Saharan Africa is 30.5%. Out of this, 59.9% of the urban population has access to electricity, in contrast to a mere 14.2% of the rural population. The population without access to electricity adds up to 585 million.

## Electricity production in billion kWh as at 2012

| Developed Countries | sub-Sahara Africa |
|---|---|
| 1. China - 4,604 | 1. South Africa - 238 |
| 2. USA - 3,953 | 2. Nigeria - 20 |
| 3. Japan - 938 | 3. Mozambique - 15 |
| 4. India - 835 | 4. Zambia - 10 |
| 5. Germany - 556 | 5. Ghana - 8 |
| 6. France - 510 | 6. Zimbabwe - 8 |
| 7. Brazil - 509 | 7. Congo, DRC - 7 |
| 8. South Korea - 460 | 8. Kenya - 7 |
| 9. Indonesia - 141 | 9. Cote d'Ivoire - 6 |
| 10. Thailand - 139 | 10. Cameroon - 5 |
| 11. Norway - 130 | 11. Sudan - 4 |
| 12. Malaysia - 118 | *Source: Indexmundi.com* |

The figures in the table indicate electricity production in billion kWh as at 2012. With respect to the 11 sub-Saharan African countries excluding South Africa which produce 238 billion kWh 2012, the remaining countries put together as indicated in the adjacent table, were able to produce a total of a mere 90 billion kWh in 2012. Focusing on increasing electricity production in Africa for value addition is very necessary for economic growth.

## Integration of RE for socio-economic development in Sub-Saharan Africa

### Agriculture

Food security is a concern in sub-Saharan Africa. Nevertheless, there is wide agreement that "African agriculture has enormous potential for growth, thanks to its abundant natural resources, namely land and water"



(source)" The strong potential of agriculture in sub-Saharan Africa is welcome news. Agriculture is the backbone of overall growth for majority of countries in the region and essential for poverty reduction and food security. But, as pointed out by the 2008 World Development Report, (source) failure to exploit this potential has significantly compromised the role agriculture could play in reducing poverty. In line with this, renewable energy applications such as solar energy can assist subsistence farmers to add value and scale up productivity on the continent. Solar water pumps are being used for drip irrigation in Ghana and Kenya, for example. The increased use of solar crop dryers (see photo) has the potential to minimize crop losses and thus increase gains for farmers by addressing the challenges of post-harvest losses (PHL) and value addition,

## Manufacturing

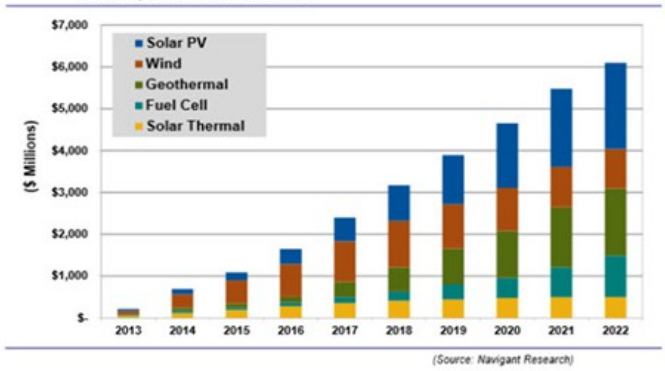
An interesting fact to consider in relation to the need for clean energy is that thermal energy consumption has accounted for 53% of total industrial energy consumption globally. To create thermal energy, we often burn up a considerable amount of coal, kerosene or petroleum. This can have serious impacts on the environment. Solar energy could be used now to replace existing thermal energy sources.

"If 10% of thermal energy consumed by tobacco, food processing, papermaking, textile, chemical engineering, woodworking, plastics and pharmaceutical industries can be provided by solar energy, then an annual energy savings of 26.63 million tons of standard coal can be achieved". This will also reduce carbon dioxide emission by 86.82 million tons." (source)

## Mining

Due to the intense demand for in both on- and off-grid energy in the mining sector, solar energy systems are preferred options to address the energy needs in this sector.

*Chart 1.1 Renewable Energy for the Mining Industry Revenue by Technology, Aggressive Investment Scenario, World Markets: 2013-2022*




Concern over the unpredictable nature of diesel prices, pressure from government regulators, and the need to reduce energy costs and carbon footprints will push the mining industry to use more renewable energy, according to a Navigant Research report. Navigant Research forecasts (source) that renewable energy technologies will supply between 5 and 8% of the world's mining industry power consumption by 2022.

## Small Scale Mining

A company such as GSI Mining Systems (Source www.gogreen.cr/energy-products.html), dealers in eco-friendly mining solutions, offer Solar power driven - or a combination of solar and diesel generators - which provide small scale miners the ability to process materials or ore in remote locations without worrying about nearby power sources. Such equipment can be adaptable in the context of small scale mining in sub-Saharan Africa. The GSI solar water panel equipment can also supply power for water pumping equipment.

## Oil & Gas

Sub-Saharan Africa stands the chance to benefit from integrating solar energy into the oil industry. The Persian Gulf nation of Kuwait provides an example of how this might be accomplished. In 2013, procurement for a planned five-megawatt plant to help power oil and natural gas extraction was tendered for, according to the Kuwait Oil Company (KOC). This falls in line with the KOC's decision to make use of RE technologies to help meet the needs of the country's oil sector because of an anticipated need for more energy to meet the expected increased global demand of 44% over the next 20 years (source).

## Telecommunication

Solar energy complements the provision of lighting and charging of cell phones by conventional power sources. This has facilitated businesses and improved livelihoods through the power of access to communication (source). The growth of the telecommunication industry in sub-Saharan Africa has witnessed a boom, positioning the continent as one of the leading regions with the highest demand for cell phone use, growing from a low of 10 million subscribers in 2002, to a high of 600 million subscribers in 2012. With respect to projected international bandwidth demand growth by region, Africa is the highest with a projected 50% demand growth from 2012 to 2019.

As a result, Africa is the world's fastest growing mobile phone market. Soon there will be 735 million people using their phones for everything from transferring money to receiving weather information, while these phone systems also support GPS and other activities that will contribute to the socio-economic benefits and transformation of the continent. Mobile penetration in Africa is now second only to Asia, according to the report by the industry group Groupe Speciale Mobile Association (GSMA). Its report found that subscriber

levels have grown by almost 20 per cent for each of the past five years. The GMS coverage since 1990 to 2008 has grown appreciably, contributing to the acceleration of social and economic development on the continent. Obviously, this will create a significant increase in demand for solar phone charging systems in the near future.

### Contribution of solar energy for telecommunication and phone charging in off-grid areas in Sub-Saharan Africa

### Ghana solar industries

The Association of Ghana Solar Industries (AGSI) was set up in 2006 by various industry stakeholders. Membership comprises solar companies and associate members who ascribe to the objectives of the Association, which are: to:

- raise the profile of the solar industry in Ghana
- promote the developments of standards within the industry
- arrange training in RE
- ensure high level of maintenance and service in the industry
- ensure quality products
- investigate ways to reduce the high up-front cost of solar energy systems.

### Conclusion

There is an imperative for sub-Saharan African countries to use their own natural endowments to generate more energy for socio-economic development. Renewable energy, such as solar power stands to play a key role in providing lighting for the millions on the continent who have inadequate lighting for self-sustenance. To do so, three major issues are of concern.

1. Sub-Saharan African governments must focus on harnessing their abundant renewable energy resources for lighting and socio-economic development.
2. Policy initiatives are needed that will create the necessary incentives for investments in renewable energy technologies in order to accelerate the adoption of sustainable energy application in sub-Saharan Africa.
3. There is a great need to promote technical education and awareness creation concerning the application of renewable energy technologies.

It is, therefore, necessary for governments to come up with policies and laws that will promote the development of renewable energy use on the continent, and engage private sector bodies in implementation. The absence of effective legislation on renewable energy development is a disincentive to investment in the sector and needs to be addressed.

Challenges confronting efforts in the application of renewable energy technologies are due mainly to the low awareness of green technologies, and the perceived high cost of renewable energy technologies. In countries with high grid connection, competition from grid connection to off-grid areas is gradually becoming a threat in displacing solar energy markets where solar energy projects have been deployed.



**Samuel Ada-Asare** is a consultant in socio-economic research and has for the past twenty three years worked in the energy sector. He is presently working for the industrial Association of Ghana Solar Industries under the World Bank Ghana Energy Development and Access Project. He lives and works in Ghana-West Africa. This presentation was delivered at the Sub-Saharan Africa Conference held in Accra, Ghana, from the 23th to the 24th of April 2014.
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## Future engineers addressing development challenges of the Democratic Republic of the Congo (DRC)

*by Karine Ndjoko Ioset*

A major drawback in Africa is the neglect of higher education and research by governments and donors, in favor of basic education. This fact is evidenced by the lack of teachers, educational programs, and respect for the academic agenda. In sub-Saharan institutions -, in particular in DRC - these multi-factoral problems drastically affect the relevance, quality, and management of higher education leading to a continuous brain drain.

DRC is one of the poorest countries in the world. In the Human Development Index (HDI), it is ranked together with Niger in last place worldwide! For decades, like a curse, the rich resources of the Congo brought mineral plundering with many conflicts that are still destabilizing the country, especially in the Eastern part. Presently, poverty and inequality severely affect the two fundamental social sectors of health and education. The Congolese educational system is facing ineffective management, shortage of financial resources, poor

and inadequate infrastructure, not up-to-date – and non-relevant – teaching and research, over-aging of the academic staff. Large student numbers are a major problem; for example, the University of Kinshasa (UNIKIN), which was designed for 5,000 students, presently has 26,000 students!,

The challenging and ambitious Excellence Scholarship System named BEBUC (*Bourse d'Excellence Bringmann aux Universités Congolaises*) aims at breaking this vicious circle and enabling young, dynamic Congolese to be the actors of their personal blooming and to take part in the development of the country. BEBUC contributes to the Congolese society creative, skillful experts and decision makers who will address the development challenges in different areas such as, health, agriculture, environment and engineering (see www.foerderverein-uni-kinshasa.de; Angew. Chem. Int. Ed. 2011, 50, 8482 – 8490).

## The project

BEBUC defines excellence as the combination of outstanding marks, interdisciplinarity, and internationality with ethical competence, visionary planning, and pro-active commitment.

The candidates for the scholarship must submit an application; the selected ones present a subject in their field on the blackboard, followed by an interview. The scholarship is for one year and must be defended every consecutive year (in English!). For a master's degree grant, an excellent Congo-relevant project proposal must be submitted and defended as well.

The scholarship system is integrated in the entire educational pipeline, even during the difficult transitions between graduation and the professionalization phase:

## Primary school → high school → university → re-entry

The scholars are trained to plan ahead, introduce themselves, and to write convincing research proposals. Through BEBUC, competitive selection, financial support, individualized mentoring of young Congolese students is practiced. To become the professors of tomorrow, these students need to accomplish their studies rapidly and in depth, strengthen their African identity through south-south cooperation, and learn competitiveness through international PhD programs.

## The results

Over the past six years, the BEBUC Excellence Scholarship System has proven to be a powerful instrument to select and support outstanding young Congolese, and to accompany them on their way to the professorship. Brilliant young people from virtually all subjects are now actively pursuing their academic careers. This program has shaped up to become a model for the sustainable development of other African countries too.

Presently, the total number of BEBUC scholars at the 13 involved universities and seven schools in the four regions (West, Center, South, and East) and one in Congo-Brazzaville, is 140, among them 47 women (33.6%) but only 2 in engineering and 1 in chemistry. Out of the total number of scholars, 76 are bachelor students, 19 are enrolled in masters programs, 10 (awarded international grants) are in PhD studies. Moreover, 4 re-entry scholars ( "who are also acting as" BEBUC professors!) have so far been supported.

## The promotion of gender equality

The low representation of girls at universities motivated BEBUC to start the program from the bottom with the integration of 2 primary and 5 high schools. The objective is to empower girls, by increasing their percentage and their position among BEBUC scholars. They are mentored by excellent African women scientist as role models. They are also individually empowered through seminars promoting a positive interaction and collaboration with men scholars.

## BEBUC scholars in engineering promoting RE



In the course of the Kin-Science Event, named *Semaine de la Sciences et des Technologies* organized by the ASBL Investing In People (IIP) in collaboration with the Education Ministries of DRC (EPSP and ESURS) which took place at *l'Institute de la Gombe* in Kinshasa from 11-12 April 2014, BEBUC scholars had the opportunity to present a topic on renewable energies to pupils as well as to a large public.

The intervention was divided in three parts with an informative talk, a demonstration of modules using solar energy, and, finally, a contest with prizes. There was an enthusiastic interest from the audience, as access to sustainable energy is still a great challenge in DRC.

## The development of a global partnership

Our NGO fUNIKIN (www.foerderverein-uni-kinshasa.de), that has implemented the scholarship BEBUC in the Congo since 2008, has more than 1,300 international personal members and 31 institutional ones (among them all partner universities and partner schools). The NGO collaborates with private sponsors and foundations (Else Kröner-Fresenius-Stiftung, Holger-Pöhlmann-Stiftung (flyer). The restricted, as yet non-sustainable, opportunities to perform

masters or PhD studies in DRC lead BEBUC to partner with academic institutions worldwide, preferentially in Africa. In the field of renewable energies, BEBUC strongly promotes the development of master research projects in the frame of a South-North-South scientific partnership.



**Karine Ndjoko Ioset** is, since 2012, the Research Program Deputy and General Manager of the scholarship system named BEBUC (Bourse d'Excellence Bringmann aux Universités Congolaises), educational partnership between the University of Würzburg (Germany) and institutions in the Democratic Republic of Congo (14 universities, 5 high and 2 primary schools). Prior to BEBUC, holding a PhD in natural products and analytical chemistry from the University of Lausanne (Switzerland), she worked for 10 years as the responsible person of the analytical service at the University of Geneva (School of Pharmaceutical Sciences, Switzerland). She managed the Instrumental Park as well as research projects in collaboration with industries, and also academic institutions in Africa and in South America. **Contact**: karine.ndjoko@uni-wuerzburg.de

## ANSOLE Regional Meeting for West Africa (ARWA 2014)

*by Emmanuel Wendsongre Ramde*




*f.l.t.r.: Prof Ahmed Addo, Prof. Yao Azoumah, Prof.S. I. K. Ampadu, PD Dr. Daniel Egbe*

The ANSOLE regional meeting for West Africa (ARMWA 2014) took place on 25 and 26 April 2014 at the Energy Center, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana.

During the opening ceremony the welcome address was given by the provost of the College of Engineering, Prof. S.I.K. Ampadu. The Chairman of the opening ceremony was Professor Daniel Egbe, the coordinator of ANSOLE.. Also present was the director of The Energy Center, Prof. Ahmed Addo and the representative of GIZ (*Gesellschaft für Internationale Zusammenarbeit*) at KNUST, Mr Andreas Ahrenbog.

About 50 renewable energy experts, non-experts, scientists, researchers, and industry experts from Austria, Burkina Faso, Canada, Cote D'Ivoire, Ghana, Germany, Nigeria and Togo attended this scientific meeting. The majority are members of the African Network for Solar Energy - ANSOLE. On the Ghana side, participants were mainly from KNUST, the University of Ghana, the University of Energy and Natural resources and from Wa Polytechnic.



The Association of Ghana Solar Industries was represented by Mr Samuel Adu-Asare. Mr Prosper Ahmed Amuquandoh of the Energy Commission of Ghana was also present.

Two keynote lectures and 16 oral presentations ranging from solar PV, solar thermal, solar distillation, energy policy, wind energy, biogas, biomass, hydro power and energy-related history were given. Arrangement has been made with the publisher of the African Journal of Science, Technology, Innovation and Development (AJSTID) for the presentations to be peer-reviewed and published in a Special Issue of the journal. The Special Issue, will not only serve to increase the readership of individual contributions, but will also provide international publicity for KNUST, The Energy Center, and ANSOLE.

The conference was financially supported by the host, The Energy Center, ANSOLE e.V., Dr. Kate Showers, and indirectly by Magenta Global LTD, which sponsored the flight of Prof. Egbe to Ghana. The participants also willingly paid for their transportation and lodging but expressed the need to have financial assistance for future meetings.

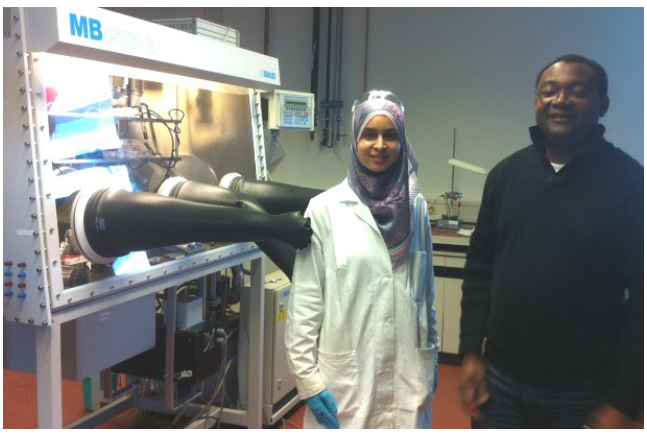
The local organizing committee was chaired by Dr Emmanuel Wendsongre Ramde. The other members were Prof. Ahmad Addo, Dr Yesuenyeagbe Fiagbe, Dr Richard Opoku, Dr Addae-Kagyah Michael, Dr Jonathan Tsikata, Mr Eric Essandoh and Mr Mawufemo M. Cyrus. The initiator and international organizer of the event was Prof. Daniel Egbe. Certificates of participation were given to participants during the closing ceremony.

ARMWA 2014 was a great success. It was a good opportunity given to all participants to learn, to share experiences and to network. Note that preparations towards **ANSOLE DAYS 2015** (25-29 August 2015) at KNUST have already started.



**Dr. Emmanuel Wendsongre Ramde** joined the Department of Mechanical Engineering, Kwame Nkrumah University of Science and Technology, Ghana in 2005. He is currently the Acting Head of one of the four sections of the Department of Mechanical Engineering, namely the Thermofluids and Energy Systems Section. His research focus has been on Energy Efficiency and on Solar Thermal Systems (Cooling, Heating and Power Generation). Dr. Ramde is currently investigating the technical feasibility of Concentrating Solar Power in West Africa. In that regard, he is the co-Principal Investigator of a research project titled “Development of a Cost-Effective, Modular and Dry Concentrating Solar Power for Africa: Design and Test of Components: CSP4Africa Project”. Dr. Ramde is the Vice Regional Representative of ANSOLE for West Africa and the Ghana National Representative of the same network. **Contact**: eramde@gmail.com

## Interview with ANSOLE exchange student- Safae Aazou




**Safae Aazou**, was born on May 12th 1984, in Settat, Morocco. She studied in Feqih Erradi Primary School in Azemmour from 1992 to 1997, then in Lalla Hasna Senior High School from 1998 to 2000, and received a baccalaureate diploma in 2003 from Oum Errabiii High School in Azemmour.

In 2006 she earned her Bachelor´s Degree in physics from Chouaib Doukkali University (UCD), El Jadida, Morocco. In 2008 she was awarded her Master´s Degree in Electronic Automatic and Signal Processing, from UCD, then her PhD Diploma from both UCD and Ulg (Luik University, Luik, Belgium) in 2014.

**Ms Aazou, you just defended your PhD thesis. What was/is your area of research?**

My main research interest is in the area of microelectronics, photovoltaics, Schottky diodes, organic semiconductors, modeling, optimization and simulating with PSpice, Maple and Mathematica. My PhD project was entitled “Simulation of an optoelectronic device using the finite difference scheme & fabrication, characterization and modeling of organic bulk hetero-junction solar cells”. The main objective of the project is to understand the solar cell behaviour and develop its performance.

**How did you learn about ANSOLE?**

I met Professor Daniel Egbe, ANSOLE coordinator, during a conference in Morocco, Congrès International sur les Energies Renouvelables et L'Efficacité Energetique" (CIEREE 2011), which was held from the 20th to the 21st of April 2011 at the Université Sidi Mohamed Ben Abdellah-Fès. He introduced the network to me, which motivated me to become an ANSOLE member.

**How did ANSOLE help you in the completion of your PhD?**




Based on a recommendation from Professor Egbe, I was invited by Professor Serdar Sariciftci head of LIOS, Linz Institute for Organic Solar Cells, Austria, to present my PhD research. Later on, Professor Sariciftci gave me the opportunity to do the experimentation part of my PhD project in LIOS for two months.

During that time, Assistant Professor. Matthew White taught me how to prepare organic devices, and Professor Egbe gave me the polymers he synthesized to prepare these organic devices.

**What were your experience in the host laboratory and living in a host country?**

At LIOS, I had the opportunity to prepare, characterize and model organic devices: bulk heterojunction solar cells, organic light emitting diodes and organic shottky diodes. The experimentations led to very important results and various scientific papers in international journals such as

- Nature Photonics (2013 Vol: 7(10):811-816, DOI: 10.1038/nphoton.2013.188),
- Journal of Optoelectronics and Advanced Materials (2013 Vol. 13, 395-404).

I also presented my work at international conferences:

- Solar Energy for World Peace. Istanbul, Turkey, August 17-19, 2013
- Spring Meeting and Exhibition, San Francisco, CA, USA, April 01-05, 2013
- ANSOLE-ICTP Fellows Workshop, Mohammedia, Morocco, January 05, 2013
- International Conference on Advanced Materials for Photonics, Sensing and Energy Conversion, El Jadida, Morocco, December 05-07, 2012.
- Education and Capacity Building for Renewable Energies, Giessen, Germany, September 17-19, 2012

My stay in Linz gave me the opportunity to discover this lovely city and, most importantly, to become part of an international network (ANSOLE) and, through LIOS, make new friends from different countries.

**Can you inform us about your PhD studies from the beginning until completion.**

I began my PhD project with Professor El Mahdi Assaid in Chouaib Doukkali University in 2009. The main project was the study of photovoltaic solar cells, modelling and simulation. We have published many papers in IEEE proceedings. In October 2010, I moved to the Laboratory for Solid State Physics, Interfaces and Nanostructures, Physics Department, Luik University (ULg) in Belgium, as a PhD student with Professor Ngoc Duy Nguyen, where I had the opportunity to pursue a joint PhD between UCD and ULg. In Belgium I learned about the numerical schemes of the semiconductor equations.

From January 16th to March 16th, 2012, I had the opportunity to visit LIOS, where I did the preparation and characterization of different organic devices. Later on, I returned to Morocco to complete the numerical solution of the semiconductor equations, and to model all the organic devices I prepared in LIOS, which led to an important article. In December 2012, I finished writing my thesis.

Abstract of Safae Aazou's PhD thesis:

"This thesis is devoted to theoretical and experimental studies of the basic device of photovoltaic conversion: the solar cell. First, renewable energies are highlighted in a general introduction and their economic, ecologic and environmental advantages in comparison with fossil energy resources are emphasized, then, a revue of structure, types of bonds and energy bands of a solid material is presented and the case of a semiconductor is considered. Starting from Maxwell equations, the basic semiconductor equations namely Poisson's equation and the continuity equations of electrons and holes are established. Next, discretizations of Poisson's equation using a finite difference scheme and of the continuity equations by the Gummel-Scharfetter scheme are performed. The obtained system of equations is solved iteratively according Newton-Raphson algorithm. The experimental part of the work, entirely achieved in LIOS affiliated to JKU at Linz (Austria), aims the fabrication and the characterization of organic bulk heterojunction solar cells based on two different polymers used as donors P3HT and AnE-PV*stat* and the molecule PCBM as acceptor. A comparative study of the fabricated solar cells indicates that the device efficiency depends on the donor:acceptor ratio. In order to understand electronic and optical mechanisms occurring within a solar cell and which may affect its characteristics and performance, and to identify the role of the equivalent circuit parameters describing these mechanisms, many electronic circuits modeling the solar cell are presented and only the five physical parameters circuit is chosen. Several physical parameters extraction methods are exposed in details and only three of them are retained to extract the five physical parameters of the fabricated solar cells. The effects of each physical parameter on the solar cell efficiency are investigated. Thus, the variation intervals of the photovoltaic metrics, fill factor and efficiency under the influence of parameters variations can be identified."

**What are your plans after PhD?** Many ideas come to mind ... foremost transfer and share all I know to other students and continuously improve my knowledge in the area of Photovoltaic Devices and Solar Energy which is the most important solution to the global warming that affects our planet.

**Any further comments?** My aim is to encourage the use of green energies to save future generations and our planet. I would like to thank ANSOLE for enabling me to do the experimental part of my PhD thesis in LIOS. I am grateful to the entire LIOS team for the support I received during my stay in Linz. Special thanks to the CNRST of Morocco and Erasmus Averroes funds which financed my stay in Luik, Belgium and in Linz, Austria.

# When the global south teaches the global north

*by Julia Boger*

It was a day in May 2014. I was waiting at Airport Nuremberg for a visitor from Ghana. I was not just waiting for any visitor, but was waiting for my professor who would come for the purpose of my thesis' defense Prof. Mariama Awumbila, the director of the well-known Centre of Migration Studies in Accra, Ghana, West Africa.

Whilst waiting for her to arrive safely – nervously and excitedly – my thoughts went back to where it all began, the journey of my PhD project. It was during the preparation of a business trip for my employer, the World University Service (WUS) in Germany. At WUS I am working in the field of assisted voluntary return. In the context of a larger governmental reintegration program, WUS supports the professional return of highly skilled experts to their source countries in Africa, Asia, and Latin America. In this context, in the summer of 2007, I was preparing for a visit to one of our partner organizations in Cameroon. It was a weekend and PD Dr. habil. Daniel Ayuk Mbi Egbe, member of the executive committee of World University Service (WUS) and I spent much time and effort doing research about Cameroon's labour market situation. We did not find much valid information about how people really get their jobs and which sectors or industries are promising for fresh graduates who studied abroad. Finally we collected the little information that was available and Daniel Egbe smiled and asked the crucial question: "Aren't you going to make something out of it? It should be something more sustainable than a report of the next business trip. Maybe you could start your PhD project?"

This was the starting point of my dissertation project: I decided to work on the subject of labor market transitions of highly skilled experts who studied in Europe and returned home. This, I hoped, from a practitioner's perspective would help to improve the situation of foreign students from the Global South in Germany. Most of these students really would like to return, but do not see realistic chances. Low wages, no job security, corruption and political instability is waiting in most of their source countries' labor markets. But then, still some graduates are optimistic and return. The question is, how do these graduates get their jobs? I started conducting my research about this particular question.

Luckily I was sponsored through the Bayreuth International Graduate School on African Studies (BIGSAS), which was established as part of the German government's excellence initiative in higher education. Prof. Dr. Dieter Neubert, an expert in development sociology, became my supervisor. Prof. Neubert, as well as my boss at WUS, Dr. Kambiz Ghawami, always supported my research and encouraged me to make the analysis of the data available to my research partners, especially in the countries of my research; Ghana and Cameroon.

Talking about people who kindly supported me and my project, I have to get back to my Ghanaian professor, for whom I was waiting at Nuremberg. Prof. Mariama Awumbila has a rich academic background. She holds a Bachelor´s degree in Geography and Sociology, a Post Graduate Diploma (Population Studies) from the University of Ghana and a PhD (Geography) from the University of Newcastle Upon Tyne, UK. She is currently head of the Centre for Migration Studies (CMS) and also senior lecturer at the Department of Geography and Resource Development, both at the University of Ghana.



*Prof. Mariama Awumbila and Prof. Dr. Dieter Neubert together with Julia Boger at the University of Bayreuth*

Her research interests include population, gender, environment and development inter-relationships, migration and development - as well as participatory research methodologies. She has undertaken extensive research and published in the areas of migration, livelihoods and development, land and natural resource tenure and management, gender and development and poverty reduction strategies. She has also provided extension services for several national and international agencies and community based organizations in Ghana. She is a member of the international Geographical Union (IGU) steering committee on Gender and Geography, the Union of African Population Scientists, and the Ghana Geographical Association. She currently serves on several national boards including the Ghana Statistical Service Board, the Ghana National Council for Tertiary Education, and the University Council of the University for Development Studies. At CMS, Prof. Awumbila also maintains strong international research collaborations. CMS for instance carried out projects in the field of migration with the UK University of Sussex Centre for Migration Research. Recently, the German Leibniz Centre for Marine Ecology started collaboration with CMS on environmental change and migration. Having this impressive experience in international research collaboration, Prof. Awumbila knew from the beginning that it would be important for me to get feedback from researchers in my

countries of research. Therefore, she strongly encouraged me to present my intermediary results of data collection at CMS.

During this presentation I received the most valuable feedback from researchers of the CMS for my data analysis. Thanks to this critical, and at the same time extremely constructive, feedback, I was able to identify contradictory data and to analyze my material from different perspectives. Apart from giving me this chance, Prof. Awumbila also sacrificed her time reading my thesis and even gave me the honor of being my external examiner, which meant that she had to be present at the thesis defense in Bayreuth. Prof. Awumbila always was interested in the intermediary results my research. By doing so, she represented other researchers and colleagues from Cameroon and Ghana and taught me perseverance; humility in waiting for results, and to become more aware of the need to learn from colleagues in the Global South.

On that day in May 2014, when I was waiting for her to arrive from Ghana, all these memories came to my mind again and I felt extremely proud and honored to have Prof. Awumbila as an examiner in the field of migration studies.

It was this particular moment during which I realized that there is need for more research collaboration in which the researchers in the Global North learn more about the research practice of the colleagues working in the Global South and that their expertise must be tapped much more often. I understood that only then will research about these important and pressing topics will become more balanced and less eurocentric.

My argument is that we need to improve these South-North research collaborations. Researchers from the South clearly should have a say about the research undertaken, and also receive the results, from researchers from the Global North. Having said this, I am also grateful for the institutional funding from the Global North. A good example of such multilateral collaboration is the graduate school BIGSAS. They not only supported the idea that I should have an examiner from one of my research countries, but also supported the idea financially.

It takes a joint partnership at eye-level between the North and the South, as well as between the countries in the Global South (south-south), to ensure that research about issues concerning the development in the countries of the Global South will be realistic, meaningful, sustainable and valid.

This is exactly the idea and message which led to the founding of the African Network for Solar Energy, ANSOLE. It is the idea of having a network whereby all participate and work together without borders and without continental restrictions, a network primarily built on expertise.

**Contact**: julia.boger@yahoo.de

Link for an article by Julia Boger on students returning from Germany to Ghana.

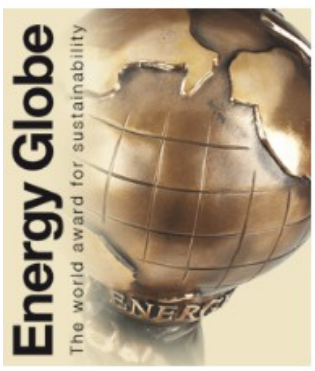
## Funding for young climate experts from developing countries

Alexander von Humboldt Stiftung/Foundation

The fellowship programme funded by the Alexander von Humboldt Foundation (link) allows future leaders to spend a year in Germany working on a research-based project of their own choice in the field of climate protection. Fellows are free to choose their own hosts. Applicants from a non-European transition or developing country who are involved with issues relating to the scientific, engineering, legal, economic or social aspects of climate change can submit their proposal.

The next application round is scheduled to begin on 15 September 2014.

## Hand in project proposals for the Energy Globe Award




The Energy Globe Award is presented annually to outstanding and sustainable projects in the area of environment and energy. Awards are presented on the national and international level for the 5 categories of Earth, Fire, Water, Air, and Youth. With more than 160 participating countries, the Energy Globe Award is today's most renowned worldwide environmental award.

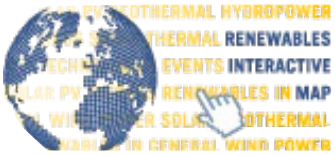
The international recipients of each category are presented with their awards as part of a ceremony that is broadcast all over the world. Also, they receive a 10,000 € cash award and are featured in international media.

Projects focusing on the conservation of resources, the improvement of air and water quality, the efficient use of energy, the implementation of renewable energies, as well as creating a heightened awareness of these issues, can be entered.

If you are involved in the implementation of an interesting project, you are invited to submit it to be considered for the 2015 Energy Globe Award.

Wolfgang Neumann, the founder of ENERGY GLOBE AWARDS, and the Energy Globe Foundation are based in Austria. You find all relevant information concerning the Energy Globe Award and how to enter a project under www.energyglobe.info.

## RE Interactive Map




To facilitate the accessibility of RE knowledge, the REN21 network has developed a web-based interactive tool to guide users through relevant renewable energy information.

The REN21 Renewables Interactive Map is a research tool for tracking the development of renewable energy throughout the world. It offers a streamlined method for gathering and sharing detailed national-level information on the status of renewable energy policies and regulations, the use of renewable energy technologies, and current investment trends.

Visit www.ren21.net.

## ANSOLE e.V. (intern)

*by Daniel Egbe and Bettina Schmidt*

### Life cycle

The month of March was a period of joy and sadness.

On the one hand, ANSOLE e.V. joyfully welcomed Thorin Hornickel, born on the 1st of March, as the second son of our member Heidi Hornickel.

On the other hand, we were full of sadness after we were informed of the death of Dr. Walter Werner, one of the founding members of ANSOLE e.V., who passed away on the 15th of March 2014, approximately two months before his 80th birthday.

Walter Werner was born on 17 May 1934 in Berlin. He studied chemistry in Leipzig in the GDR (German Democratic Republic) and then moved to Jena in 1958, to work as a synthetic organic chemist at the *Zentralinstitut für Mikrobiologie und experimentelle Therapie* (ZIMET), which then became *Hans-Knoll-Institute for Natural Products Research* after the reunification of Germany. His contribution and that of his colleagues in the development of drugs against cancer can be read here in German. Prior to the reunification of Germany, Dr Werner was bold to express his opinion against the oppressive system of the GDR. His writings in the form of pamphlets posted at the workers notice board of ZIMET and the written reaction of his then boss in that respect can be read here in German.

Upon Daniel Egbe's arrival in Germany in 1992, he was lucky to meet Dr. Werner and his wife Gisela, who decided to support him financially and otherwise during his three years of study till the end of his master's degree course. Without their support at that early stage of his stay in Germany, he would have not made it to what he is today. He is extremely grateful to both of them. May Dr. Werner´s soul rest in eternal peace.





*f.l.t.r.: Thorin Hornickel, late Dr. Walter Werner, Liv Lataguia Ngada*

On 18 June 2014, our webmaster, Narcysse Ngada, joyfully announced the birth of their second child, Liv Lataguia Ngada, who first saw the light of the world at 7.40 pm (length: 52 cm, weight: 3620 g). ANSOLE shares the joy of the Ngada family.

We also want to congratulate our ANSOLE member Julia Boger (see article) for successfully defending her PhD thesis at the University of Bayreuth, Germany.

# Events calendar

16 - 17 Sept. 2014, Accra, Ghana
**Solar & Off-Grid Renewables West Africa.** More information

9 - 10 Sept. 2014, Johannesburg, South Africa
**PV Project Development Africa 2014.** More information

22-24 Oct. 2014, Abuja, Nigeria
**4th Annual Nigeria Alternative Energy Expo - NAEE 2014.** More information

28 - 30 Oct. 2014, Accra, Ghana
**1st Inter-Regional Conference on Clean Energy & Climate Change in Africa.** More information

4 - 6 Nov. 2014, Accra, Ghana
**3rd West African Clean Energy & Environment Exhibition & Conference - WACEE 14.** More information

6-7 Nov.2014, Frankfort, Germany
**Solar Energy Technology in Development Cooperation**. More information

14 Nov. 2014, Bonn, Germany
**3rd Annual Conference "Universities, Entrepreneurship and Enterprise Development in Africa**" organised by the Bonn-Rhein-Sieg University of Applied Sciences Rheinbach. More information

18-19 Nov. 2014, Nairobi, Kenya
**Africa Mini Grids Summit.** More information

25-29 Aug, 2015, Kumasi, Ghana
**ANSOLE DAYS 2015**. Event details will be published soon on ANSOLE´s website.

*Check the events calendar on ANSOLE's website*

# African PV community coming together at PV Project Development Africa 2014, 9-10 Sept. 2014, Johannesburg, South Africa

## The future of PV in Africa to be discussed

On the 9-10th September 2014 in Johannesburg the key PV developers in the region are coming together to outline their vision for the development of solar PV in Africa. Key mining companies, developers, associations and utilities will all be in attendance to share their thoughts on how solar energy can improve the quality of life in Africa. Find out full event information on the conference website.



## ANSOLE Invited

As a member of ANSOLE you are invited to join the discussion on the future of solar energy in South Africa. To help you do this, PV Insider is pleased to offer ANSOLE members an exclusive €150 off any selected conference pass.

Just use the code 'ANSOLE150' when you register.

## Africa Mini Grids Summit 2014, 18-19 Nov. 2014, Nairobi, Kenya: Unleashing the Commercial Potential of Mini Grids in Africa

Globally, 1.4 billion people do not have access to electricity; 85% of the off-grid population in Africa lives without electricity access. The International Energy Agency (IEA) estimates that in order to achieve universal electricity access, mini grids will have to provide more than 40% of the new capacity needed by 2030. The resulting market potential for mini-grids is estimated to be US4 billion per year.

The pressing need for off-grid electrification coupled with the rising costs of using expensive, polluting, fossil fuel solutions such as diesel generators calls for successful ground-level implementation of renewable and hybrid mini grids in the region. These are high on the agenda for most countries.

Mini grids have been promoted actively in Africa, and industries such as mining and agriculture have shown unprecedented interest; projects are being implemented to cut operating costs and improve efficiency. Many positive factors are supporting mini-grid development in Africa.

There is a tremendously large market with and potentially ideal sites throughout the region for the development of established RE-technologies like solar projects. The costs of utilizing these technologies are also decreasing, as in the case for solar power; the usage cost has reduced significantly from $250 per 30 watts to $150. Authorities in the region, for example in Tanzania where the REA have 90+ projects in the pipeline, are rapidly setting the landscape to attract more sustainable investments into this sector.

In addition, there is also an increasing depth of development and implementation experience to inspire similar success stories currently found in Senegal, Tanzania, Kenya, Rwanda and Cape Verde amongst other countries. Significant public sector funding and grants are also available through national governments and international donors. .

**Africa Mini Grids Summit** will therefore convene key decision and policy makers along with the power players in the mini grids sector to share their invaluable expertise and experience to help you effectively strategize your mini grid blueprints. Be treated to a first class event where pressing issues and solutions are brought to the fore and extraordinary networking opportunities are abundant.

**For more information about Africa Mini Grids Summit** 2014 please visit http://www.magenta-global.com.sg/africa-mini-grids-summit-2014 or contact Ms Reema Raj at r.raj@magenta-global.com.sg

## About ANSOLE

### Goals and Objectives of ANSOLE

The Network promotes research, education and training in the field of solar energy among Africans as well as non-Africans with a special focus on - and relationships with - Africa.

As outlined in its statutes, ANSOLE supports nonprofit activities in the field of development aid and cultural exchange with the aim of strengthening the dialogue between the North and African countries (north-south) and among African countries (south-south) on renewable energy.

It endorses the use of solar energy to the benefit of the social and economic development of Africa as well as environmental protection through:

- ➔ Education and training of African scientists, experts and students
- ➔ Exchange of students and visiting scientists
- ➔ Workshops, conferences and meetings in Africa
- ➔ Organising and implementing projects and programmes on renewable energy
- ➔ Promoting capacity building in the use of renewable energy in Africa for all

➔ *ANSOLE members and those acting in the name of ANSOLE accept and act in accordance with the association's by-laws.*

*Mention of conferences, companies, or products in this document does not automatically constitute an endorsement.*

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## Publishing information

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