ANSOLE e-Magazine, Volume 5, 2019



Gyasi Poku, Poet from Ghana

ANSOLE e-Magazine Volume 5, 2019

Dear ANSOLERs, Friends and Network Partners,



January 2019: Left) Sea of Galilee in Israel. Right) Coptic Church in Egypt

2019 is two months old. I hope most of you started the year in a smooth way. ANSOLE just celebrated its 8th anniversary on the 4th of February 2019. We thank God for the journey sofar. 2018 was marked by the start of low cost National ANSOLE Scientific Meertings, with the first of the sort (ASMCI) organized in Abidjan, Côte d´Ivoire on the 10th of November 2018. The second, ASMEG 2019 (ANSOLE Scientific Meeting in Egypt) was on the 30th of January this year at Zewail City of Science & Technology,close to Cairo. These low-cost national gatherings allow our members in the respective countries to know each other personally and interact scientifically. Our members in countries with morethan 20 members are interacting already through the creation of Whatsapp groups. This is the case in Cameroon, Zimbabwe, Morocco, Democratic Republic of Congo, Uganda, Egypt, Kenya, Rwanda, Senegal, Algeria and Ghana. Other countries with large number of members such as Nigeria, Tunisia, Burkina Faso, Ethiopia will follow soon.

In 2018, few of the founding members of ANSOLE from Ethiopia and Austria expressed their dissatisfaction with my leadership of the network and deplored the fact that ANSOLE is a legally recognized institution (NGO). They therefore decided to create a new network called "***Renewable Energy Research and Development***" headquartered in Addis Abeba and hopefully having the financial backing of the ICTP. I am of the opinion that Africa is large enough to accomodate many regional scientific networks on the same thematic area as desired by the ICTP. ANSOLE hopes to cooperate with the new network, if need be.

2018 was also marked by our involvement in local activities in Jena, where our office is located. We are proud of successfully completing the 1st year of the AMAH-project (Focal Point for People of African Origin), thanks to our coworkers Simona Fofie, Abishag Ngoci and Shewa Bekele. This issue gives you an account of AMAH and ANSOLE activities in 2018 among other interesting reports and articles. You will also get to discover Mr Gyasi Poku, the poem writer and newly appointed ANSOLE National Representative in Ghana. He is among the young men and women who have been placed in leadership positions in many countries.

In this era of Agenda 2030 (Sustainable Development Goals), you can read the article of Bernhard Gruber (Wels, Austria) on "Permaculture", which is a design tool for a sustainable life…

"The underdeveloped are the developed"…

You are all invited to discover Kigali, the cleanest and greenest City in Africa by attending ANSOLE DAYS 2019 and BALEWARE 2019 in Rwanda from the 2nd to the 6th of September this year.

We can only sustain our e-Magazine, if you submit your article to editorial@ansole.org

Stay blessed

Daniel A. M. Egbe
daniel.egbe@ansole.org.

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Celebrating the 8th anniversary of ANSOLE in our office at Wagnergasse 25, 07743 Jena, Germany

About ANSOLE

The African Network for Solar Energy (ANSOLE) promotes research, education and training in the field of renewable energy among Africans as well as non-Africans with a special focus on - and relationships with - Africa.
As outlined in its by-laws, ANSOLE supports non-profit 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 renewable 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

In addition, ANSOLE is involved in facilitating the integration and acceptance of migrants of African origin within the local German society in Jena through the AMAH project (*Anlaufstelle für Menschen afrikanischer Herkunft*).
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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February 4th, 2019: 8th anniversary Celebration of ANSOLE

Reporting on…

ANSOLE Activities in 2018

By ***Daniel A. M. Egbe***

In 2018 ANSOLE has pursued the objectives laid down in the by-laws.

In addition to the previous activities with a strong international focus (admission of new members, organisation of scientific meetings, publications, support of members by issuing membership certificates and letters of recommendation etc.), ANSOLE increasingly carried out activities at the local level in 2018, which can be traced back to the establishment of the contact point for people of African origin (AMAH). The AMAH project was financially supported in 2018 by the City of Jena and the State of Thuringia with a half position. Two half positions have been applied for in the continuation application. The AMAH project made it possible for ANSOLE to move into its own premises at Wagnergasse 25, 07743 Jena for the first time, which resulted in higher running costs for the network.

ANSOLE celebrated its 7th anniversary on 4 February 2018. The celebration took place in the Evangelische Pfarrgemeinde, Freistädter-Str. 10, 4040 Linz, Austria with a thanksgiving service.



7th birthday celebration on 4.02.2018 in the Evangelische Pfarrgemeinde, Freistädter-Str. 10, 4040 Linz, Austria

Membership

Through *capacity building* and networking, the number of personal members could be increased by 70 to currently approx. 1120, distributed among 45 African and 31 non-African countries. Madagascar is the latest African country to join through the membership of Ms Mirana Njakatiana Andriarisoa.

So far, 233 personal members have transferred the membership fee at least once. For 2018 there were 39 members who paid.

Leadership

There have been some changes in the leadership. Vice-Regional Representatives and new National Representatives (NR) were appointed. For details please go to: https://www.ansole.org/index.php?id=1&p=home_4&spr=en

ACTIVITIES

1. Promotion of research and training activities

Ms Nothandu Ndlovu, ANSOLE´s National Representative in Zimbabwe, received 353,39 Euro for her flight ticket to Windhoek to participate at the First *Biennial African Conference on Fundamental Physics and Applications, African Conference on Physics* (ACP 2018) with the aim to gain new knowledge in physics and to find a supervisor for her doctoral thesis.



Mrs Nothandu Ndlovu (right) with 2 participants from ACP 2018 in Windhoek Namibia

Since ANSOLE does not receive any further funding for the her 3 scholarship programmes from ICTP (International Centre for Theoretical Physics) in Trieste, Italy, I asked the Jena SPD member of parliament Christoph Matschie for support in the search for new sources of funding. A letter requesting sponsorship was written in German and English and sent through Mr Matschie's office to potential sponsors. The office informed us at the end of November 2018 that the *Jenaer Verband für Mittelständische Wirtschaft* has shown the willingness to support ANSOLE Nevertheless, nothing has happened to this extent so far.

2. (Co-)organization of Scientific Meetings

In 2018 ANSOLE (co-)organized the 4 following scientific meetings:

- CPEEL-ANSOLE Regional Conference on Renewable Energy Development in Africa: An Interface of Technology, Economics and Policy, 5-6 March 2018, Trenchard Hall, University of Ibadan, Nigeria

- Africa Days 2018, Jena, Germany, 25-26 May 2018
- ANSOLE DAYS 2018 & ANSOLECAM 2018, 2-6 Sept 2018, Centre Polyvalent de Formation (CFP), Mbouo-Bandjoun, Cameroon
- ANSOLE Scientific Meeting in Côte d´Ivoire (ASMCI 2018), 10 November, Université de Cocody, Abidjan

ANSOLE DAYS 2018 was characterized by strong practical training. The venue, CPF Mbouo-Bandjoun, is well equipped for practical training (from Germany). The participants from Cameroon, USA, Tunisia, Canada and Germany were very satisfied with this form of conference (scientific lectures and practical training). This will be a standard for ANSOLE in the future.





left) ANSOLE DAYS 2018, CPF Mbouo-Bandjoun, Cameroon 2-6 Sept. 2018. right) ANSOLE Scientific Meeting in Côte d´Ivoire (ASMCI 2018), University of Cocody, Abidjan, 10 Nov 2018

For the purpose of getting to know each other personally and organising activities in their respective countries, ANSOLE members came together in Kigali, Rwanda (8.12.2017), in Kampala Uganda (18.02.2018 and 16.03.2018), again in Kigali, Rwanda (25.04.2018) and Nairobi, Kenya (27.09.2018).





Meeting of ANSOLE members in Kampala, Uganda on 18.02.2018 (left) and at the University of Nairobi, Kenya on 27.09.2018 (right).

3. Raising Awareness on the Sustainable Development Goals (SDGs)

Agenda 2030 (17 Sustainable Development Goals) has been in effect since 3 years, but is still very little known in African universities. An observation I made when I gave block lectures at the African Center of Excellence of Energy for Sustainable Development

(ACE-ESD), College of Science and Technology, University of Rwanda, Kigali, Rwanda (23-27 April 2018) and at the Faculté des Sciences, Tunis Elmanar, Tunis, Tunisia (15-22 November 2018). The students in Kigali were not even aware of the fact that the SDG Center for Africa (www.sdgcafrica.org) is located in Kigali.

In both countries, 18 (Kigali) and 17 (Tunis) course participants were asked to do online research on the SDGs and to do a presentation. In the case of Tunisia, the 4 best presentations were awarded prizes.

In Kigali the second ANSOLE general assembly meeting in Rwanda took place in the afternoon of 27 April. The members decided to establish a local management structure and to create a local association with the aim to put Agenda 2030 into practice. ANSOLE is very supportive in the registration process of the association.




Participants in Kigali (23-27 April 2018)



Presentation of the SDGs by the participants in Kigali (23-27 April 2018)



Left) Course participants in Tunis (15-22 Nov 2018). Right) The 4 best lectures on the SDGs

4. Participation in other events

ANSOLE e.V. received invitations to various national and international events, such as congresses and meetings, to introduce the activities of the network. The focus was on scientific exchange and networking. This resulted in new members and cooperation with scientists from over the world.

In the following, the events and circumstances are listed in which ANSOLE's activities were presented and/or represented during the reporting period:

- Cooperation meeting of the ThAFF with representatives of the Thuringian universities on 3 March 2018 in Erfurt
- Block Lecture at African Center of Excellence in Energy for Sustainable Development, College of Science and Technology, University of Rwanda, Kigali, Rwanda, 23-27 April 2018
- Opening Ceremony of the UNESCO Chair on Global Understanding for Sustainability,02.05.2018, FSU Jena
- Department of Chemistry, University of the Zambia, Lusaka, 14 May 2018
- Africa Days 2018, Jena, Germany, 25-26 May 2018
- First Biennial African Conference on Fundamental Physics and Applications
- 28.06-04.07.2018, NUST, Windhoek, Namibia
- Young African Scientists in Europe (YASE) Conference, 6 July 2018, Toulouse, France
- University of Ghana, Accra-Legon, 17.08.2018, Accra, Ghana
- 4th ThAFF Network Forum, 23.08.2018, Erfurt, Germany
- 30th anniversary of Eurosolar e.V. 25.08.2018, Bonn, Germany
- ANSOLE DAYS 2018 & ANSOLECAM 2018,2-6 Sept 2018, Centre Polyvalent de Formation (CFP), Mbouo-Bandjoun, Cameroon
- Entwicklungspolitik To Go (Development Policy To Go) Conference 2018 by Eine Welt Netzwerk e.V. 4-5 on "*Was ist Globalisierung von unten? Entwicklungspolitische Beiträge zu(r) transkulturellen Gesellschaft(en)*" (What is globalisation from below? Development policy contributions to transcultural society(s)) September 2018, Neudietendorf/Erfurt
- Exchange of expertise in the funding mechanism the Thuringian Ministry for Migration, Justice and Consumer Protection, 19.09.2018, Erfurt
- Joint MSSEESA and DAAD International Conference on Materials Science Research for Sustainable Energy in Africa, 25-27 Sept 2018, Chiromo Campus, University of Nairobi, Kenya
- PASRES Symposium on "Développement de l'Energie Solaire Photovoltaique en Afrique à l'horizon 2030", 8-9 November 2018, Azalai Hotel, Abidjan, Côte d´Ivoire
- Block Lecture for école doctorale organized by *Le Laboratoire des Matériaux Avancés et Phénomènes Quantiques* and *l'Ecole Doctorale MISTM, de la Faculté des Sciences de Tunis*, 16-21 Nov 2018, FSTTunis El Manar, Tunisia

ANSOLE e.V. General Assembly Meeting on 8.12.2018

Before the African Christmas party on 8.12.2018 the seventh general meeting of ANSOLE e.V. took place in the afternoon with participation of only 6 persons. Most of the members apologized.



Group photo at the General Assembly meeting of ANSOLE e.V. on 8.12.2018

In view of the high financial expenses resulting from maintaining the office at Wagnergasse 25, 07743 Jena, the general assembly meeting decided to increase the membership fee as follows:

- personal member 50 Euro (30 Euro for students)
- Institutional members 350 Euro
- membership of companies 1000 Euro

African members still pay 20 Euro as yearly fee!
Mrs Karin Christine Hartwig and Chancily Matinda were accepted as new ANSOLE e.V. members.

Account Details

Bank: Sparkasse Jena-SHK**, BIC:** HELADEF1JEN**, IBAN:** DE52830530300018025668

Please transfer your membership fee for 2019!!

Acknowledgments

I thank all those who contributed in the running of our activities in 2018. The list is too long for me to mention each one of you.God knows you and will reward you. ANSOLE needs your support also in 2019 and beyond. However, I want to mention two people have played a major role these last years: Narcisse Ngada, our faithful webmaster since 2011 and Ms Rea Mausberger, who helped us build a second pillar of activities by putting in place the AMAH-project. . We acknowledge the support in kind and/or financially of the institutions with the following logos:

AMAH Activities in 2018

By ***Abishag Ngoci*** & ***Shewangzag Bekele***

The AMAH (Anlaufstelle für Menschen afrikanischer Herkunft/Contact Point for People of African Origin project was launched to enable ANSOLE e.V. to act as a bridge-builder between Africans living in Jena and the German society. The project pursues the following goals:

- Support for all people of African origin in Jena and the surroundings
- Assistance in case of discrimination
- Intercultural exchange and knowledge transfer
- Actions against of clichés, prejudices and racism
- Transfer of expertise - consulting service for companies/organisations
- Networking and cooperation with migrants and German organisations

For 2018, the project was equipped with a half-time position. An application for 2019 has been submitted to the City of Jena and the State of Thuringia. This time 2 half positions have been applied for.
The AMAH project was carried out from January to March by Ms Simona Fofie (from Ghana), then from April 2018 by Ms Abishag Wanjeru Ngoci (from Kenya) and Mr. Shewangzaw Bekele (from Ethiopia) for one quarter position each.

The following services were offered:

Advice and assistance

About 500 people of African origin (students, scientists, refugees and migrants) live in Jena and its surroundings. Many of them, especially newcomers, are confronted with a number of challenges and were able to take advantage of AMAH's counselling and assistance services since 2018. The following table summarises the type of counselling and assistance and the number of people who benefitted from them.

Type of support	Number of persons
search for accommodation	6
job search	8
Assisting at the authorities (foreigners office, social welfare office) and medical doctors	30
Search for a kindergarten	5
Telephone counselling	23
Social and family counselling	12
Assisting in filling forms and translating	20

The staff of the AMAH office helped new students to find accommodation. Migrants and refugees were supported in filling out documents, were accompanied and translated at authorities, medical doctors and at job placement´s office. Social counselling and family counselling took place in cooperation with Rea Mausberger from Iberoamerica e.V.. The telephone counsellings were not limited to the surroundings of Jena, but were requested by Amharic-speaking people (especially refugees from Eritrea) from all cities of Thuringia, since the AMAH employee, Mr. Bekele from Ethiopia, is an Amharic native speaker. The ages of those sought support was between 17 and 52 years.

Involvement in kindergartens and schools in the field of Global Learning



On 25.07.2018 Ms Ngoci introduced the continent and the geography of Africa to the children of the kindergarten Weltentdecker on the basis of a puzzle.

INTERCULTRURAL EVENTS

Africa Days 2018

The event "Africa Days 2018" took place from 25 to 26 May. It was held in 3 parts:

I-Conference on Africa (Haus auf der Mauer, Johannisplatz 26, 07743 Jena)

The conference was mainly conducted by African students and experts. Short lectures and discussions were held on economic, health and human rights issues in Africa as well as on education and research in the field of environment and sustainable energy. Additionally, there was a book presentation on "Representations and Renegotiations of the Nation in Anglophone Cameroonian Literature", Priscillia M. Manjoh, NARUD e.V.

At the same time there was an art exhibition of a "Street Artist" from Kampala, Uganda. In total, there were more than 80 visitors.



Conference on Africa at Africa Days 2018

II-African Market & Children Program (Haus auf der Mauer)

Children present at the Africa Days had the opportunity to participate in handicraft activities and to experience the everyday life of the African children.

At the African market, visitors were able to purchase various products on display, such as snacks, artworks and clothing, as well as other African accessories.



African market and art exhibition at Africa Days 2018

III-Gala evening (canteen, Ernst-Abbe-Platz 8, 07743 Jena)

At the gala evening we offered an African cultural programme consisting of musical contributions, gastronomic delicacies and a fashion show. The aim of the gala evening was to enable an intercultural exchange between Africans living in Jena and all interested people. About 150 people took part, far less than in 2017, because the final of the Champions League was played in parallel.



Gala evening at Africa Days 2018

African-German grill party (28 Juli 2018, Paradiespark)

The event included a barbecue, music and a short presentation of the AMAH project as well as the international activities of ANSOLE e.V.. The AMAH team took the opportunity to make new African contacts.



African-German grill party in Paradiespark am 28.07.2018

Eritrean cross discovery festival (Meskel)

This event took place on 8 October 2018 at the Jenaer Tafel e.V., Binswangstraße 26, 07747 Jena.

Prior to it, on 6 September, a meeting with the Eritrean community was organised with the aim to be informed about the problems the Eritreans in Jena and surroundings are facing and find common solutions thereof with the aim to facilitate their integration into the German society.

As a first step, an Eritrean evening (through further meetings on 23 September and 6 October) was planned and held on 8 October.

The celebration of the Eritrean *finding of the cross* started with a warm welcome from the chairperson of ANSOLE e.V. and from Ms Rea Mauersberger, treasurer of ANSOLE e.V., employee of Iberoamerica e.V. and leader of the MigraNetz project.

After the welcoming ceremony the Eritrean Abel Gemreysus made a presentation about the land and people of Eritrea. Then his compatriot Desbele Kidane explained the origin of the celebration. The *Cross Finding* was originally a Roman Catholic festival, which was celebrated in memory of the day of the finding of the Holy Cross by Saint Helena. In Eritrea, the Eritrean Orthodox Church of Tewehedo still celebrates it every year on the 27th of September. This takes place only a few days after the Eritrean New Year and falls approximately at the end of the rainy season. Desbele Kidane noted that the event is celebrated by all Eritreans regardless of age, sex, language or ethnicity. It is believed that people receive blessings through the cross at this ceremony.

This interesting excursion was followed by a short worship service. Afterwards the Eritrean national dish Injera was served in combination with salad, flat bread and various sauces. At the end of the meal the blessing and the coffee ceremony took place. The preparation of the coffee, including roasting and grinding as well as the serving in traditional porcelain could be observed. The coffee was served with popcorn.



Eritrean evening: Left) Eritrean women with their traditional clothes.
Right) Handing over of prizes after the team game.

The highlight of the evening was probably the team games, whereby the teams consisted in part of people from different nationalities. For example, pantomime was played in two languages as well as a kind of egg run. The winners received a small packet of sweets, but those who lost received a consolation prize. All in all, the fun interlude was a great way to spread cheer and to make cross-cultural connections.

A total of about 40 children and adults from different backgrounds took part in the event and gave us only positive feedback with the hope of a repeat in 2019. The Eritrean community thanked us very much for the support by the AMAH project.



Group photo at the Eritrean evening

African Christmas Party

The celebration took place on the 8th of December 2018 in the Haus auf der Mauer, Johannisplatz 26 07743 Jena, immediately after the general meeting of ANSOLE e.V.. It was the last intercultural activity of AMAH in 2018 and was visited by more than 100 people of different nationalities. They learned how Christmas is celebrated in Africa: It is sharing, eating and having fun!



Guests converse at the 2018 African Christmas Party

Self-cooked dishes from various African countries were typically prepared and served by African students and migrants (Cameroon, Kenya, Eritrea/Ethiopia, Nigeria, Uganda).



The dishes at the Christmas party 2018

In addition to the food, there was the opportunity to listen to and dance to a variety of African music. Different country groups (Eritrea, Ethiopia, Cameroon, Nigeria, Kenya, Mozambique) took part in a dance competition for fun. There was no winner and no loser!



Dance competition at the Christmas party 2018

There was also a children's programme. They could play together, do handicrafts, learn to know each other and eat together. The kids got "Santa Clauses" made of chocolate as a Christmas present.



Children doing handicrafts during the Christmas party 2018

Cooperations with other organisations

In order to achieve the goals of the AMAH project, events with other associations were organized and carried out. For example, on November 9, 2018, the AMAH project participated by organizing an Ethiopian coffee ceremony at the "Woche der Generationen" (Week of Generations) organized by the Jena Bündnis für Familie (Alliance for Family). The coffee ceremony took place in the premises of ANSOLE e.V. and offered visitors the opportunity to get to know the new ANSOLE office at Wagnergasse 25, 07743 Jena.



Ethiopian coffee ceremony on 9.11.2018 at the „Woche der Generationen“ (Week of Generations)

Outlook 2019

The AMAH project plans the following activities in 2019 in addition to previous activities:

- Africa Day 2019 (25 May)
- Ghana Evening (26 October)
- Kenya Evening (16 December),
- Eritrean Easter Celebration (April)
- African End of Year Party (December)
- monthly meeting of parents and children
- activities in schools and kindergartens

AMAH-Team in 2019



The AMAH-Team in 2019 consists of (from left to right) Shewangzag Bekele from Ethiopia (coworker), Daniel Ayuk Mbi Egbe from Cameroon (Chairperson of ANSOLE), Chancily Matinda from Democratic Republic of Congo (coworker without remuneration), Abishag Ngoci fom Kenya (coworker) and Chris Seiferth from Germany (coworker without remuneration)

ANSOLE DAYS 2018 & ANSOLECAM 2018

By ***Bertrand Asobo Ngonla***

ANSOLE DAYS 2018 & ANSOLECAM 2018 were held from the 2nd to the 6th of September 2018 at the Centre de Formation Polyvalent de Mbouo-Bandjoun in Cameroon.

The theme for this edition was "*International Conference and Practical Training on Sustainable Energetics*". The participants started arriving at CPF Mbouo-Bandjoun on the 02/09/2018 and were received by the local organizing committee and lodged at the various hostels at CPF. A welcome conference dinner took place around 8:30pm at the school restaurant with Prof. Daniel EGBE, Prof. KAMTA Martin, Prof. SAMIR Romdhane, Mr. Daniel NGWANOU and 15 other participants. After the dinner, everyone retired to his or her room to rest.



Welcome addresses from (left to right) Mr Daniel Ngwanou (Director of CPF), Mr Alex Sipua (Coordinator of CPF-EBZ Partnership), Prof. Daniel A. M. Egbe (ANSOLE Coordinator), Mme Antoinette Nzongo (Senior Divisional Officer of Koung-Khi), Mme Hélène Fokoua (2nd Vice-Mayor of Pete-Bandjoun) & Prof. César Kapseu (Regional Representative of ANSOLE in Central Africa)

The next day, 03/09/2018, breakfast was at 8:18am at the school restaurant. The registration process started at 9am with each participant signing the registration form and a package made up of a conference bag, badge, program with the various abstracts and biogragrahy and the RETScreen exercises handed to them. At 9:15am, the SDO of Nkong-khi division, Mrs. Antoinette ZONGO arrived CPF with her entourage. Some members of the international and local organizing committee received her. The opening ceremony started at 9:20am with 42 participants. The MCs were Mr. Jean-Pierre SAYOUBA (French) and Miss Melissa OUM (English).



Group photo with the dignitaries after the opening ceremony of ANSOLE DAYS 2018

The welcome address was done by Mr. Daniel NGWANOU (Director of CPF, Mbouo-Bandjoun) who said he was very pleased to receive participants from all over the continent (Britain, Germany, USA, Canada, Tunisia, and Cameroon: Bamenda, Maroua, Ngaoundere, Buea, Dschang, Yaounde, Douala) since it was the first time the institution was a host to such an event. He further said till date, renewable energy remains a major difficulty in Cameroon. After COP21 in December 2015, Cameroon took an engagement to reduce Green House Gas (GHG) emissions by 32% and it should involve all the stalk holders in Cameroon hence the conference had the following objectives, which he cited:

1. Bring together all the actors in the domain of renewable energy, which includes experts, researchers, masters and PhD students, post-doc candidates all at the same platform in order to exchange ideas so as to advance this sector in Cameroon.
2. Promote, valorization of renewable energy and master it according to Presidential degree No 2012/501 of 07 Nov. 2012, which creates the direction of renewable energy and energy mastery.

He further said Cameroon is a blessed country with enough sunlight and so it should not be wasted. Lastly, the director prayed that this conference should live long in the history of renewable energy in Cameroon.

Mr. Alexander SIPUA (ANSOLE Regional Representative in Europe) was the second speaker of the day. He said Campus Solar Partnership, EBZ in Germany has being in collaboration with CPF since 2015 and that all the work to be done during the conference should reflect both the national and international needs. He said they are pleased to work with the country and in the future years will continue to support morally, financially, administratively and educationally. He concluded that they were ready and will put at the disposal of CPF what is available.



ANSOLE members participating at ANSOLE DAYS 2018

Prof. Cesar KAPSEU (ANSOLE Regional Representative in Central Africa) was the third speaker. He said ANSOLE has being existing for 7years as of date and cited some instances when conferences took place in Cameroon like First ANSOLE days at Yaounde in 2011, ANSOLECAM2012 in Yaounde, ANSOLECAM 2016 in Bamenda, ANSOLECAM 2017 in Yaounde and now ANSOLECAM2018 with ANSOLE Days 2018 in CPF Mbouo-Banjoun. He thanked Prof. Daniel EGBE for all that he was doing for ANSOLE to make the organization strong. He also gave some proposals for ANSOLE and prizes won (both national and international competitions) by some members of ANSOLE during the course of the year.



The support team during ANSOLE DAYS 2018 (left), Participants receiving training on RETSCREEN (right)

Prof. Daniel EGBE (International coordinator of ANSOLE) was the fourth speaker. He started by welcoming the SDO, DO, Mayor, Administrative staff, Organizers and all the participants. He said when people come together, a lot could be achieved and a clap should be given to unity. He encouraged the participants to cooperate and not to think of themself because that will lead to the promotion of corruption in Cameroon and Africa in general. He also encouraged using the

law of thermodynamics; that is sharing the little you have and in return you will receive a lot which is a blessing. ANSOLE is dynamic and promotes vocational training hence CPF has quality because it is well equipped with laboratories for practical and so he encouraged students from other institutions and universities to visit CPF for experimental research. He further thanked the director of CPF, Mr. Daniel NGWANOU for producing skilled labor because without such labor, the nation cannot develop and encouraged that more of such centers should be created. He concluded by handing a gift to the SDO.



Practical training during ANSOLE DAYS 2018

The fifth speaker was Mrs. Helene FONKOUA (Second Deputy Mayor and Representative of the Mayor of Bandjoun). She started by passing on cordial salutations from Mr. FOTSO Victor, the mayor of Bandjoun to the participants and welcome all to Bandjoun. She said climate change is a world issue today, which affects biodiversity leading to environmental risks. Hence, renewable energy is needed in order to confront this risk. She further said in this context, this international conference was timely to propose solutions to the risks of climate change. It will also give opportunity to the council to recruit qualified personnel to tackle the problem in the context of decentralization. She concluded that collective action is imperative to tackle the ecological changes on the environment in order to attain the Sustainable Development Goals.



Lectures during ANSOLE DAYS 2018

Mrs Antoinette ZONGO (SDO of Khong-Khi Division and first female SDO in Cameroon) was the sixth and last speaker. She started by welcoming all the participants to her jurisdiction and thanked the participants for coming to the small village of Bandjoun and even smaller quarter of Mbouo. She said she knows good results will be obtained during our stay in CPF and that the Government of Cameroon supports this initiative, the youths and the future. Concerning

renewable energy, the SDO affirmed the fact that Cameroon has enough sunlight throughout the year and so with renewable energy mechanisms put in place, the first constraint of poverty will be alleviated. She concluded by wishing the participants a pleasant stay in CPF, assured us of security and that the end results of the conference should be given to them so that they can also benefit. She couldn't stay for long because it was school resumption, so she had to visit some schools. The SDO signed the conference posters; photo shots were taken outside in front of the conference venue and the opening ceremony ended at 10:38am. A pause coffee followed immediately till 11:05am.

The second part of the event, which was Practical Training Session: Analysis of projects in renewable in clean energy with RETScreen started at 11:20am with Breena Sperry (PhD Student, Material Science and Engineering, University of Washington, Seattle, WA, USA) as the chair. Prof. Daniel NKWETTA (Professor, RETScreen Expert, Department of Infrastructure and Sustainable Design, School of Applied Sciences and Technology, Northern Alberta Institute of Technology (NAIT), Canada) did an oral presentation on "*Introduction and general presentation of RETSCreen Expert*". He said all the participants would be evaluated at the end of the case studies that was to be done.



Poster Presentation during ANSOLE DAYS 2018

Prof. Martin KAMTA (Associate Professor, Department of Electrical, Energetic and Automatic Engineering, ENSAI, University of Ngaoundere, Cameroon) was the next oral presenter. He did a presentation on "*Dimensioning and wiring of solar photovoltaic systems*". At the end of the presentation by Prof. Martin KAMTA, Lunch break took place from 2:45pm to 3:30pm.

After the lunch break, Mr. MBAKOUOP Arnaud (MSc., Laboratory of Renewable Energy and Sustainable Development, CPF Mbouo-Bandjoun) did an oral presentation on "*Case study on dimensioning*". He used a house in one of the chiefdoms in the Western Region of Cameroon as the case study.

Session 1 of the Technical session started after Mr. MBAKOUOP presentation with Prof. Germaine ALOYEM (Associate Professor, Department of Physics, University of Yaounde 1, Cameroon) as the chair. The first oral presenter was Prof. Daniel EGBE (Professor, Institute of Polymeric Materials and Testing, Johannes Kepler University Linz, Austria) who did a presentation on "*General energy situation and energy research situation in Africa*". Mr. Griffin RUEHL (PhD Student, Department of Chemistry, University of Washington, Seattle, WA, USA)

was the second oral presenter who did a presentation on "*Phenol and Benzaldehyde Hydrogenation on metallic catalysts: Model compounds for biomass conversions"*. The third presenter was Prof. Martin KAMTA who did an oral presentation on "*Experimental approach for evaluating the reliability of usual MPPT algorithms for stand-alone photovoltaic systems in tropical area*". The oral presentations ended at 7:25pm and supper was at 8pm after which the participants retired to their respective rooms to rest.

Breakfast was at 7:20am the next day, 04/09/2018 at the school restaurant. The practical training session started at 8:15am with Prof. Daniel NWETTA doing an oral and practical presentation on "*Analysis of projects in Renewable Energy with RETScreen Expert: Case Study 1*". All the participants carried out practical using the RETScreen program installed on their laptops following the instructions keenly given stepwise by Prof. Daniel NKWETTA with the aid of 2 exercises under the case study 1.

After the presentation was a coffee break, which at the end, the participants were divided into 8groups in order to take part in the practical at the laboratory at CPF arranged into 8 different workshops. The workshop session started at 11:20am. The workshops included:-

- **Workshop1**: Solar PV Energy management system with Arduino by Mr. Cionville TCHAPDA
- **Workshop2:** Building an Economic light bulb with LED technology by Mr. CHEKAM and Mr. Jakson
- **Workshop3**: Wiring a small PV set system by Mr. Joachim SAADIO
- **Workshop4**: Wiring a stand alone solar PV system by Mr. Nzendjang MBAKOUOP
- **Workshop5**: Solar PV mounting structure design practices by Mr. AYI Rodrigue
- **Workshop6**: Solar PV mounting structure design practices by Mr. AYI Rodrigue
- **Workshop7**: Implementing an electric power distribution by Mr. NJOUFFO Lionel
- **Workshop8**: Wiring an electrical installation building lighting system by Mr. Martin SINDZE and Mr. TIDJIP

Each group of participants went through 2 workshops; listen to the presenters, and later on did the practical aspects themselves from scratch. The workshop session ended at 1:30pm and lunch break took place till 2:30pm.

The technical training session 1 started at 2:40pm with Prof. Daniel EGBE as the chair. Prof. SAMIR Romdhane (Professor, Laboratory of Advanced Physics and Quantum Phenomena, Faculty of Sciences of Tunis, Tunisia) did an oral presentation on "*Nanostructured organic solar cells*". After the presentation by Prof. SAMIR, 6 of the female participants; Miss. Melissa OUM, Miss. Breena Sperry, Miss. Yolande KETCHANJI, Miss. Cathy TSAGUE, Miss. Annie MOKO and Miss. Carine MOTOUM did oral presentations on their projects for 5mins, each which was moderated by Prof. Germaine ALOYEM. The prize of the winner was to be awarded during the conference gala.

Mr. Alexander SIPUA (International Expert on Renewable Energy for Africa, SIPUA Consulting, Hamburg, Germany) did an oral presentation on *"Importance of vocational training in Renewable Energies in Africa: Case study partnership CPF (Cameroon)-EBZ (Germany)".* After Mr. SIPUA's presentation, there was a coffee break for 30mins. Later on, it was the poster

presentation, which took place. There were 4 participants, Mr. Etienne TCHOFFO, Mr. MBOUENDEU Tientcheu, Mr. Aldrin BOGNING and Mr. Daniel MANTAP and 3mins was given to each of them to do their poster presentation. The jury members were Prof. Samir, Prof. Kamta and Prof. Germaine. The activity ended at 6:48pm and the participants went to their various rooms in order to prepare for supper at 8pm.



Women in Science competition during ANSOLE DAYS 2018

The next day, 05/09/2018; breakfast was at 7:30am and the Practical training session started at 8:15am with Prof. Daniel NKWETTA doing an oral and practical presentation on "*Analysis of projects in Renewable Energy with RETScreen Expert: Case Study 2*". Later on, the participants went to the various workshops and each group went through 3 different workshops for the day that is 1hr for each workshop, so the total duration for the workshops was 3hours. Lunch was from 1:40 to 2:20pm.

At 2:35pm, the technical session 1 started with Prof. SAMIR as the chair. The first presenter was Prof. Daniel NKWETTA who did an oral presentation on "*Sustainable hybrid energy system design: Potential optimal solution to meeting Cameroon future energy supply*". He later on did another oral presentation on "*Design, feasibility, performance assessment and optimization of the technical and financial viability of potential renewable energy and energy efficiency projects*". The next presenter was Miss Melissa OUM (PhD Student, Department of Chemistry, University of Birmimgham, United Kingdom) who did an oral presentation on "*Modeling microstructural and chemical degradation of ferritic stainless steels for SOFC interconnects*". The next presenter was Mr. FOGNO Fotso (PhD Student, Department of Physics, University of Yaounde 1, Cameroon) who did an oral presentation on "*Application of Artificial Neural Networks for predicting monthly wind energy potential in Bamenda, Cameroon*". The next presenter was Mr. DJOUSSI Sosthene (Department of Rural Engineering, National Advanced School of Public Works, Yaounde, Cameroon) who did an oral presentation on "*Renewable Energy in developing countries: From research to exploitation*". The last presenter was Mr. Dountio TCHIOFFO (PhD Student, Faculty of Science, University of Ngaoundere, Cameroon) who did an oral presentation on "*Power control of a Brushless Doubly Fed induction Generator based on Model Predictive Control*". The session ended at 6:47pm and the participants returned

to their various rooms in order to prepare for the conference gala that was to begin at 8pm that same night.



Prize winners of the Women in Science Competition sponsored by Professor Germany Aloyem

The participants started arriving at the conference gala venue at 8:25pm. After the arrival of the representative of the mayor of Bandjoun, the conference gala proper started at 9pm. The MC for the conference gala was Mr. Jean WOUMBLE and Mr. Jean MATERNE gave the opening prayer. Prof. Daniel EGBE made a speech, which at the end he gave a copy of the signed conference posters to Mr. Daniel NGWANOU, Prof. Daniel NKWETTA, Prof. SAMIR, Mr. SIPUA, Dr. Claude ALOYEM (represented by his wife) and to the members of the local organizing committee. The director of CPF, Mr. Daniel NGWABOU also made a short speech and the Mayor's representative, Mrs. Helene FONKOUA, gave the last speech of the evening. Prizes were given to the winner of the female contest on renewable energy; Miss. Annie MOKO and all the other participants of the female contest. Prizes were also given to the winner; Mr. Etienne TCHOFFO and runner up; Mr. MBOUENDEU Tientcheu of the poster presentation. Afterwards, Prof. Daniel EGBE handed the certificates of participation to each participant that was present and photos were taken. Later, it was time for dinner and after the dinner was opening of the floor. After the opening of the floor, it was dance, dance, and dance till dawn.



Conference dinner during ANSOLE DAYS 2018

The last day of the conference was the 06/09/2018 and breakfast took place from 7:15am to 8:00am. The practical training session started at 8:05am with Prof. Daniel NKWETTA doing an oral and practical presentation on "*Presentation RETScreen: Case Study 3 in Energy efficiency*". Two case studies were used. Later on, Prof. Cesar KAPSEU (Professor, Department of Electrical, Energetic and Automatic Engineering, ENSAI, University of Ngaoundere, Cameroon) did an oral presentation on "*Business incubator; driving the development of renewable energy*".



Award of special gifts and certificates of participation at the closing ceremony of ANSOLE DAYS 2018

After his presentation was a 30mins coffee break. After the coffee break was time for the practical session at the various workshops. Each group of participants went through 3 workshops. So at the end of the day, each group of participants went through all the 8 workshops for practical at the various laboratories of CPF Mbouo-Bandjoun. At 2pm, lunch was taken and after the last lunch, the participants had to say their goodbyes, exchange contacts and depart to their various destinations.



Mr. **ASOBO NGONLA Bertrand** has a DIPES-I, BSc, DIPES-II in Chemistry and an MSc in Natural Resource Management. He is currently a PhD student in Natural Resource Management in the Dschang School of Agriculture and Environmental sciences, University of Dschang, Cameroon. He is a trained chemistry teacher under the Ministry of Secondary Education in Cameroon teaching General Chemistry the first cycle and Organic Chemistry in the second cycle.
ASOBO NGONLA Bertrand is a member of the North-West Chemistry Teachers Association in Cameroon and also an active member of the African Network for Solar Energy (ANSOLE). He is the Ansole Youth Representative in the University of Dschang, Cameroon. Mr. ASOBO NGONLA Bertrand research is focused on biogas production from municipal solid waste and energy efficiency. Contact: momgemma@gmail.com

ANSOLE Scientific Meeting in Côte d Ivoire (ASMCI 2018)

Par ***Yao N´Goran***



Participants de l ASMCI 2018 à l´Université de Cocodi le 10 Novembre 2018

Le 10 novembre 2018, s'est tenue à l'Université Félix Houphouët-Boigny à Abidjan, Côte d'Ivoire, une rencontre scientifique internationale intitulée "ANSOLE Scientific Meeting in Côte d'Ivoire (ASMCI 2018)", organisée par ANSOLE. Les travaux qui se sont déroulés dans la salle INFO 1 du laboratoire de Physique de la Matière et de Technologie (LPMCT) de l'UFR Sciences des Structures de la Matière et de Technologie (UFR SSMT) de 14h à 20h ont vu la participation de 42 personnes venues de différents pays: Autriche/Allemagne, Burkina Faso, Côte d'Ivoire, France et Maroc.
Cette rencontre s'est déroulée en deux phases: les cérémonies d'ouverture et de clôture et l'atelier de présentation de travaux scientifiques en deux panels. Une pause-café offerte par l'équipe Energie et Innovation Technologique (EnIT) de Dr N'GORAN Yao, LOC Coordinator of ASMCI 2018 a eu lieu entre les deux panels. D autre part l atelier a reçu la visite du Mr Séverin

AKÉ, chef du Service Recherche Valorisation Innovation (UFHB_VPRIT_SRVI) au Pôle Scientifique et d´Innovation (PSI) de l université de Cocody, qui a exprimé sa satisfaction de voir la tenue de l atelier.



Professeur Jeremie Zoueu, représentant national d ANSOLE en Cote d´Ivoire modère la séance (gauche) et la pause-café (droite)

1/ Cérémonies d'ouverture et de clôture

La cérémonie d'ouverture a été marquée par quatre allocutions.

La première prononcée par Dr N'GORAN Yao, en tant que coordinateur du Comité d'Organisation Local de la rencontre. Il a souhaité la bienvenue aux participants et remercié le décanat pour l'acceptation de la tenue de cette rencontre ainsi que le coordonnateur international d´ ANSOLE pour la confiance qu'il lui a faite en lui confiant l'organisation locale de cette rencontre. Il a exprimé sa joie de voir un si grand nombre de participants, car jusqu'à la veille seulement une vingtaine de personnes s'étaient inscrites.

La deuxième intervention est revenue au Professeur ZOUEU Jérémie de l'INP-HB en tant que représentant national de ANSOLE qui a lui aussi souhaité la bienvenue aux participants.

En troisième position, le professeur Daniel Ayuk Mbi EGBE, a exprimé toiute sa joie que cette rencontre aie eu lieu et remercié les participants, les Vices doyens de l'UFR SSMT, le doyen de SFA et particulièrement le coordinateur du Comité d'organisation local, Dr N'GORAN Yao pour son efficacité et son dynamisme. Le Professeur Egbe n a pas manqué d exprimer sa joie de voir les deux doctorants burkinabés, Ali Diane et Yomi Woro Gounkoua, qui se sont deplacés pour Abidjan et qui ont contribué à donner le flair international de la rencontre.

Enfin, professeur OBROU Olivier, le Vice-doyen en charge de la Recherche au sein de l'UFR SSMT, a procédé à l'ouverture officielle de la rencontre en souhaitant au nom de Monsieur le Doyen de l'UFR SSMT qu'il a représenté la bienvenue aux participants et un bon atelier.

La cérémonie de clôture a été marquée par la rémise des attestations de participation par le Coordonnateur d´ANSOLE et par les mots de clôture de Dr N'GORAN Yao qui a exprimé sa satifaction pour la tenue de l'atelier, du Professeur Daniel Ayuk Mbi EGBE qui, très heureux de voir que l'atelier a atteint ses objectifs, a souhaité que ANSOLE Côte d'Ivoire travaille pour relever les nombreux défis de l'Afrique en matière de promotion d'énergies renouvelables et de professeur OBROU Olivier, Vice doyen de l'UFR SSMT en charge de la recherche pour mettre fin à la cérémonie.

Le Professeur Kre N´GUESSAN, Doyen de l´UFR SFA de l´université Nangui Abrogoua, s est declaré prêt à accueillir la prochaine journée ANSOLE au mois de février 2019.

2/ Atelier de présentation de travaux scientifiques

Plus d'une dizaine de présentations ont traité les quatre thèmes suivants:

1- Gisement solaire
2- Fabrication de cellules photovoltaïques
3- Applications solaires photovoltaïques
4- Applications solaires thermiques

Cet atelier s'est déroulé en deux (2) panels y compris un (1) poster.

Panel 1

Ce premier panel dont le modérateur est J.P.J. KAM KOUAM a enregistré 5 communications qui sont :

Communication 1: Elaboration de matériaux semiconducteurs en couches minces par des techniques à bas coût pour applications en photovoltaïque et capteurs de gaz par **B. Hartiti**/ FST de Mohammedia, Université Hassan II de Casablanca, Morocco,

Communication 2*:* Solar cell main recombination mechanisms characterization with the temperature-dependent open circuit voltage par **A.Darga** /Paris-Sorbonne Unversity, France

Communication 3*:* Estimation and prediction of the national potential of solar energy par **Y. Ngoran**/ University of Cocody, Abidjan

Communication 4*:* Low cost solar energy, Perovskite solar cell par **A.P. Kouakou**/ University Nangui Abrogoua, Abidjan

Communication 5*:* Design, realization and cooking test of a spherical concentrator solar cooker par **S. Touré**/ University of Cocody, Abidjan



Professeur Siaka Touré, le doyen des enseignants de Physique à Cocody (gauche), Mr Jean-Pierre Justin Kaam Kouam, le facilitateur de ASMCI 2018 (milieu) et le Professeur Kre N´Guessan, hôte de l ASMCI 2019 à l Université Nangui Abrogoua le 28 Mars 2019, reçoivent leur certificat de participation.

Panel 2

Ce deuxième panel dont le modérateur est Prof J. ZOUEU a enregistré 6 communications et 1 poster qui sont:

Communication 6: Solution for the optimisation of solar dryer collector par **A.S. Koffi**/University of Cocody, Abidjan

Communication 7: Realization of a low energy consumption solar medical refrigerator adapted for poor-areas in electricity par **A.P.A. Kouassi**/ University of Cocody, Abidjan

Communication 8: Characterization of natural dye extracted from Rauvolvia vomitoria for dye-sensitized solar cells par **J.K. Datte/** University of Cocody, Abidjan

Communication 9: Comparaisonet analysedes performances d'un moteur diesel fonctionnant à l'huile de jatropha préchauffée et au gazole par **Y. W. GOUNKAOU**/University of Ouaga1 Pr KI-ZERBO, Burkina Faso

Communication 10: Réalisation d'un réfrigérateur médical solaire, à faible consommation d'énergie, adapté pour les régions pauvres en électricité par A. P. A. KOUASSI/University of Cocody, Abidjan

Communication 11: Réalisation d'un WEBSIG de contrôle centralisé à distance de micro-réseaux phpotovoltaïques dans la région de Conakry en Guinée par K. H. KPEGNE/University of Cocody, Abidjan

Poster
Communication 12: Gestion optimale de l'alimentation d'un moteur dual-fuel couplé à une installation de gazéification de type batch par **A. DIANE**/University of Ouaga1 Pr Joseph KI-ZERBO, Burkina Faso.
Les résumés des communications sont publiés dans ce recueil. Ce dernier est téléchargeable sur le site d´ANSOLE.



Dr. N´GORAN Yao is a solid state physicist and a specialist in solar energy. He holds a postgraduate doctoral of solid physic on 1985 and a PhD thesis of State in Physical sciences on March 17, 2005. He was recruited as an assistant in the Department of Physics at the former Faculty of Science and Technology of the National University of Côte d'ivoire from 1985 to 1987 and as Assistant master since 1987. In 1998, He is member of the laboratory of condensed matter physics and technology (LPMCT) where he served as adjunct Director from 1998 to 2005 and then as director from 2005 to 2008. From Nov. 2014 to Sept. 2018, he was a porter and coordinator, in the framework of the Debt and Development contract (C2D), of a project on " Estimation and prediction of the national potential for solar energy and applications for drying agricultural products. Since Sept. 2018, he is the promoter of the project start-up Serima Group for the creation of an innovative company. Contact: nygoran@gmail.com

1st Strategic Meeting of ANSOLE-Uganda

By ***Joan Talibowa*** *and* ***Lukia Nabawanuka***

ANSOLE –Uganda Members 1st Strategic Meeting was chaired by the ANSOLE country representative Ms Lukia Nabawanuka at Urban City Blue Hotel, who financially sponsored the meeting. It was attended by 9 ANSOLERS and 2 German guests.



ANSOLE-Uganda 1st Strategic Meeting on February 18th 2018

1. **Opening Remarks**

The meeting was opened by the chairperson, Ms Nabawanuka, who welcomed and thanked members for having turned up at short notice for the in the interest of ANSOLE activities. She specially appreciated and welcomed Prof. Daniel Ayuk Mbi Egbe – cofounder and international coordinator of ANSOLE to the same event as was visiting Uganda for the first time.

2. **Introduction of members**

Members present made self-introductions and shared brief profiles of themselves to colleagues.

Prof. Daniel congratulated members for having joined ANSOLE. He shared about successes and opportunities that the ANSOLE network is celebrating seven years down the road that include among others:

- 13 PhD and Masters Scholarships
- Organised 17 Conferences plus 2 more planned for 2018.
- 3 Summer Schools
- Proud to have over a thousand members including personal, institutional and corporate memberships.

Here was re-emphasized the purpose of ANSOLE as that of sharing to keep growing with reflections from Genesis 12:2-3. A practical example of life and blessings that come with giving was given based on a comparison between the Dead Sea and the Sea of Galilee. The Sea of Galilee receives and gives out its waters while the Dead Sea only receives. Members were encouraged thus to give more and be more of a blessing to the ANSOLE family and its initiatives, as we reach out to a wider community. And sure! One way members were encouraged to share of their fruits was to become active members by committing to always pay their yearly membership fee of 20 euros.

3. **ANSOLE Committee election**

To get ANSOLE –Uganda organised and fruitful, members discussed and agreed to have a specific leadership structure. The following were the agreed positions with specific roles outlined.

- **National Representative, Uganda**
  - Accounting officer for ANSOLE –Uganda
  - Media support and internet web page within ANSOLE web site
- **General Program Coordinator**
  - Raise funds for ANSOLE university projects
  - Work with other organisations to form collaborative partnerships
  - Spread information about ANSOLE
  - Implement new curriculum programs in universities or other academic institutions
  - Work hand in hand with the national representative.
- **University Coordinators**
  - Introduce ANSOLE in their specific universities.
  - Work to recruit faculty and students to ANSOLE activity programs through creation of ANSOLE clubs for example.
  - Appoint student and lecturer/professors on ANSOLE –Uganda committee that assists in running ANSOLE activities and represent ANSOLE Uganda during ANSOLE international programs.

- Collaborate with other departments concerning ANSOLE DAYS/activities.
- Communicate with the national representative and international coordinator.
- Form partnerships with communities businesses, working with them to fund ANSOLE program initiatives at your university.
- Work with the general program coordinator on implementing new curriculum programs in academic institutions.
- Share a quarterly report with the national representative.

- **General Secretary**
  - Obtains appropriate facilities for organisation activities
  - Keeps a record of all members of the organisation
  - Keep a record of all activities of the organisation
  - Prepares an agenda with the national representative for all meetings
  - Notifies all members of meetings and general ANSOLE communications
  - Prepares organization calendar of events
  - Keeps the organisation informed of both organisational and university business
  - Keeps and distributes minutes of each meeting of the organisation
  - Creates and distributes agendas for each meeting of the organisation.

The following members were voted and appointed to the different specific positions:

• **Country Representative**	Ms . Lukia Nabawanuka
• **General Program Coordinator**	Mr. Jimmy Chaciga
• **General Secretary**	Ms. Joan Talibawo
• **University Coordinators** **-**Gulu University -Kyambogo University -Kisubi University -Makerere University	 Mr. Tabu Benard Ms. Nasejje Stella Ms. Nasejje Stella Members Suggested Dr. Okello Denis who, one day later, accepted the position.

4. Other discussions

Ms Lukia informed members about the willingness for GIZ to support ANSOLE activities if only a bigger community is involved. Members from the focused group discussion potted out the business people, researchers and students as possible reach out groups within bounds of

ANSOLE objectives. From the group discussions members pointed out the possibility of some companies offering both or either financial and physical support.

National Institute of Solar energy in India was reported as willing to support ANSOLE activities as well.

One member, cautioned though for the need to be careful when it comes to networking and creating collaborations with specific organisations to protect the values and objectives of ANSOLE.

Prof. Daniel A. M. Egbe shared the bigger vision of ANSOLE as working towards becoming a unique and specialised consultancy entity in renewable energy technologies and solutions.

- **When to meet?**

As part of the ANSOLE – Uganda working strategy, members shared opinions about when and how to meet to share and follow up on ANSOLE activities. It was agreed to that members would meet at least four times a year. They agreed to have the next meeting in about a months time (18th March) to focus more on planning and identifying activities that may bring members together and how best to introduce ANSOLE in Universities.

- **How to get Renewable/Solar companies on board?**

The administrative committee was tasked by members present to identify and document the competent and potential trainers in various areas among members who can ably support practical skills development when trainings or workshops are organised.

The same idea of documentation of company/NGO profiles and their contacts that may be supportive and reached out to was also shared and noted.

Technicians also need to be mobilised.

- **How to make ANSOLE more attractive to employees in renewable /solar energy sector?**
  - Engage companies and other stakeholders in training especially for University students and staff.
  - Organise trade exhibitions. This was identified as part of workable strategy for next years planned event in Uganda. The committee was tasked to distribute tasks in the interest of its success.
  - Reach out to the companies and share with them about ANSOLE network goals and objectives, and in turn find out their needs.
  - Create a platform for information sharing probably a space within the ANSOLE website.
  - Organising continuous professional development courses.
  - Talk to the press about workshops.
  - Follow up with installations and provide support to the final consumers.

- **More Institutional involvement:**

One member suggested that at least one vocational institution and probably other universities be brought on board. Ndejje University and Nakawa Vocational Institute were suggested.

Dr.Stefan Skupien promised to share a link for where proposals can be shared for financial support as well as a list of collaborative working tools that may be of help to the ANSOLE group.

Prof. Daniel A. M. Egbe encouraged members to remain focused and not to give up.

- **Closure**

The chairperson thanked members for having turned up for the meeting and closed the meeting at 19:40 pm and networking went on till 9 pm.



Joan Talibawo is a PhD. Student focusing on Renewal Energy at the University of Rwanda, Rwanda. She has previously worked as a Teacher and Teacher-Trainer. Joan has been a member of ANSOLE for two years now. When not at her work tasks, she loves to volunteer with children projects especially related to exploration and inspiring of Science activities. Besides her studies, Joan is scheduled to support and mentor an upcoming environmental children's project, to keep the environment Clean and Green in Uganda. Contact : joantalibawo@gmail.com



Lukia Nabawanuka has a Bachelor of Science degree in Electrical Engineering and she has completed her Master of Science degree in Renewable Energy/Solar Energy from the University of Science and Technology Houari Boumediene found in Algiers, Algeria. Ms Nabawanuka is the National Representative of the African Network for Solar Energy in Uganda.Contact: lukienab@gmail.com

Block Lecture on Organic Semiconducting Materials & the SDGs

By ***Amel Ben-Fredj Romdhane***

The Laboratory of Advanced Materials and Quantum Phenomena organized together with doctoral School MISTM, of the Faculty of Sciences of Tunis, University of Tunis El Manar, and ANSOLE a course for PhD students, from 16 to 21 November 2018.

The course was held by visiting Professor Daniel Ayuk Mbi Egbe of Johannes Kepler University, coordinator of ANSOLE. The course was composed of two parts:

Part I: Organic Semiconducting Materials for Photovoltaic and Other Optoelectronic Applications: Synthesis and Structure-Property Relationships.

Part II: Extracurricular Knowledge Acquisition.



End of course exams (left), group picture at the end of the course (middle) and getting polymer samples from Daniel Egbe (right)

More than 50 PhD students from different disciplines (Physics, Chemistry and Electronics) attended the course. The course was very lively and the students were asked to do presentations on the Sustainable Development Goals (SDGs). The course ended with a written examination. All the participants received a certificate of participation. The 4 best SDG presenters were awarded prizes, the best among them was Ms Maroua Dkhili.

As part of a scientific collaboration existing since 2012 in the frame of ANSOLE, which has led so far to the graduation of 6 Tunisian PhD students, Professor Daniel Egbe brought along morethan 30 polymeric samples to be studied in our research lab. Optical, electrical and magnetic properties of these polymers are presently under investigation. We are proud of ANSOLE!!



Amel Ben Fredj Romdhane is a professor at the Faculty of Sciences of Tunis, University of Tunis El Manar, Tunisia and Director of the Laboratory Advanced Materials and Quantum Phenomena. Her research focuses on theoretical and experimental investigation of magnetic field effect on the delayed fluorescence and photoconductivity, in molecular crystals. Photophysical and electrical properties of organic materials, such as molecular crystals and polymers as solutions and thin films. She focusses in particular on the intermolecular inter and intra chain interactions (H and J aggregates), the processes of energy transfer in singlet excited states and exciton diffusion, on magnetoresistance effect in organic semiconductors, for magnetic sensor applications.. She is a co-founder of ANSOLE. Contact: amel.benfredj@gmail.com

First Biennial African Conference on Fundamental Physics and Applications: African Conference on Physics

By ***Nothandu Ndlovu***

I had the pleasure of attending the First biennial African Conference on Fundamental Physics and Applications, African Conference on Physics (ACP 2018) held at the Namibia University of Science and Technology, Namibia. ACP is an international forum that brings together researchers and scientists to present and discuss innovative and diverse topics on the next generation of Physics. The conference had international speakers from countries such as United States of America, France, Switzerland United Kingdom, Kenya, Israel, Nigeria, Senegal, Namibia and Cameroon.



Participants at ACP 2018 in Windhoek Namibia

The ANSOLE International coordinator, Professor Egbe was also part of the speaking panel in the renewable energy track. He gave a presentation on the need for more research in the energy sector in Africa and the importance of inter-country collaborations and concluded his talk with an overview of the work of ANSOLE and how many students have benefited from the various fellowship opportunities offered by ANSOLE. ACP topics included but were not limited to Astrophysics and cosmology, Nuclear and Particle Physics, Material Physics, and Renewable Energies and energy efficiencies As a Professional Physicist, I found the conference intellectually enriching. I got to leach more about Physics fields that I had done few courses on at undergraduate level and got a broader perspective on topics such as Astro and Particle Physics in particular. This will enable me to provide well informed mentorship advice for Physics majors seeking to embark on careers in these fields. Sessions on renewable energy placed an emphasis on how Africa should develop solutions that will improve energy situation. Experimental research in Photovoltaics and solar thermal technologies from undergraduate to PhD level was considered as key in enabling development of new insights on Africa specific energy solutions. I also had the opportunity to interact and network with Professors from the University of Namibia and Brookhaven Laboratory and speak about PhD supervision for my project in Material Physics of Solar technologies. ACP was a great experience all-round and I Thank ANSOLE for sponsoring my attendance at the Conference.



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ANSOLE Members from Rwanda, Uganda, Kenya and Tanzania Urged to Work for Solar Energy Uses

By ***Didace BIZUMUREMYI***

ANSOLE members (11) from Rwanda, Uganda, Kenya and Tanzania participated at the Mini School on "**SOLAR CELLS IN THEORY AND PRACTICE (SCITAP-2018-A)"** organized by ICTP - East African Institute for Fundamental Research (EAIFR) held at the ICTP-EAIFR premises of the University of Rwanda Kigali, Rwanda from 25th to 29th June 2018.



ANSOLE members and others attending the Mini School

The topics covered include:

- Working principles of solar cells
- Development of dye sensitized Solar cells (DSSCs): Theory and Hands on Session
- Device Simulation of Solar Cells
- Absorption Spectra of materials relevant to DSSCs
- Set Up of Practical Solar Systems (Theory and Hands on):

- Solar Irradiance
- Connecting Cells to Make Modules
- Battery Choices
- Power Input / Output Determination
- Solar Panel Choices and Positioning
- Charge Controller
- Suitable Inverters
- Connecting Modules/Panels



Participants at SCITAP-2018-A, Kigali, Rwanda 26 June 2018, Photo Credit ICTP-EAIFR



Dr Chukwuka supervising practicals on photovoltaics (left) and Dr. Omololu assists participats acquire practicals skills on photovoltaics

The following lecturers trained the participants:
-Dr. Omololu Akin-ojo, Director of ICTP-EAIFR, Kigali Rwanda: Photoelectric and Photovoltaic effects, PN Junction Solar Cells, Phenomenological equations for solar cells, Current Voltage (I-V) Characteristics, Curves for solar Cells, Fundamentals of Dye Sensitized Solar Cells (DSSCs), Devices Modelling and Simulation with SCAPS, Optics: Maxwell's Equations to light absorption, Absorption Spectra Creating DSSCs
Dr. Sameer Patwardhan, Northwestern University, Illinois, USA: He lectured on Materials and Methods for Solar Energy Conversion and Fundamentals of DSSCs
Dr. Sarah Holliday, Imperial College, London, United Kingdom: Advances in low cost, stable and printable organic solar cells for sustainable energy.

Dr. Alexander A. Willoughby, department of Physical Sciences, Redeem´s University, Ede, Nigeria: Components of PV systems: Solar Cells, solar panels/modules, charge controller, batteries, inverters and their connections. Practicals supervision: connecting modules, charge controller, batteries and lamp.

Dr. Mulwa Winfred, Computational Material Science, Multimedia University of Kenya, Nairobi, Kenya: Absorption spectra (calculation with ORCA and Quantum Expresso)

Dr. Chukwuka U. Madumela, **Masdar Institute:** Fundamental of PV System Design. Practicals supervision: connecting modules, charge controller, batteries and lamp.

Testimonies of SCITAP-A-2018 participants

"Thank you ICTP-EAIFR. Many thanks for a great Mini School. Personally found it is very informative, extremely useful, education and fun…. partly due to the way the lecturers structured the days and partly due to the very nice people that attended. The certificate is an additional to my curriculum vitae", said **Uwineza Emmanuel,** participant from Rwanda.

"Just wanted to say thank you for a brilliant course it was inspirational, thank you ICTP–EAIFR for this mini school", said **Joan Talibewo,** participant from Uganda.

"Brilliant mini school, very easy to understand. I enjoyed it very much", said **Brian,** participant from Kenya.

"Thank you ICTP-EAIFR for this Mini school. Lecturers are brilliant and are very experienced. Solar energy helps us to get electricity", said **Ollotu,** participant from Tanzania.

"I believe if we, as African, don't take ownership and responsibility for our problems and challenges, we run the risk allowing other nations, organizations and institutions to do so on their terms. It is up to our generation to start doing research responding to our problems and publish journals on Solar energy" said **Dr. Alexander A. Willoughby,** Professor of physical sciences at Redeem's University, told the participants in the closing ceremony of the mini school.



BIZUMUREMYI Didace is a Rwandan engineer, graduated with Bachelor degree in Electronics and Telecommunication Engineering obtained from University of Rwanda - College of Science and Technology, located in Kigali, Rwanda.

He is a very passionate person in Renewable energy mainly solar energy, environment protection and much interest to turn 17 Sustainable development Goals into reality. He is currently a Health, Safety and Environment Officer at Case Consultants Ltd and Co-founder and Chairs

the NGO on environmental protection currently under legalisation process. Email: didacebizumuremyi@gmail.com. *Tel: +250786214159 Linkedin:* www.linkedin/in/bizumuremyididace, *Twitter: @bizumuremyidida* Skype: didacebizumuremyi

Africa Gala Night 2018 in Erfurt

By ***Collins G. Adeyanju***

Introduction

The Africa Gala Night program was initiated in line with African customary practice of "end of year stock-taking and thanksgiving". End of year stock-taking or evaluation of actions and decisions, not just by individuals, but as a society, is an age-long tradition in the African culture: birthing the idea of agenda-setting for the incoming year. That is, besides the appraisal, it is usually an opportunity to set community development goals for the incoming year and prioritize obligations. It is in this light, that the maiden edition of Africa Gala Night program was conceived.

The goal of the event is to build a network of Africans in diaspora for engagement on Africa development issues. The main objective is to galvanize African scholars, African community in Thüringia and Germany; not only to celebrate culture, diversity and social cohesion, but to interact and share opinion on a common subject of significant value to Africa's development. E.g. deepening democracy, addressing Africa emigration problem, human rights, achieving Sustainable Development Goals (SDGs), addressing vaccine hesitancy, etc. The expected outcome is increased community of multipliers, inspired by Africans in diaspora in partnership with host community.

While celebrating and merry over our accomplishments, strides and successful end of year, we also, as Africans in diaspora must see a need to discuss how to contribute to development challenges Africa faces. If Africans in diaspora can be the single largest external source of revenue to the continent behind direct foreign investment and ahead of "over-exaggerated" foreign aid, then, it is a worthy strategy to equally enlist the diaspora Africans on specific Africa development agenda.



Welcome address by Collins G. Adeyanju (left) and Opening address by Mr. Oni-Orisan (right)

AFRICA GALA NIGHT 2018 PROGRAM

The maiden edition of Africa Gala Night took place at the Victor's Residenz-Hotel Erfurt – Häßlerstraße 17, 99086, Erfurt: on December 29, 2018. The program began at 17:00 and went on until 21:30; followed by an after party until 00:00. The anticipated attendance was 70 persons; however, the event witnessed a bigger than initially expected turnout. A total of 126 participants (without accompanying minors) graces the event. However, due to EU data protection and consent laws, 86 participants agreed and sign to the attendance sheet for their data to be used for this report. The attendee's affiliation cut across different spectrum of endeavours, including: Willy Brandt School of Public Policy, FS Wiso Erfurt, University of Erfurt, Bauhaus University Weimer, EAH Jena, RCCG Leipzig, Glück e.V., Netzwerk Gemeinde Erfurt, Rechtsanwält, IBM, BA English, Technical University
Ilmenau, Christian Albrecht Universität Zü Kiel, Caritasverband für das Bistrum e.V., Spirit of Football e.V., Springboard to Learning e.V, TANG e.V., ANSOLE e.V, Friedrich Schiller Universität Jena, Culture Goes Europe (CGE) e.V., Psychology and Infectious Disease Lab and Forschungsgruppe für Gesundheit und Gesellschaft, etc.

The objectives of the 2018 Africa Gala Night were:
• **Podium Discussion:** To interact on challenges of vaccine acceptance in Africa and role of Africans in diaspora via a Podium discussion
• **Presentation of Awards**: Presentation of appreciation awards to individuals, organisations and families contributing to the growth of Africa and/or Africans
• **Dinner Party**: Compilation of different foods and a party

It was organized by *Africa Partners Initiative* in collaboration with *Afrikanisch-Deutscher Verein für Kultur und Bildung e.V*. **(**ADKV).
Welcoming - The 2018 program started with a welcome address by the lead organizer, Collins G. Adeyanju. He took the audience through the spirit behind Africa Gala Night idea; the contribution of Africans in diaspora to their host community and their potentials; and finally, what they can do to support the continent based on the influence they wield on families, communities, decision makers and development initiatives back home. "We must be part of the success story of our continent". He heartily welcomed the guests and appreciate them for honouring the invitation. He reiterated the significant value of partnership by the guests in all areas of Africa development process. He thanked those who have been supporting in one way or another: projects, scholars, families and cultural exchanges in Africa, as well as African immigrants here in Thuringia. He concluded with objectives of the evening, as highlighted above and gratitude to sponsors who made it happen.
Opening - The opening address was delivered by Mr. Agboola Oni-Orison (Leipzig). He spoke about the contribution of African community to Germany's development and the opportunities Germany has blessed the community with. He encouraged the audience not to take the opportunity for granted, but to strive to achieve the best in life. At the same time, remember the duty on all to be concern about the progress of the African continent. He emphasised on dignity and place of love to the host community and also extend same back to disadvantaged families back home. The development of the continent must not be left to the existing failed system back in Africa, that's why the discussion today must be viewed from diaspora contribution to development back in Africa.

Podium Discussion



Panellists during the podium discussion (moderated by Collins G. Adeyanju)

The opening address was followed by the podium discussion on the topic: The challenges of Vaccine Acceptance in Africa and the role of Africans in diaspora. The panellists consist of

Prof. Dr. Daniel Egbe,- works at the Johannes Kepler University Linz and is the coordinator of ANSOLE
Dorothee Heinemerier- is doctoral candidate at the Psychology and Infectious Disease Lab and CEREB at the University of Erfurt. She is a specialist in health decision making and evidence-based health communication and her PhD dissertation project focuses on vaccine hesitancy and non-acceptance in health campaigns.
-*Collins Adeyanju-* is a doctoral candidate at the Psychology and Infectious Disease Lab and CEREB at the University of Erfurt. He is a lecturer of Global Public Health and Systematic Review Methods.
Agboola Oni-Orisan- has engineering and Finance academic training, but since 1991, been a facilitator of seminars and international conferences on Africa development issues.
Dr. Amani Bohoussou- is an African linguist, communicator, teacher and leadership mentor.

The discussion touched on questions/topics such as:

- The importance/benefits of vaccination/immunization to self and society
- Why vaccination Hesitancy despite its significance to preventing diseases and deaths (globally)

  - **Follow-up**:
  - Are there main reasons for non-acceptance of vaccination?
  - How significant or not is hesitancy in Germany?
  - Are there differences to what is obtained elsewhere (e.g. Africa)?
- Since Out-Of-Pocket healthcare Cost (OOPs) is one of the contributors to poverty according to World Bank, do we think vaccination can have drastic effect on health expenditure and why?
- How can effective health communication through Africans in diaspora help address the above stated hesitancy issues?

o **Follow-up:** According to WHO "**30 million children** are unimmunized because families are uninformed or misinformed about importance of immunization"

- How can we (Africans in Diaspora) become part of the solution?

The discussion was moderated by Collins Adeyanju and lasted for 85 minutes. Forty-five minutes were spent laying the foundation and providing the empirical/evidence-based narratives; thereafter the audience joined the conversation for another 40 minutes. All of the above topics were covered. Converging opinion was that, Africans in diaspora should energise the health communication or vaccination acceptance narrative into an agenda to be promoted; as equal in substance as the economic livelihood promotion. The discussion enhanced interaction and engaged academic studies and the society; thereby inspiring a feedback forum on how best to engage and communicate vaccine acceptance to the African population. The first and most important barrier to be surmounted is the conspiracy theory behind vaccination as a fertility inducing mechanism to de-populate the Africans. The general view was that, this occupies the strongest determinant of vaccine hesitancy in Sub-Sahara Africa. While many still hold some of these strong negative stereotypical views concerning vaccination, there is little or insufficient counter-arguments communication, at least that is yet to be effective. Although evidence-based studies have debunked these conspiratorial linkages, effective communication via trusted medium has been relatively poor or absent. Prof. Egbe and other contributors questioned the role of churches in Nigeria, Ghana and other countries in the region. Arguing that, the role of churches has been self-serving, rather than being a source or platform for promoting general well-being of the African people. i.e. they could have been one of the trusted vehicles for championing acceptance of vaccination and help fight vaccine preventable diseases. Another barrier mentioned was education. According to Prof. Egbe and affirmed by practical testimonies from Dr. Bohoussou and other participants, the level of education of the population and the acceptance via-a-vis non-acceptance have relationship. Therefore, addressing the literacy level within the African society will increase the likelihood and understanding or comprehension of the role of vaccine: hence, engender its acceptance as the most effective medium for confronting the alarming rate of child and maternal mortality in the region. However, some participants felt that while formal education is the bedrock of any well-informed society, a lot is required to get there, and diaspora short- and medium-term goal should not be broad formal education of the populace, rather, appropriate information communication or knowledge sharing for immediate life-changing decision making on vaccination. Diaspora do not have the resources to educate the continent, hence, what can be done is to build on vaccination success stories and share the knowledge, since they (Africans in diaspora) also share resources or successes with relatives back home. The idea is to begin an enlightenment campaigns among relatives, networks, community leaders, policy decisionmakers back in Africa. By so doing, the seed of trust may be established in the efficacy of vaccine, as the most veritable tool for addressing not just poverty (due to Out-Of-Pocket expenses on healthcare) but decrease avoidable and preventable deaths or disability.

Ms Heinemeier introduced confidence factor as an evidence-based psychological determinant of either motivation for accepting vaccine or refusal to continue. She emphasised that, once the attitude towards vaccination messages and the messengers is built on mistrust or miscommunication, the problem of hesitancy is not unexpected. This, she stressed, makes herd immunity almost hard to accomplish in societies. Others also contributed, along same line of thought and concluded that, because Africans in diaspora have high level of credibility than policy makers or politicians back in Africa, they stand a good chance to drive vaccine acceptance narratives on the continent. She also introduced the idea of legal framework around behaviour that promotes acceptance.

Since out of pocket healthcare expenses (OOPs) is so critical, it dominated the latter phase of the podium discussion. According to World Bank, OOPs is one of the highest contributors to poverty on the continent. That is, by implication, greater proportion of money sent home by diaspora Africans is expended on healthcare. The speakers agreed that it is unacceptable, and something urgently needs to be done about it. Collins Adeyanju narrated the loss of his brother owing to polio, however, not killed by polio, but inability to cope with associated cost of caring for a polio-disabled brother led to his death. This topic solidifies all the questions and discussion for the night, hence, puts the audience in the state of what do we do now?

Finally, without infrastructure that enables vaccine to reach hinterland or innermost part of the communities, effective communication no matter how best, is a non-starter. It will not solve the problem, and herd immunity Ms Heinemeier talked about will be a mirage. Therefore, lag in coverage due to infrastructure gap must be loudly advocated for, in order for vaccine preventable diseases to be tackled with all seriousness. Eric Mushimiyimana concluded the session with a call for African scholars, experts and high skilled Africans to think about returning home to participate in the development process.



Cross-section of Participants during the discussion

Outcomes of the podium discussion were:
Knowledge of Africans in diaspora was expanded on vaccine challenges in Africa; There was a general consensus of the value of vaccine acceptance as the best shot to fight high rate of maternal and child mortality in Africa; Religious and cultural doctrines that either prohibit or do not contribute-enough to the spread of the significance of vaccine acceptance as the most effective tool to fight vaccine-preventable-diseases was challenged and the narrative continues; The unanimous resolution to be champions/ambassadors of vaccine acceptance to the people; The need for unity in communicating the importance of vaccine acceptance, beginning with families, through communities and to policy makers in Africa; The possibility of forming a research/working group by Africans in diaspora on vaccine acceptance promotion; The need to invite African policy makers in subsequent forum; To campaign for improved quality of education and information communication, especially negatively framed ones on consequences of vaccine hesitancy; The need to involve the religious organizations in information communication on vaccination, in view of their enormous ability to instil confidence among citizens; Africans in diaspora to consider piloting a health communication promotion strategy/intervention in a community in Africa; since we have partners at the program willing to support such project. Finally, scholars and experts of African origin in diaspora to considers returning home to contribute their gained knowledge to progress of the continent.

Dinner
Guests are introduced to exquisite varieties of African and intercontinental dishes. Although mainly African dishes, but because of the diversity of guests, varieties were incorporated to give them choices and also a semblance of Afrika-Deutsche or Africa-European convergence.



Award Ceremony
The final phase of the program was the award ceremony. Presentation of Africa Recognition Award 2018 was handed to individuals and organisations contributing to the growth of Africa's ideals and development; integration and promoting social good. Also, recognising individuals or organizations carrying out projects in Africa. Lastly, recognising individuals or organizations whose work is having positive impacts on the general society. The awardees were: Spirit of Football e.V., Caritasverband für das Bistrum Erfurt e.V., Erde Der Kinder e.V., Dr. Kathleen Wachowski of Glück e.V., Paca Jose Manuel - Ausländerbeirat, Frau Petra Eweleit – co-founder and former coordinator of Fremde Werden Freunde e.V., Pastor Michael Sia of I AM Mission e.V., Deutscher Akademischer Austauschdienst e.V. (DAAD) e.V., Frau Elizabeth Strübel Founder of Springboard to Learning, and Prof. Dr. Daniel Egbe – coordinator of ANSOLE e.V.



Way Forward/Lessons Learnt

- There is a general consensus that, the Africa Night should be sustained; possibly an annual event.
- There is a need to plan and fund-raise for the next Africa Night event, much in advance.
- There is a need to network with other African groups in German to enhance reach and collectivism.
- Consult widely on interest of African scholars on vaccine communication working group
- There is a need to hire two paid interns (funded from the program budget)

Vote of Thanks
The program concluded with a vote of thanks from Michael Sia on behalf of the organizers of the Africa Gala Night 2018. The night ended with dance to African music and tunes.

Credit to Team: Muyiwa Alalade, Mufutau K. Muyiwa, Dr. Olivia Ugokwe, Estella Nelson, Kemi Best Ovie, Jean de Dieu Kizito Cirhigiri, Gbolade Willoughby, Collins G. Adeyanju, Michael Sia, Osamede Peace Smith, Grigori Grigoriev, Best Ovie, Nicholas Abamu (photographer), Maria V. Colaiemma and Elvira Sia.

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Catholic International Development Aid Organization – MISEREOR, Culture goes Europe (CGE), Freistaat Thüringen Staatkanslei



Collins G. Adeyanju, is a researcher at the Centre for Empirical Research in Economics and Behavioural Science (CEREB) and Department of Media and Communication Science, University of Erfurt. He is a Nigerian. His current research focus is on decision making through behaviour intention (health communication) in sub-Sahara Africa. Mr Adeyanju had previously worked for international development agencies and the Federal Government of Nigeria, focusing on: program evaluation for Global Fund grants to Nigeria; capacity support for ECOWAS Centre of Excellence respectively. He was an independent evaluation consultant for Christian Aid UK – Nigeria program, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) – Nigeria and others.

.He holds bachelor and master's degrees in international Relations from Ahmadu Bello University and University of Abuja – Nigeria. In 2016, he completed another master's degree (interdisciplinary) in public policy from Willy Brandt School of Public Policy at the University of Erfurt.

He is the lead organizer of Africa Gala Night (Erfurt) and coordinator of Africa Partner Initiative, a non-profit think-tank aimed at mutually beneficial knowledge and capacity sharing between Africa and rest of the world; especially toward achieving the SDGs by 2030. He can be reached via gbadebo.adeyanju@uni-erfurt.de.

Articles on…

Permaculture: A Design Tool for Sustainable Life

By ***Bernhard Gruber***

The word Permaculture is lend from "permanent Agriculture", but the providers of these ideas, Bill Mollison and David Holmgren from Australia, discovered that it is not only in the responsibility of the farmers to produce healthy food. It is in our own responsibility to take care of our daily life, the future of our children and the creation around us. We have to work with nature, not against it.



Permaculture book in Swahili authored by Dr. Peter Feleshi and Bernhard Gruber

The 5 Pillars of Permaculture

First Pillar - Healthy Food: Clean water freely accessible to all living beings, GMO-free seed, animal feed and food. Preservation of thousands of years of biodiversity in plants and animals. No patent on life / seeds. Storage of unused or surplus energy in the form of meat (kitchen waste for chickens and pigs!). In small areas intensive (for example in mixed culture), on large areas extensively, focus on perennial fruits or extensive grazing animals.

Second Pillar - Renewable Energy: It is a need to have a balanced energy consumption. The easiest way would be to use the sun's energy. When trees are felled, always make sure that more trees can regrow. Biogas can be produced with excreted products of humans and animals, arrears of it are used as fertilizer in the field. A worldwide fight for existing resources is already taking place.

Third Pillar - Architecture: The use of energy should also be reconsidered in architecture. It is also the question, how will it be possible to lead back the building material to nature? Even the burning of bricks is associated with a high energy expenditure and is often not necessary. In general it is important to use local renewable material.

Fourth Pillar - Technology and Education: In Permaculture, we try to apply simple technologies that support people and do not endanger their health or harm nature. In the age of the Internet we have the opportunity to get information from different parts of the world, which can support our actions and our environment. We ourselves can also let interested parties participate in what we do. It is important not to proselytize others with our ideas, but to lead by example.

Fifth Pillar - Community: Community is an important pillar of Permaculture because humans can not survive without cooperation with others. They need the help but also the friendship of other people. Societies can only survive if they have a certain size, they will disappear if they are too small or too big. A community can help one another at work, grow together, collect devices together, co-product and market products together. Swap seeds and much more activities. We can also promote the community by visiting our neighbours and celebrating festivals together in the village.

The Ethics of Permaculture

Permaculture is a design tool with Ethics, Principles and Methods, which fit in each culture and also region in the world. Permaculture means to live from the surplus of nature, it combines ecology with economy. There is no endless economic growth without destruction. To have our personal freedom in our community we have to have a permanent culture as well.



Earth care - This planet is our livelihood and therefore we should show humility in front of nature and the creatures on earth. We only make up a small part of the entire life cycle on our planet, but we have a decisive influence on it.

People care - It means: providing the basic needs of all people for food, energy, shelter, education, meaningful employment and friendly contact.

Fair share - We live at the expense of the future of our children and grandchildren. This means: limiting growth, reducing meat consumption, reducing livestock, supporting my family and neighbours. Growing vegetables, planting fruit trees and trees for timber and firewood. Respecting habitats of wildlife.

Bernhard Gruber, President of Österreichisches Waldgarten-Institut, Permaculture Consulter, Teacher, Activist and Author - Grown up on a micro-farm on the outskirts of Wels / Austria, which has been managed since the early 1990s according to the principles of Permaculture. Training as food technologist, technical designer, advertising designer and Permaculture designer. He is consulting and teaching farmers and organisations in therms of Permaculture in Austria, Germany, Sudan, Tanzania, Kenya and other countries.Contact: Österreichisches Waldgarten-Institut, Stadlhof 47, 4600 Wels, Austria, www.waldgarteninstitut.at, Email: bernhard.gruber2@gmx.net

Energy Access in Africa: Case of Ghana

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Abstract
Energy is one of the strongest pillars of industrialization and improved social life. Without energy, industrial production will be limited. This will lead to scarcity of goods and services resulting into hardships and decline in economic growth. Energy Access should therefore be a priority for any country that aspires to achieve better socio-economic development. However, energy access in Africa, especially in Ghana, has been very challenging. This paper studied the energy access situation in Africa with focus on Ghana by reviewing published literature on the subject. The study showed that energy access is still a challenge that needs to be addressed for better economic growth in the region. It further recommends that renewable energy sources such as biogas and solar energy should be considered to increase energy access in rural farming communities.

Keywords
Energy access; human development index; clean cooking; electrification

Energy is one of the inevitable resources of socio-economic development of every country. The production industries, service sectors and households all depend on energy for survival. Energy plays invaluable role on industrialization, combats poverty and helps in rural planning and sustainable development. Emphatically, modernization depends on energy without which life will be boring and less profitable. In 2017, Ömer and Metin showed that there is a positive and statistically significant relationship between energy consumption and economic growth. Martınez and Ebenhack (2008), also did a study on the relationship between energy consumption per capita and human development index (HDI)[1] and found a strong relationship between them.

However, energy consumption depends on sustainable energy availability and energy access. According to International Energy Agency (IEA) energy access is when a person has a minimum of 100 kilowatt-hours (kWh) per person per year for urban areas and half this amount for rural areas (IEA, 2015). However, the Center for Global Development in 2016 recommended that the energy access thresholds should be increased to 300 kWh per capita per year instead of the 100 kWh defined by International Energy Agency (IEA) to capture basic household appliances and at 1,500 kWh to capture on-demand usage of multiple modern appliances within a household.

Energy access is therefore very critical for countries that aspires to have socio-economic development and better standard of living for its citizens. Having access to energy leads to economic growth, human development and sustainable environment. The globally agreed-upon Sustainable Development Goal Number Seven (SDG 7) is to “Ensure access to affordable, reliable, sustainable and modern energy for all”. However, energy poverty is endemic in most developing countries. Although, Africa is endowed with a considerable potential of fossil and renewable energy resources it suffers from severe energy supply deficit. IEA estimated that about 1.1 billion people[2] globally do not have access to modern electricity. Many more also suffer from supply that is of poor quality. Around 84 % of those without electricity access live in rural areas while more than 95 % of those without electricity live in sub-Saharan Africa and developing Asia (IEA, 2017).

Sub-Saharan Africa is broadly and deeply poor in energy. Only 32 % of the population has access to electricity with about 59 % of this population living in urban areas. Though the rates of electricity access vary between countries, less than 50 % of the population in at least 37 sub-Saharan countries has access to electricity. In extremely poor and post conflict countries such as Liberia, South Sudan and Sierra Leone the access rates are less than 5 % (Center for Global Development, 2016). The country-by-country analysis of policies, investment and technologies projects about 59 % access rate of electrification in sub-Saharan Africa in 2030 from 43 % in 2016, however, the number of people without access to electricity begins to grow. It is projected that about 674 million people will still have no access to electricity in 2030 globally. Out of this 90 % lives in sub-Saharan Africa (IEA, 2017). There is therefore the need for quick interventions to address the energy access situation in Africa in order to boost economic growth and standard of living.

Globally, about 2.8 million people do not have access to clean cooking facilities. Approximately 2.5 million people rely on solid biomass, 120 million use kerosene while 170 million use coal. With the exception of few countries, energy consumption in Africa is widely dominated by biomass (IEA, 2017). Although access to clean cooking has recently improved in developing countries, however, strong population growth in these regions still put pressure on biomass demand for cooking and the number of users has increased by 400 million people, despite growing awareness of the associated health risks and decades of programs targeting access to modern cooking. Sub-Saharan Africa is the region showing the least progress on clean cooking. Almost 80 % of the population still cooks with solid biomass (IEA, 2017).

To address the struggling energy issues in Africa, energy policy instruments should be geared towards developing other renewable energy resources to augment the conventional energy supply. Though grid connections increase energy access by 50 %, decentralized systems are the most cost-effective (as transportation cost and losses are prevented) to make about 70 % energy access in rural

[1] The Human Development Index (HDI) is a measure of economic development and economic welfare. It examines life expectancy, education and income levels and scores it between 0 and 1 (UNDP, 2016).

[2] About 14 % of global population, 2017 (IEA, 2017).

communities (IEA, 2017). Renewable energy sources such as mini-hydro systems, solar energy and biogas are some of the possible means to decentralize energy supply to rural communities in Africa. It is estimated that about 60 % of energy access globally will be provided by renewable energy by 2030 while about 50 % of new access will be provided by off-grid and mini-grid systems. One of the sustainable ways to ensure that energy access in the rural areas is met is to invest in biogas production projects. Nevertheless, biogas production, which has extra advantages of producing bio-fertilizer, preventing environmental pollution and efficient organic waste management, is less developed in Africa (IEA, 2017).

Ghana is a country with about 29.6 million people (Ghana Statistical Service, 2018). It aspires to achieve socio-economic development and better living standards for its citizens. It aims to attain a GDP growth rate of 7.5 % in 2018 (World Bank, 2017) which studies show that its success strongly depends on efficient and productive energy consumption (Ömer and Metin, 2017). Ghana envisions to make energy services universally accessible and readily available in an environmentally sustainable manner, from 66 % to universal access by 2020 (Ministry of Energy, 2010). However, Ghana's energy situation has not been the best in recent years which brought about the popular term "Dumsor"[3].

Although Ghana has achieved about 83 % electrification and has installed capacity of 2800 MW of electricity, many rural and farming communities still do not have access to electricity. About 85 % of urban dwellers have access to energy as against only 41 % in rural communities (World Bank, 2017). They mostly use lantern as source of light in the night and depend on biomass[4] for cooking which is against the global agenda of achieving clean cooking in 2030. Biomass constitutes approximately 66 % of the total energy consumed in Ghana. The negative health impacts of indoor air pollution from traditional biomass fuels on women, girls and babies remain a critical issue (Ministry of Energy, 2010). Nevertheless, urban dwellers also depend heavily on electricity and fossil fuel which put pressure on the percentage available for industries and service sectors for profitable production thus negatively affecting gross domestic production.

Normally, there are no motor able roads to farming and rural areas and even if there is, are very deplorable and therefore makes it difficult transporting fossil fuel to these farming villages. Yet, the food security in the country inevitably depends on these communities but due to difficulty in accessing energy in these areas, they rely on open sun drying as the only means to preserve agriculture produce. But it is obvious that open sun drying alone is not efficient. However, farmers in these communities cannot afford to purchase efficient drying technologies that use other sources of energy such as fossil fuel and electricity. Nevertheless, drying efficiency can be achieved if solar drying technology augmented with other renewable energy sources such as biogas is used. Biogas can be produced onsite using the organic waste from the crop farms, households, animal farms and human excreta. During night hours and cloudy seasons when the sun is not available, the biogas can be used as a source of energy. Excess biogas can be used for other purposes like cooking and electricity generation. This will help achieve Ghana's renewable energy policy that aims to attain 10 % of its energy mix from renewable energy. It will as well help achieve the goals of Sustainable Energy for All (SE4ALL) in 2030.
In conclusion, energy access is still a challenge in Africa, especially in Ghana

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[3] Dumsor is a term for frequent blackout in short time. It is a term derived from Twi words **dum** (switch off) and **sor** (switch on) in the periods of 2010-2016.
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Physico-chemical Characteristics of Cattle Blood and Rumen Content

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ABSTRACT

Physico-chemical characteristics of a substrate strongly affects its biogas production. Therefore, to optimize biogas production, the physico-chemical characteristics of the substrate used are very essential. Though cattle blood and rumen content have been identified as suitable feedstock for biogas production, however, there is limited study on their physico-chemical characteristics at Kumasi Abattoir Company Limited. This study was therefore done to determine the physico-chemical characteristics of cattle blood and rumen content from Kumasi Abattoir Company Limited. The physico-chemical characteristics of seven samples with varying blood and rumen content were determined. The study showed that the total solids and volatile solids of cattle blood and rumen content and their mixtures are in the ranges of 2.97 – 17.2 % and 75.17 – 95.01 %, respectively. They as well have C – N ratio between 2.6 – 11.3. Their pH and temperature ranges from 7.58 – 8.14 and 25.43 – 28 ^{o}C, correspondingly.

Keywords

Cattle blood, rumen content, biogas, mixing ratio, total solids, physico-chemical characteristics

1. INTRODUCTION

Biogas contains 50 – 70 % of methane that can be burned to produce heat energy and power. However, its production is strongly influenced by the characteristics of the substrates used. The activities of the microorganisms that are involved in anaerobic digestion (AD) which is the process for biogas production depends on factors such temperature, pH, carbon-nitrogen ratio, organic loading among others. Methanogenic bacteria are very sensitive to composition of substrates, feeding rate, temperature, oxygen and pH. Biogas yield and its methane concentration also strongly depends on the total solids and volatile solids of the substrates [1,2]. Therefore, to optimize biogas production, the characteristics of the substrate or feedstock is very important.

Temperature has critical effect on the metabolic activities of the microorganisms in the AD process. It affects the rate of biogas production, the quality of biogas produced and the hydraulic retention time. There are three different temperature ranges within which AD process can occur. These are;

psychrophilic (< 20 °C), mesophilic (30 to 42 °C) and thermophilic (43 to 55 °C) temperature ranges [3]. Temperature instability negatively affects the methane production process. Brief fluctuations not exceeding the following limits may be regarded as safe in operating AD processes: Psychrophilic range (±2 °C/h), Mesophilic range (±1 °C/h), Thermophilic range (±0.5 °C/h) [1].

The pH of a substrate is a critical parameter to determine the success of the AD process. It depends on the properties of the substrate fed into the digester [4]. Slurry pH affects the rate of biogas production and the quality of the biogas. This is because outside the optimal pH range of 6.5 and 8.5 [5] methanogens are severely inhibited though the acidogenesis bacteria survive pH between 5.5 and 6.5. The right slurry pH must therefore be maintained in the digester for a stable biogas production [4].

Carbon – Nitrogen ratio (C/N ratio) is the ratio of the number of organic carbon atoms to the number of nitrogen in the substrate. It is a very essential parameter in the decomposition of organic matter for biogas production [3]. It determines the stability of the digestion process. Micro-organisms in the biogas digester feed on carbon and nitrogen to produce biogas. They use carbon as an energy source and nitrogen for building cell structures. If the C/N ratio is too high the bacteria in the process will experience lack of nitrogen and the pH of the process will drop quickly from the formation of fatty acids. This will inhibit the methane producing bacteria [3]. If the ratio is too low the process will suffer from ammonia inhibition [1]. It is difficult to state the exact optimal C/N ratio because it varies with different substrates and also with the process conditions. However, for optimized biogas production the C/N ratio of the feedstock mix should be between 20 and 30 [3]. The microorganisms use up carbon about 30 times faster than they use nitrogen so they require a carbon-nitrogen ratio closer to 30. Table 1 shows C/N ratio of some organic material.

When a substrate is heated to the temperature of about 105 ^{o}C it loses its moisture content remaining the dry solid portion of the substrate. The dry solid portion of the substrate is called Total Solids (TS). It consists of Total Suspended Solids (TSS) and Total Dissolved Solids (TDS). TS provides a way of measuring the concentration of the substrate fed into a digester as well as a standard unit for measuring the biogas production potential of a substrate [3,7]. Wet and medium solids substrates have TS of 12% and 15 – 20%, respectively, while dry solid substrates have TS of 22 – 40% [2,8]. The total-solids and water contents of different substrates vary widely from substrate to substrate. For example, the total solid content of animal dung varies between 15 - 30 % while that of fresh cattle dung is 15 to 25 % [2,10]. The recommended total solid content for slurry fed into a continuous-fed digester is between 5 - 12 % [10]. However, dry digesters, can digest slurries of up to 30 per cent total solid content [10]. Mineral ash or fixed solids (FS) is the ash left after burning the dry matter in a furnace at a temperature of 550 ^{o}C or 600 ^{o}C [3]. FS is usually composed of soil particles, inert portions of vegetable matter and some solid carbon left from the decomposition of foodstuffs.

Table 1: C/N Ratio of Some Organic Materials

Substrate	**Nitrogen (%)**	**C/N ratio**
Chicken dung	8	6-15
Turkey litter	2.6	16
Human use	5-7	5-10
Pig manure	3.1	14
Cow manure	2.4	19
Sheep manure	2.7	16
Slaughterhouse waste	7-10	2-4
Horse manure	1.6	25-30
Whole carrot	1.6	27
Potato top	1.5	25
Raw sawdust	0.11	511
Rotted sawdust	0.25	200-500
Rice hull	0.3	121

Soybean meal	7.2-7.6	4-6
Tomato	3.3	12
Corn hubs	0.6	56-123
Corn husk	0.6-0.8	60-73
Grass clipping	2.1	12-19
Water lily	2.9	11.4
Algae	1.9	100
Fallen leaves	1	50

Sources: [3,6]

Volatile Solid (VS) is the measure of the portion of the dry matter or TS lost when the dry matter is burnt at 550 ^{o}C or 600 ^{o}C [2,3]. It is the organic matter in a sample which is measured as dry solid content minus ash content of the substrate. It is the digestible portion of the substrate [2]. It is used to determine the concentration of the slurry fed into a digester and the amount of biogas produced from it per unit weight of slurry fed into a digester. The volatile solids content of dung is usually 80 % of the total solids. The total solids and volatile solids of some substrates are shown in Table 2.

Table 2: The TS and VS Content Organic Materials

Substrate	**TS (%)**	**VS (%TS)**
Rumen content (untreated)	12 – 16	85 – 88
Cattle slurry	5 – 12	80
Chicken manure	10 – 29	67 – 77
Brewery spent grain	20 – 26	80 – 95
Corn Silage	20 – 40	94 – 97
Municipal organic waste	15 – 30	80 – 95
Sheep manure	18 – 25	80 – 85
Human Faeces	14 – 22	79 – 84; 93
Sewage sludge	3 – 5	75 – 85
Cattle excreta	25 – 30	75 – 85
Pig stomach content	12 – 15	80 – 84
Pig manure	20 – 25	75 – 80
Pig slurry	3 – 8	70 – 80

Sources: [6,11,12]

2. METHODS AND MATERIALS

2.1 Collection of Raw Material

Cattle blood (liquid) and rumen content (slurry) were taken from the evisceration unite of the Kumasi Abattoir Company Limited, Kumasi. The company is located at Ahinsan in the Kaase Industrial Area, Kumasi, Ghana. The cattle blood was collected into a clean dry plastic bottle while the rumen content was collected into a clean dry plastic container. They were taken from the abattoir's premises around 9:00 am and were placed inside a temperature controlled ice chest. They were then transported to the Biotechnology Laboratory of the Chemical Engineering Department at Kwame Nkrumah University of Science and Technology, Kumasi, Ghana for analysis.

2.2 Experimental Set-up

Seven samples of different mixing ratios were prepared from cattle blood, rumen content and nutrient medium for the study. They were then analysed for their physico-chemical characteristics at the laboratory.

2.3 Sample Preparation

The samples were prepared by mixing different ratios of cattle blood and rumen content. 100 ml of nutrient medium was added to each sample and stirred at 200 rpm for 30 minutes to obtain homogeneous mixture. The mixing ratios of the seven samples are listed in Table 3. The composition of the nutrient medium is shown in Table 4. All standard laboratory protocols were followed in the preparation.

Table 3: Mixing ratio of Samples

Samples	Blood (ml)	Rumen Content (ml)
S_1	60	0
S_2	50	10
S_3	40	20
S_4	30	30
S_5	20	40
S_6	10	50
S_7	0	60

2.4 Determination of Physico-chemical Characteristics of Samples

2.4.1 pH and Temperature

The pH and temperature of the samples were determined using Hanna Instrument's multi-parameter (HI9829). Each measurement was done three times and the average determined. All standard laboratory protocols were followed while manufacture's manual was strictly obeyed.

Table 4: Composition of Nutrient Medium

Chemical	Mass (g)
NH_4Cl	0.53
KH_2PO_4	0.27
$Na_2HPO_4.2H_2O$	0.56
$CaCl_2.2H_2O$	0.075
$MgCl_2.6H_2O$	0.1
$FeCl_2.4H_2O$	0.02

2.4.2 Total Solids, Moisture Content, Ash Content and Volatile Solids

To determine TS and moisture content, 50 ml of each wet sample was weighed for their mass (M_{WS}) and dried at a temperature of 105 ^{o}C for twelve hours and the mass of the dried sample (M_{DS}) weighed. The VS and ash content were also determined by burning the dried samples to ashes at a temperature of 550 ^{o}C for four hours and the mass of the ash weighed (M_A). They were then calculated using equations (1), (2), (3) and (4) as used by Asam *et al.* [13], 2011; Van Reeuwijk [14], 2002 and Cioabla *et al.,* 2012 [15] in their study. Each measurement was done three times and the average determined.

$$TS(\%) = \frac{M_{DS}}{M_{WS}} \times 100 \quad \text{.....(1)}$$

$$MC(\%) = \frac{M_{WS} - M_{DS}}{M_{WS}} \times 100 \quad \text{.....(2)}$$

$$AC(\%) = \frac{M_A}{M_{DS}} \times 100 \quad \text{.....(3)}$$

$$VS(\%) = \frac{M_{DS} - M_A}{M_{DS}} \times 100 \quad \text{.....(4)}$$

where:
M_{WS} is the mass of the wet sample
M_{DS} is the mass of the dry sample
M_A is mass of ash of the sample

2.4.3 Determination of Carbon-Nitrogen ratio
To determine carbon-nitrogen ratio, 50 ml of each sample was used. Dry combustion was used to determine the organic carbon content of the samples while Kjeldhal Method was used to determine the nitrogen content of the samples [14,16].

3. RESULTS AND DISCUSSION

The physico-chemical characteristics of the samples are presented in Table 5. The varied characteristics of the samples indicated that mixing the same co-substrates in different ratios resulted into substrates of different physico-chemical characteristics. This agrees with the findings of Adelard *et al.* (2015) [17]; Manyi-Loh *et al.* (2015) [18] and Budiyono *et al.* (2011) [19] in their studies that different mixing ratios of the same co-substrates produce different physico-chemical characteristics.

Table 5: Physico-chemical Characteristics of Samples

Samples	Moisture Content (%)	Total Solids (%)	Ash Content (%)	Volatile Solids (%)	pH	Organic Carbon (%)	Nitrogen (%)	Carbon Nitrogen Ratio	Temperature (^oC)
S_1	95.39	4.61	6.30	93.70	8.03	47.00	16.81	2.80	27.97
S_2	93.51	6.49	6.43	93.57	8.14	46.20	15.69	2.90	25.43
S_3	95.01	4.99	8.84	91.16	7.89	44.65	13.66	3.30	27.66
S_4	96.38	3.62	13.29	86.71	7.79	41.30	15.97	2.60	27.76
S_5	95.70	4.30	15.12	84.88	7.82	35.20	6.37	5.50	27.64
S_6	96.39	3.61	18.64	81.36	7.77	34.45	5.53	6.20	27.67
S_7	97.03	2.97	24.83	75.17	7.71	33.10	2.94	11.30	28.00

The total solids and volatile solids of the samples showed that they had biogas and methane potentials. House [2] recommended that the total solids and volatile solids in substrates for biogas production should be 5 - 10 % and 75 - 95 %. It was realized that the carbon-nitrogen ratio of the samples was inversely proportional to the blood composition. It is a known fact that blood has more protein and therefore adding it to the rumen content reduces its carbon-nitrogen ratio. The carbon-nitrogen ratios of the samples were below the optimum range of 20 - 30:1 [4,18], however, Jeung *et al.* [20] found in their study that cattle blood and rumen content has C/N ratios of 3.41 and 19.2 respectively which is similar to the findings of this study. This suggested that the optimum C/N ratio depends on the kind of substrate.
The pH of the samples showed that all the samples were within the optimum pH values for methanogens which ranges between 6.5 and 8.5 [3,6] and their temperatures were within the mesophilic temperature range [3].

4. CONCLUSION

This work has shown that the TS and VS of cattle blood and rumen content and their mixtures are in the ranges of 2.97 – 17.2 % and 75.17 – 95.01 % respectively. They as well have C – N ratio between 2.6 – 11.3. Their pH and temperature ranges from 7.58 – 8.14 and 25.43 – 28 ^oC respectively.

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Poems...

By ***Gyasi Poku***

Holy Ghost Hour

"Huhukiki babamukai lalalababa….mukadishi"!
I overhear it some distance away
Hardly understand I these confusing chants
I am curious! So I get closer
At the door see I an old woman rolling on the floor
Just a foot away from the tip of arrowed shoes
Of a huge man, sweating like rain in his black suit.
He is at his peak! His nerves are peeping out his neck.
His sweat is as thick as the anointing oil
On the old woman's face. She is a witch!
It is holy ghost hour! Miracle must be done!
The old woman must confess!
She is bewitching her flourishing son…really?
Silence floods Bukakata International Church Inc.
Everyone is pregnant with curiosity
All are eager to witness the woman confess
She is a witch! The prophet say so.
Angels must work. Nana-nom will work.
Now and then, the nestle pastors wearing skinny three-quarters
Raise her up. "Huhukiki babamukai lalalababa….mukadishi"!
The prophet invokes his tongue-scary words again at her
Angels should come. Ayantafre and Nimokafre
They will come with Gabriel to punish the woman
To talk, to talk all the truth. I…we patiently wait!
For hours now the woman has not confessed
The prophet still chant; Angels are on strike?
No! One must succumb to man of G…o…d.
Their skin-tight suit is wetting, still the woman
Will not confess. In fact, she has nothing to confess!
He pushes her, right at the confusing center of her mind;
Prophet patiently wait for his unfailing hypnotism to manifest.
She will still not confess? Provocative?
She is 75 years with multiple wrinkle marks
On her face, one could witness a total toil of life.
Helpless old granny, she has integrity
To defend at the prophet's court!
It is time for her to rest and be cared for.
Her son is now a bank manager
She sold five of her twelve pieces Holland cloths
To pay for his common entrance fees; she remembers in tears.
But her son now belongs to the prophet in mind.
The congregation still wait for prophetic miracles.
The woman is not confessing: she cannot accept false disgrace!
Prophet is becoming wild! Something must be done.
He stumps her belly with his left foot mercilessly.
Out of pain she responds with strong yell; yes! Yes!
I am a witch! For a moment she becomes weak and silent.
Now the congregation is satisfied, the witch old granny
Has confessed in her half-coma-pain, lying on the floor helplessly.
Prophetic image is redeemed; praises and offertory follows,
Old granny still lies down helplessly in pain on the floor.
No one cares because prophet says she is a witch?

Prophet knows the deal; life is hard so every means
Is opportunity. Smartness? It is believed that man is impotent,
That is unfortunate paradigm! If one is not rich
At an assumed age, then he may not be the favorite
Of the gods or he is bewitched. Lack of plans and ideas
Or laziness does not matter; they believe less in toil.
The prophet has a clue. The people lack the eye!
A fine opportunity! Heaven is a second thought.
Rub your face with “back to sender oil”.
“Ye bo ne tuo paaay”!!
Yell upon your enemy curses and be saved;
An isomer of biblical law of love!
Lies wearing same moral coat.

Glossary

Huhukiki babamukai lalalababa….mukadishi	this common tongues said in prayers by some prophets in Ghana.
Bukata	this is a term used to show that something is deceptive in Ghana. Bukakata is coined out of it.
Nananom	is a name given to the gods in Ghana. It is used in the poem to show that some prophets use other spirits other than Holy spirit.
Nestle pastors	pastors under training
Skinny three-quarters	attar normally worn by these pastors
Ayantafre and Nimokafre	names given to some angels by a Ghanaian prophet called Obinim. It is used as satire in the poem.
Ye bo netuo paaay	this is a Twi language which means we shoot the enemy. It is often used in prayers by some prophets. It is as satire in the poem.
Back to sender oil	a common oil sold in Ghana by prophets which is soppused to

Commentary

This poem describes the ordeal that some people especially helpless old women and children go through in the hands of some so called “prophets and pastors” in Ghana. These prophets normally accuse these old women and children to be witches who are bewitching their children and other family members. To show that their prophecies are true they call these accused people in front of the whole congregation and humiliate them.

The new phase

At this junction
Where cross-road ends meet
And the sun in its full cloth
And darkness has become
A thing of the past
When our fathers are now
Gray-headed,
And the young in his youth;
This is the new version of our story
Tomorrow is in our arms.
Now we know
Yesterday could only be a lesson.
With all heads with one accord
And all hearts together
Brothers come let us build
This new phase of Africa.
Truth is all there is to build
Demolish the canker of corruption
Do away with the scattered debris of filth
And mental slavery
A Disease free Africa
What a nice continent it would be!
Peace would reign high
Justice on the right, equity on the left
And on that day, this continent
Will be a glittering monument in
The presence of the Lord
The creator of this universe.



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Events Calendar

30.01.2019, Giza, Egypt: First ANSOLE Scientific Meeting in Egypt (ASMEG 2019)
28.03.2019, Abidjan, Côte d´Ivoire: 2nd ANSOLE Scientific Meeting in Côte d´Ivoire (ASMCI 2019)
25. 02. 2019, Jena, Germany: International Conference on Africa: Africa in a Post-Colonial Perspective

04-07 April 2019, Ouagadougou, Burkina Faso: Semaine des Energies et Energies Renouvelables d´Afrique (SEERA)
24-27 June 2019, University of Minna, Nigeria: The Second School of Physical Sciences Biennial International Conference (2nd SPSBIC 2019)
July 2019, Alexandria, Egypt, Second ANSOLE Scientific Meeting in Egypt (ASMEG 2019-II) (*Exact date will be communicated soon)*
02-06. September, Tumba & Kigali, Rwanda: ANSOLE DAYS 2018 & BALEWARE 2019
Mid –October 2019, University of Ngaoundere Cameroon: ANSOLECAM 2019 (Exact date will be communicated soon)

The 17 Sustainable Development Goals (SDGs) to Transform our World

https://www.un.org/sustainabledevelopment/sustainable-development-goals/



Goals 6 and 7

Goal 6. Ensure availability and sustainable management of water and sanitation for all

Targets	Indicators
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all	6.1.1 Proportion of population using safely managed drinking water services
6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations	6.2.1 Proportion of population using (a) safely managed sanitation services and (b) a hand-washing facility with soap and water
6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	6.3.1 Proportion of wastewater safely treated 6.3.2 Proportion of bodies of water with good ambient water quality

6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	6.4.1 Change in water-use efficiency over time 6.4.2 level of water stress: freshwater withdrawal as proportion of available freshwater resources
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	6.5.1 Degree of integrated water resources management implementation (0–100) 6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	6.6.1 Change in the extent of water-related ecosystems over time
6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies	6.a.1 Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan
6.b Support and strengthen the participation of local communities in improving water and sanitation management	6.b.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management

Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all

Targets	**Indicators**
7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	7.1.1 Proportion of population with access to electricity 7.1.2 Proportion of population with primary reliance on clean fuels and technologies
7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	7.2.1 Renewable energy share in the total final energy consumption
7.3 By 2030, double the global rate of improvement in energy efficiency	7.3.1 Energy intensity measured in terms of primary energy and GDP
7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support	7.b.1 Investments in energy efficiency as a proportion of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services

The inconsiderate capitalistic technological development has fostered **environmental underdevelopment** characterized by extinction of many biological species, air pollution and climate change, among other effects. Walking with air-filtering masks in Peking is clear evidence of underdevelopment.

As such, the underdeveloped are the developed…