

## WELCOME ADDRESS

It gives me great pleasure to welcome you to the third edition of the KEEP Bulletin.

This year KEEP would initiate steps to establish an Endowment Fund for the College of Engineering (CoE) to ensure the sustainability of postgraduate education. You can count on us to be visiting your various institutions for discussions and support.

We would also be giving priority attention to the GAP Assessment, which aims to identify and remedy gaps in COE postgraduate education and training to meet good international practices. Also, the project would ensure that the international accreditation of postgraduate programmes is carried out. The International Accreditation would be undertaken by Agency for Quality Assurance (AQAS) in Germany.

The Construction of the postgraduate building has commenced, and we anticipate it to be completed by March 2022. Sincerest appreciation to all alumni that have filled the alumni google form; if you have not, please follow the link (<https://forms.gle/xnPsNCJXDC28s7kU8>) to complete the google form on basic biodata; this should not take more than 2 minutes of your time.

We welcome contributions and suggestions from stakeholders and readers to help improve future editions. Please send contributions and suggestions to [keep@knust.edu.gh](mailto:keep@knust.edu.gh).

Cheers!



*Prof. Kwabena Biritwum Nyarko (Project Lead, KEEP)*

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# Staff and Graduate Students of College of Engineering visit the Juaben Oil Mills

The College of Engineering, KNUST, and the Association of Ghana Industries (AGI) have jointly organised an industrial visit to the Juaben Oil Mills in the Juaben Municipality of the Ashanti Region. The visit, which took place on October 21st 2020, was part of ongoing activities between the College of Engineering and the AGI to strengthen industry-academia collaborations. The team was received by the Managing Director of the company, Mr Alex Owusu, and the Head of Human Resources, Mr Isaac Ansu-Diabuo, and given a preliminary briefing on the company's profile and current operations.

The team from KNUST was then conducted around the company's facilities. Various officers then briefed the team on each of the

processes at different points in the facility, such as from receiving the fresh fruit bunches through to its processing and the refined oil packaging.

Following the tour of the facility, discussions were held on possible areas of collaboration between Juaben Oil Mills and the University. Avenues for staff and student internships were also discussed. The company's Management and staff were encouraged to provide periodic feedback to the University. The input would guide academia in reviewing programmes of study and research to make them more relevant to industries needs and aspirations.

The visit drew staff and post-graduate participation from the Departments of Mechanical Engi-

neering, Chemical Engineering, Computer Engineering and Electrical/Electronic Engineering.

Mr Sam Akomea, Head of KNUST's Centre for Business Development (CBD), expressed the team's gratitude to the Management of Juaben Oil Mills Ltd. He further expressed the University's readiness to partner with Ghanaian industry players to make them more competitive and create jobs for the unemployed and graduates of the country's universities each year.

The Juaben Oil Mills Ltd started operations in 1984 and currently employs over 300 people. The KNUST Engineering Education Project (KEEP) provided logistical and financial support for the trip.



*An Engineer from Juaben Oil Mills explaining how the Crude Palm Oil Plant works.*



*KNUST in a roundtable discussion with Management of Juaben Oil Mills on possible areas of collaboration*

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# College of Engineering (CoE) Innovation Fund Rolled Out

The CoE Innovation Fund through the KNUST Engineering Project (KEEP) has received sixteen (16) proposals seeking to address development challenges in digital development and energy systems.

The purpose of the CoE innovation Challenge is to offer seed funding for innovative initiatives or assist the implementation of endeavors, with clear time frames, that align and seek to address developmental

challenges within defined thematic areas. Thematic areas eligible for funding are Distributed and Cluster Computing, Digital Forensics and Cybercrime, The Internet of Things (IoT), Artificial intelligence (AI), Renewable Energy (RE) and Smart Grids and Energy Management Systems. Proposals that will be funded should be innovative, entail an upscaling potential, be cost-effective, sustainable and show local ownership

## Virtual Workshops Held by the African Centres of Excellence (ACE)

The workshop was the fourth of its kind by the ACE-IMPACT and was held via zoom from October 20th to 27th, 2020.

A significant highlight of the workshop was how Universities could operate in these challenging times of Covid-19. Members agreed that the virus has revealed that more resources must be geared towards developing digital infrastructure for teaching and learning purposes. ACE Centres were therefore encouraged to put in place mechanisms that will equip both Faculty and students with knowledge and competence in online procedures to ensure a

smooth take-off when effective teaching and learning resumes.

The workshop was also used as a platform to assess the performance of the various Centres. KEEP was the Centre with the highest amount of project funds disbursed (57%). During the closure of universities as part of lockdown procedures for COVID-19, students were given free access to online courses via Coursera®. It was also evident that the Centre with the highest participation levels were postgraduate students from the CoE, KNUST.

A thematic session was held for the various Colleges of Engineering (CoEs) during the workshop. The

CoEs gave an update of their achievements and measures they had put in place to achieve the Disbursement Linked Results (DLRs) outstanding. Internships in light of the COVID-19 situation were also discussed. KEEP was applauded for securing online internship opportunities for their students even when the country was in lockdown. KEEP would use this medium to express its appreciation to Kumasi Hive for providing the online option. Discussions also centred on academia-industry linkages, where all the CoEs alluded that a lot more work needs to be done in that area.



# Keep Hangs out with Mr Kwasi Nyamekye, CEO of Vester Oil Mills

## KEEP: WHO IS MR KWASI NYAMEKYE?

**MR NYAMEKYE:** Kwasi Nyamekye is a Metallurgical Engineer by profession. I left KNUST in 1994, worked in the gold mining industry for twelve years, retired prematurely, and went into entrepreneurship, working for myself. While working in the mines, I had the opportunity to work in Tanzania as an expatriate, so I set up the plant, and then I started working. I had always wanted to work for myself, so that entrepreneurial spirit was in me. In 2006, I left the mines and decided to work for myself.

## KEEP: WHY THE DECISION TO STUDY ENGINEERING?

**MR NYAMEKYE:** Why I studied engineering, yes: growing up, umm, you know we had only three courses on our minds; those were the ones we saw as prominent at the time. You either become a Doctor, an Engineer or a Lawyer. So, I wanted to become one of them. I was good [academically] while in school, so I did Science. I never liked Biology because you know, with Biology you have to draw so much and memorise so many things, so I liked Mathematics [instead]. That one, when you get it right, you get it right, and when you don't get it right, you don't get it right. And during our time, you had to go to the sixth form, and in the sixth form, you do only three subjects. So I chose Mathematics, Physics and Chemistry. These choices limited me from further pursuing any other courses other than math-related ones. Engineering



was the most prominent at the time, so I did Engineering. Even the Metallurgical Engineering, I didn't know much about it until a senior colleague told me about his roommate studying a mining-related course and how he goes on attachment and gets paid when they're on vacation. The getting paid aspect of his narration was what motivated me because I needed money, you know. I mean, we're always looking for money, so that inspired me to read Metallurgy, and I don't regret it because right from school, I got a job at that time. Those times were not like these times; we were only ten in the class: 15 in Geological Engineering and 10 in Metallurgical Engineering so, it wasn't difficult for us to get jobs.

## KEEP: WHY DID YOU LEAVE SUCH A LUCRATIVE JOB IN THE MINING INDUSTRY?

**MR NYAMEKYE:** Umm, I have always wanted to work for myself, and this became more pronounced when I finished my National Service at Bogoso and got a job at Prestea with Sankofa Gold. When I went to Prestea, saw the environment and everything, I said no, I should work in the mines for ten years, and then leave the industry; either I work for myself, go to school, or change my profession. And still, I was looking at working for myself. Fortunately, I had the opportunity to go to Tanzania as an expatriate. I was being paid good dollars, so I decided to leave when the South Africans came in and took over the Ashanti Goldfields, and it became AngloGold Ashanti. I realised the pressure on us was just too much because they wanted our positions. Meanwhile, I set up my business here, and people were mismanaging it, so I decided to come back and work for myself.

### KEEP: DO YOU REGRET LEAVING THE MINING INDUSTRY?

**MR NYAMEKYE:** The first two years after I left mining, I regretted leaving the industry because it was like, umm,[previously] at the end of the month, your dollar is in your offshore account. Suddenly, you said you want to work for yourself, and things are not going on well; it was tough for the first two years. And most companies were calling me that I'm too young to retire; [asking] "...with the wealth of experience [you have], why do you want to leave the industry?" But I persevered because I had a vision, and I wanted to make sure I didn't lose track of what I wanted to do. So though things were not going on well, I still insisted that I would not work for any company again; I wanted my business to survive. Fortunately, things started turning around, and we are where we are now because of the persistence to fulfil my vision.

### KEEP: WHAT IS VESTER OIL MILLS INTO?

**MR NYAMEKYE:** Vester oil started in 2004. We were just doing palm kernel oil. At that time, soya wasn't known so much. So we were processing palm kernel just to get raw materials from my sister; my sister sells oil. So we were getting the supply from Twifo and Benso. One and a half to two years into the operations, Unilever decided to add value to their raw materials, so they stopped supplying us with raw materials; Twifo and Benso belonged to Unilever. We tried getting some raw materials from Ivory Coast; unfortunately, it was too expensive. And then somebody introduced us to soya. We decided to process soya. Initially, penetrating the market wasn't

easy because people [preferred to] import and you know the perception in Ghana about foreign and local [goods]; but we managed to go through. This was at the time I had just come back to Ghana to work for myself. We managed, and now we've been able to survive within the industry, and I must say, thanks to God, we're industry leaders now when it comes to soya, and everybody will mention [Vester Oils] as number one when you mention soya in Ghana. Vester is number one at the moment, and we thank God for that. If you want to visit us, you can visit us at [www.vestermills.com](http://www.vestermills.com)

### KEEP: WHAT VALUES AND BELIEFS HAVE HELPED YOU ESTABLISH SUCH A FORMIDABLE COMPANY?

**MR NYAMEKYE:** I wouldn't say I possess any magic wand; but what I will say is that to be an entrepreneur, one of the core values that you have to guard carefully is being honest; you have to be very honest, very truthful and be up to your word. If you say "A," it should be "A" because you deal with many people, and they look up to you. If today I tell you to come and the next time you go and I'm not there, or I take your raw material, and I don't pay you on time, next time you won't sell to me again. Or maybe I'm supposed to supply you [with some goods], and I don't keep my word, you won't buy from me again. So those are some of the values. Apart from that, um, there's one thing in Ghana that everybody trying to set up in Ghana should carefully examine. Ghanaian labour is a very difficult one [to deal with]. In fact, unlike other places where when you have a contract, the person knows, "...I have a contract with you, and I'm supposed to do A, B, or C," it's

not like that here. So you have to be also monitoring and make sure people do what they're supposed to be doing at work. Some workers sometimes sleep on the job, and others also want to be pushed. And the funny thing is sometimes they feel they're doing you a favour though you've given them the job. So that is the challenge that we have here, and so you have to be monitoring to get things done right.

### KEEP: IS IT TRUE THAT THE ENVIRONMENT IN GHANA IS NOT CONDUCTIVE ENOUGH FOR INDUSTRIES TO SURVIVE?

**MR NYAMEKYE:** Very, very accurate. Until I became a company owner, I didn't know. When I was working in the mines and being paid, I didn't know about this, but since I became a business owner, umm... some of us have been fighting. I'm the Vice-Chair of Ashanti-Brong Ahafo [branch] of the Association of Ghana Industries (AGI). We've been fighting against how policies are made in Ghana without any recognition or something to industry, which is very bad. Take, for example, electricity. If you want power for your factory, you have to buy almost everything, including the transformer and power lines, for your area. And before you are connected, the Electricity Company of Ghana (ECG) computes whatever costs you incurred, and they take a percentage of it before they connect you.

Industry pays more than households. The industry is supposed to be creating jobs; we pay more than the households. That aside, government policies in Ghana favour buying and selling more than production. Sometime before I set up, a lady told me, "... Mr Nyamekye, why don't you use

the money you have to import oil from Malaysia; you will have more money?” At the time, I didn’t understand, but later on, I realised yes, I think the lady had a point. So, I believe that policy direction should be such that people would be encouraged to open more factories because no country develops on buying and selling. We [countries] develop on job creation by businesses like this, taking in so many people, paying them so they can earn some money, and have jobs; because [take] somebody who imports, how many people does he take [employ]? When you go to his warehouse, he may have some two guys who will load, and that’s all. Maybe as a whole, he will have 3 or 4 people. The policy direction in the country doesn’t favour entrepreneurship; not at all.

**KEEP: IRRESPECTIVE OF ALL THESE CHALLENGES, VESTER OIL MILLS MANAGED TO SURVIVE TILL TODAY. WHAT HAS BEEN YOUR DRIVING FORCE?**

**MR NYAMEKYE:** I have survived up to this stage because of discipline. I have been very disciplined myself. That aside, I’m not used to buying and selling. Like I told you, umm, right from day one, I wanted to work for myself, and I enjoy creating businesses for people to work and all that; so, I think it’s my passion, and you know passion is what you have to develop, and that is what I’m developing now. It’s a passion. Umm, other than that, I think I was ‘freer’, and I was getting more money when I was working in the mines, but with this, I’m still comfortable doing what I’m doing.

**KEEP: IS THE ASSERTION THAT ENGINEERING GRADUATES**

## **DON’T PERFORM WHEN SENT TO INDUSTRY TRUE?**

**MR NYAMEKYE:** To some extent, yes, it’s true. Umm, even when I was a student, the same thing. But some of us were fortunate. The course that I did, I was lucky because every long vacation we were going on vacation attachment. I remember I was taught about thickeners and column floatation. I was just picturing everything in my mind, and the diagrams and the drawings and everything weren’t making sense to me; I couldn’t even understand the whole concept. But you know those times, and even this time, you just have to memorise and write and pass. So I got my good grade there until I went for attachment and I saw a thickener in operation, I saw a column floatation at Bogoso Gold Mines, and I said, “Oh, so this was it?” I’m sure if I had seen it before the exam, maybe I could have done better, and I could have understood what the lecturer was telling me at the time. So umm, sometimes the practicality is the issue. They don’t even know some of the things, some of them, they haven’t seen it, they imagine.

And the students themselves also sometimes, are the problem especially those guys that come here. Some of them feel once you go to University, certain things are above you. They don’t have to touch this, and they don’t have to do that. A guy was telling me, “Oh Director, as for me, I’m just waiting for you to set up your lab, and I’ll wear my coat and sit in the lab because I’m a graduate.” So sometimes, the perception they have is the problem. When they come to the field, they feel like a graduate, and they’re not supposed to touch anything other than to sit in the office. But you’re an Engineer, and besides, even if

you’re sitting in the office and you know the thing, that would have been easier, but you don’t know. You want to sit in the office, take a salary, and who will do that? Who will pay you for that?

You’re supposed to solve problems; that’s why you were trained, and if you come to the field, you don’t understand the concept, you don’t understand the operations, you want to sit in the office, and you want to be paid; nobody will do that.

So that’s the problem AGI has been complaining about. And that’s what I told the Vice-Chancellor; that we should try and bridge [the gap] and make sure when they’re coming for attachment or when they finish school, and they’re working they know that they’ve done the theory, and they’re now coming to the field to practice what they’ve learnt. But you see, some people are quick to adapt. Some people are quick to learn, but some are also arrogant.

I advise them that experience is not taught at school; otherwise, some people will have first-class, some people will have “A” in experience. It’s not taught in school. And there is no school where you can learn every practical thing that you need to work in the industry; there’s no school like that. When you go to the field, which is to the students, I’m sure they will listen to me carefully. When you go to the area, associate with the guys, you will meet there. Some MBAs are not MBA in your book, but MBAs on the field (i.e. me baa ha aky – meaning ‘I’ve been here longer than you have).

They [already] know everything about the machines but the theory behind it, they don’t know. The students, you have learnt



the theory behind it, you haven't seen the practical thing. Learn from them, be friends with them and while they tell you "...Oh this point, we dose this chemical, this point we do this," or "...Oh here we dose caustic," then it clicks in your mind that, okay, so the caustic they said we do; saponification, whatever, this is how it is. Then you apply your theory, and before the guy can say "jack", you're ahead of him because you know the theory behind everything the guy is telling you. But most of them, when they come, they feel once they come from the University, they are here [up there], that is the problem, not that they can't perform. They can perform, but the arrogance is too much. When I was working in the mines, the Australians and the Americans that I used to work with used to tell me, "... it's not about paper. It's about performance." You could be a PhD holder or whatever but, you'll need to perform. Let your paper talk on the floor, on the field.

So they should learn that when you come to the industry, whatever you've known must be applied. That's what the industry is talking about. We're not saying what you're teaching them is not good, but when they come, they should make it practical; they should apply it, that's all.

#### **KEEP: WHAT CAN BE DONE TO BRIDGE THE GAP BETWEEN ACADEMIA AND INDUSTRY?**

**MR NYAMEKYE:** The industry and academia could do better because elsewhere industries sponsor many programmes at the University. I was in Missouri, and I realised the farming community sponsors research into soya production, the seeds that come out and all that. We could do the same, and some of us are trying

to collaborate to help the school start doing some things like that. Because for one, the projects that your students turn out, I mean the projects at the end of the year and programmes they do, are not supposed to be just projects for the shelves. They're supposed to be projects to solve day-to-day problems in the outside world or the industry. So we have to try and make sure industry and academia talk and find issues about the industry. If the industry has even to sponsor, we do it. If we need to commercialise it, we can even agree that umm, whoever has the funding should fund it, in some percentage terms, so in that sense, the projects and everything the students are turning out could be beneficial. But I mean, projects on the shelves, all those things are not being beneficial to anybody. So those are the things that AGI is looking at doing with KNUST to make sure we practicalise whatever the students are doing to become helpful to society.

#### **KEEP: WHAT STRATEGIES COULD BE PUT IN PLACE TO ENSURE A "WIN-WIN" SITUATION FOR BOTH ACADEMIA AND INDUSTRY?**

**MR NYAMEKYE:** The KEEP Project at the KNUST; its continuity when the Project time elapses is what we're talking about right now and what we can do to benefit the industry. That is what the industry has always been looking out for. The country cannot grow to be over-reliant on other people; because nobody can develop your country better than yourself. So AGI, of which I'm a member, has always been looking out for a situation where we could rely on our universities in Ghana to solve our problems. So that is what we're looking out for.

We have our challenges. Fortunately, we have an MOU with KNUST at the moment. We will expect KNUST to bring students to our industries to be on internship or attachment at our initiatives. We want a strong collaboration between KNUST and industry with industry sponsoring KNUST to solve research problems. But sometimes you know Africa and Ghana; some people might feel that this is my technology and I'm giving it to Vester. How much is Vester giving to me? But as Zimmermann said, "Resources are not, they become". If you don't help solve the problem, nobody might even know that you have this technology; nobody will get to know it, and it will be in your head till you die. So KNUST should be willing to open up, so the industry will approach, and we will have a "win-win" situation. We shouldn't think about "money, money, money" too much all the time.

#### **KEEP: WHAT IS THE FUTURE OF THE AGRO-PROCESSING INDUSTRY IN GHANA?**

**MR NYAMEKYE:** With the recent COVID situation, it has taught us that we have a big future. We have a lot ahead of us. Because Covid has taught everybody that you have to rely on whatever you have and develop it properly. The Agro-processing industry, I mean the bedrock of every economy, is food - Agriculture. And we've been selling our crops, our products raw, until recently that we've started adding value to most of our produce. And we feel the future is in the Agro-business sector. The Ministry is trying to boost poultry production, trying to control the importation of frozen chicken and other things, which is very good because the poultry sector alone could create so many jobs. So if we're able to

tap into the Agro-industry properly, I'm sure the economy will not suffer again. But we will need a lot of support and research [input] from the University. Sometimes we have to outsource it, and that is not the best.

**KEEP: WHAT ADVICE DO YOU HAVE FOR ENGINEERING STUDENTS WHO WANT TO VENTURE INTO ENTREPRENEURSHIP?**

**MR NYAMEKYE:** There is so much joy in working for yourself, and most people who have made it essentially are people who work for themselves. It's not all rosy. It's very challenging, especially when it's the end of the month. I mean ordinarily, you would have been going to the bank, laughing because your salary will be there. [Rather], you will be thinking about paying people and especially if sales weren't good and you couldn't make it well, how're you going to pay them? So it's not all that rosy, but there's so much joy because you sit back, you think, and plan for everybody.

Like currently, about 150 people; when I sleep, I think and plan for them, though I take some of their inputs, they all look up to me, and when they say a prayer, they say some for me because they get income from me. So there's so much joy in working for yourself. I will urge most of them who have that spirit to go into entrepreneurship and employ some of

their colleagues who can't enter into entrepreneurship because not everybody is comfortable venturing out there; some are comfortable getting paid. But those who could go out there, I think it's the best. It's the best.

I meet some of my colleagues, and sometimes, they're baffled; I mean how I have been able to get this far, so it's the best. Some people don't get the opportunity that I had; some also are risk-averse, so they don't want to take risks; you know the higher the risk, the higher the reward, so the more you take the risk, the more you get the reward.

**KEEP: THE PRESIDENT OF GHANA VISITED VESTER OIL MILLS IN 2018. WHAT WERE HIS REMARKS, AND WAS THERE ANY OFFER OF SUPPORT TO YOUR COMPANY?**

**MR NYAMEKYE:** Yes, the President came here two years ago. He saw the kind of operations we were doing, and because we're part of the "One District One Factory" companies, he told Exim to make sure they fund our operations here. So far, we've got some working capital, not all but some working capital from Exim. Exim is also financing the infrastructural development that we want to do. We want to expand from the existing operations that we have here. We're

looking at putting up a complete feed mill plant to be doing fish, poultry and shrimp feed in Ghana. So, Exim is the one financing that. So the financing has not been thoroughly done, but we hope from the communications and everything that has gone on they're in the process of doing everything.

**KEEP: Thank you, Mr Nyamekye!**



# KEEPing up with the KEEP Student Representative



Ikpo Valentine Chibueze  
(Student Representative, KEEP)

KEEPing up with the KEEP Student Representative

**Q: Could you please tell us a bit about yourself?**

**CHIBUEZE:** Thank you very much. Thank you for welcoming me to this session. My name is Chibueze Valentine Ikpo. I'm an African (laughs), and I come from the Ibo land in Nigeria. I'm privileged to be here in Ghana and to pursue this educational programme. I'm the first of three boys, and I've been pursuing Engineering, I think, from my very early stages in life.

**Q: Really? How so?**

**CHIBUEZE:** Yes. Growing up, I was always looking forward to what I can do with my hands. I grew up with my grandparents. My grandfather was of the view that "nothing gets spoilt, something must be done about it." (laughs) Whenever the work of a piece of equipment stops, it must be used to do something else. So I learnt so much from him, and

that was where my desire to do Engineering started.

I did my first degree in Nigeria, in Electrical/ Electronics Engineering. My second degree was in Control Engineering.

**Q: What specifically does a Control Engineer do?**

**CHIBUEZE:** Control Engineering interphases between Biology, Bioengineering, and pure electronics. So everything that has to do with a system being stable or put to use adequately, a system being secured, ok, and then quality assurance all have to do with control. So control is like the heart. If the heart is not beating, there is no life.

So we have control both in hardware and in software. So in Control Engineering, either with the application (practical) aspect or control theory, you need to study everything from Sciences and Art. Yes, because you need to have every bit of information when it comes to strategy, ok? So you're studying what animals do, who they are, what they are; you're learning what humans do, then looking at the machines also, performing, and what you can bring on board as a Control Engineer.

**Q: What is your role as the student representative for KEEP?**

**CHIBUEZE:** Umm, hierarchically, I serve as a Liaison and an intermediary between the Management of KEEP and my fellow students. So I bring in students' new ideas and complaints to KEEP Management and then

redirect Management's concerns to students. I also visit my fellow students, which I often do, to ensure that they're also doing their work as they're supposed to.

At this level, we are all research students; we are all either in Management positions or leadership positions. We can try to differentiate between the two because Managers are always safe (*laughs shortly*), but leaders always take significant risks, so if we have students who know why they're here, and Management understands what students are going through, it brings collaborations and makes the 'marriage' sweet, because there will be productivity. But suppose there is no such collaboration, or liaison or intermediation, and everybody does what they want to do; in that case, Management doesn't have a way to assess students, or they'll have to do so one by one, dealing with them individually, they'll be distracted in their main line of duty.

For instance, imagine if Management will have to visit the students one by one to make sure everyone is doing well. So it's imperative to have someone doing that job.

**Q: How are you able to visit the students on an individual basis, with your own resources?**

**CHIBUEZE:** Yes. For instance, for those within my vicinity, I create time to see them, and in the case of those who live far off, I can reach out to them on video calls or chats platforms, or they come around, and then we discuss

whatever challenges there might be.

And I do these voluntarily, and then it would be good if they could improve on the support system to at least cover the costs involved. Otherwise, it is purely voluntary work, which I undertake with pride.

**Q: Why have you chosen to be in the engineering field?**

**CHIBUEZE:** Initially, the motivation came from my family. I come from a family of people who want to do something. And I also come from a clan or a tribe (the Ibos in Nigeria) who are industrious. The industry is what we do. Ok? So it's not just about what you eat, but amid your peers, everybody wants to do something.' I want to show something...'. Everybody wants to be the next scientist, the next engineer, and that's what you see in most families. That's what you see.

My great-grandfather was an engineer in his day, my grandfather also was an engineer, my father didn't attend school much, but he was into mechanics. You know, at some point, you tend to get some kids who just don't want to go to school; (*laughs*). I think my father fell in that category.

Also, I represented my school in science quizzes and doing a lot of things in that direction. So it wasn't about the money; it was about who wants to be the next Albert Einstein, *hahaha*. And all of us (my friends and I) were into the sciences and engineering right from the start, and it became a passion. Then it dawned on me that I had so much to offer the world, and I decided to pursue it and that's how come I'm here.

**Q: What do you hope to do, or what are you doing with the knowledge you acquire?**

**CHIBUEZE:** Well, you know, the opportunity is always a function of time. The environment may not have provided what I want to do. So what do you do? What you do is to progress and then mark time, sometimes. It seems we are in an African environment where things are yet to kick off for those who have innovative ideas to put them into practice. What we do right now, in Africa, is to consume. But then we will not sit back on our oars just because that enabling environment has not been created. So we keep pushing until we have that opportunity to make that impact.

What is frustrating, though, is that sometimes you know what to do or can do, but the enabling environment is not there. For instance, I'm privileged to be in Ghana right now; one of the best things I've noticed is the relatively uninterrupted supply of power, compared with other countries where sometimes, you don't get power for up to 3 weeks or more. I must say that Ghanaians are privileged, and my fellow students are honoured too. And the computer has become my second 'sister'. I spend more time on it, and I see more beautiful things I could do.

Now Engineering is about practice, not only about theory. It's about what you can produce, and also about design. You've got to practice. You realise that you have so many designs, but you can't even practice implementing them because the moulds are not available; because the industries are not collaborating with academia, we have that bridge that is yet to be crossed.

So until that bridge or gap is closed, um, people like us who have genuine ideas may seem sluggish, ok, compared to our other counterparts out there who have access to enabling environments doing well in Engineering. It's not because they are better than us, but because the tools are available.

**Q: What can be done to make the environment right for brilliant upcoming engineers?**

**CHIBUEZE:** One, equip the schools with the necessary tools to practice, practice, practice. We need policies and interventions that see education in Africa as an investment rather than an expenditure. Provide moulds, tools, factories, and let industry and academia collaborate more rather than compete with each other.

Two, let the tools and the books (theory) be together. Change the modes of teaching to make theory lessons 40% and 60% practice intentionally across Africa. Bring the tools to the place where the students are so that as they are studying, they are also producing. Because at the end of the day, the countries who produce things rule and drive the world's economies. Currently, most of the industries in Africa only engage in buying, rebranding and selling. We don't produce much.

Thirdly, we need to involve the youth in productive programmes. The youth must be encouraged to take risks.

**Q: What does KEEP mean to you?/ How does KEEP make your study worthwhile?/What value does KEEP bring to your research and profession, if applicable?**

**CHIBUEZE:** KEEP carries a huge burden of financial expenses, or rather an investment because, in the end, we'll give back to society. KEEP gives us stipends to keep us going. KEEP also creates a platform bringing us (students) across Africa into Ghana, and it's a beautiful opportunity to be here. KEEP is therefore doing a noble thing, which other universities across Africa must emulate.

If more finance and genuine involvement are put into the KEEP project, we have started a foundation that will have a far-reaching impact. Genuine involvement here means that we keep the same level of passion that started the Project, even in the face of obstacles or opposition. While other scholarship schemes are fixed (limited) to Departments or schools, KEEP embodies the entire Engineering College, creating an enabling environment for inter-departmental research collaboration. And I feel privileged to be a beneficiary.

**Q: What is your motivation for pursuing your studies here in Ghana? Would you recommend KEEP and Ghana to others across the continent for further studies in Engineering?**

**CHIBUEZE:** One motivation for coming to school here in Ghana was an inspiration from a Professor I met during my undergraduate study back in Nigeria by Prof. T. K. Rogers, a Ghanaian. He was very knowledgeable and more like a father to the other students and me. He's a man that pursued the challenges students brought to him as a father would do for his son. So the experience we had from him and a few Ghanaians with us at the time was very hospitable.

Ghana was also in the news as one of the countries that have high standards of education. So if someone must go elsewhere in Africa to study, their first interest should be Ghana.

Therefore, I recommend students come to Ghana for their studies or other places with relative peace.

Being here and seeing the lecturers, young professors, young Doctors is encouraging to us young ones. And I recommend KNUST to African students looking for a first-class university to study in.

**Q: What are some of the challenges you encounter as an international student?**

**CHIBUEZE:** Finance, to start with. From where I'm coming from, one million naira is a considerable amount. But change that into the Ghanaian currency, and it becomes relatively inadequate to sustain you. And you begin to struggle to obtain necessities. It would be good to reduce the numbers of student intake and concentrate on increasing the stipends and financial support for the few admitted. These few should then be tasked to deliver, give back to the economy, not travel to Western countries searching for greener pastures or better living standards.

So the stipends should be something that can accommodate them per the living standards in Ghana or other international standards of living, and then hold the students/graduates productive.

So first, the students comfortable staying in Ghana, and task them to be productive.

I think it's an excellent opportunity that KEEP is giving to have more students on board. But I

also believe that the essence of pruning is for quality and not quantity. If you train everybody and in the end, you have nothing productive coming out from them, then not much has been achieved. But if you have just a few and increase the value of the support they receive and tie their benefits to productivity, then we'll be making progress. Because psychologically, when a person grows up in poverty, they don't like to take significant risks that would bring higher returns.

We also need to see education as an investment and put more support into the research and encourage collaborations among the programmes of study. We have all-round engineers that can be productive to society. Individual competitions to be seen as the best should stop; this should turn into collaborations for the common good.

**Q: Any words of encouragement for current and prospective Engineering students in Africa and the world as a whole?**

**CHIBUEZE:** Yes, there's so much I could say, but in a nutshell, it is to tell them that there's hope. We just need to endure for a while intentionally and genuinely, but consciously push harder. Among students, we need to grab every opportunity to engage each other meaningfully. We need to look beyond individual geographical, language and location barriers and collaborate more, just like Kwame Nkrumah rallied Africans to come together to fight for their rights and independence.

In the absence of an enabling environment equipped with the needed tools and factories, I would encourage my fellow students to work harder and look at

areas to catch up. We need to see beyond the physical tools which are not there and look at software engineering. We can begin to look at programming, ok, and I think every student should learn programming: Artists, Engineers, Doctors alike. Then we can compete at that level and use the proceeds to push for the physical moulds and factories that we need because almost every education now can be realised on the computer, through virtual environments. Our Primary and Secondary schools should be pushed to go into programming, learn to use the software to solve our issues.

**Q: Any other thing you want to say in relation to your study here in Ghana?**

**CHIBUEZE:** Yes. I'm hoping that we'd still have some more time and platforms to talk. This is the first of a kind. It's also imperative the KEEP Management orients freshly admitted international students into the cultures of Ghana. There should be programmes to move the students around the country and visit critical places in Ghana to integrate well into society. This will serve as a good recommendation for others to come on board.

We should also get students from across Africa to socialise. This

breaks any stereotyped mentality for students to see themselves as global persons. This can also boost the students' confidence levels when they come out to the industry.

Such orientations and sightseeing programmes send a message of importance to the students and let them know they should relax and give off their best.

**Q: Thank you very much for your time.**

**CHIBUEZE:** I'm privileged.



# Internship at Juaben Oil Mills Limited

By Rejoice Ntiriwaa Ossei-Bremang (PhD, Sustainable Energy Technologies)

As part of the course requirements, I undertook a six-week industrial training at the Juaben Oil Mills. Juaben Oil Mills is a private Ghanaian company with 1100 hectares of palm plantation and 450 hectares of out-growers. The company is a food processing company which produces vegetable cooking oil.

I was assigned to the boiler section and spent much time around the furnace. Different biomass feedstock types used in the furnace to turn turbines included waste resources found within the oil palm value chain such as the fibre, palm kernel shell and the empty palm fruit bunch. The company uses firewood as part of the fuel sources to meet the pressure demand of the boiler. I actively participated in the feeding of the furnace to ensure a continuous supply of high-pressure steam for electricity generation in the industry.

After two weeks of joining the company, the Human Resource Manager and the Utility Head requested that an investigation be made to determine the Palm Oil Mills Effluent (POME). Their request aligned very well with my career interest, so I collaborated with the team of interns from KEEP who were in the same industry to do the work.

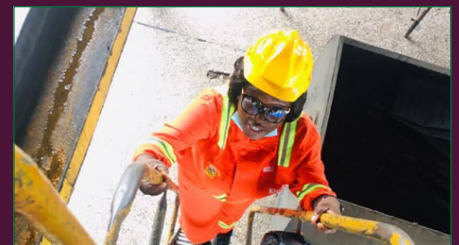
Another significant contribution I made was in partnership with the Utility Manager, who doubled as my supervisor during the internship, in reaching out to a potential investor whose facility would

convert the POME into biogas to provide power for some company sections. This POME settles in a final pond of about 14,000m<sup>3</sup> with a depth of 7.1m.

The leadership of KEEP made an important decision by completing an internship, a core aspect of the Engineering programme. I say this because the internship period brought to life lessons I learnt in the lecture room. My understanding of biomass resources and their relevance in power generation in industries has dramatically improved. I appreciated the existential consequence of ecosystem deterioration and climate menace caused by energy generation from fossil fuels and industrial effluents to a whole new level. This internship experience supports the calls for continuous implementation of policies that seek to integrate the interlinkages between energy generation and other sustainable development goals into national planning.

The internship period was very beneficial because it has enhanced the need to channel students' research into industry-relevant areas. Per my interest in Waste-to-Energy technologies, which includes effluents from Agro-processing industries, I found myself connecting very well with different ideas and possible bioenergy research areas in industries. It has also added to my career development skills such as teamwork, discipline, and emotional intelligence (EQ).

It was a great learning experience for me; I gained a much broader perspective of what it meant to be in the professional world. More importantly, I was privileged to contribute knowledge and also to learn from Juaben Oil Mills. I am grateful to KEEP for their remarkable leadership and support throughout the internship programme.



# THE COLLEGE OF ENGINEERING (CoE) INNOVATION CHALLENGE

The College of Engineering through the KNUST Engineering Education Project (KEEP) is now accepting proposals for funding innovative initiatives that seek to address developmental challenges in Digital Development and Energy System.

The purpose of the CoE Innovation Challenge is to offer seed funding for initiatives or assist in the implementation of endeavors with clear time frames that aligns and seek to address development challenges within the defined thematic areas. Activities that will be funded shall address a developmental challenge, be innovative, entail an upscaling potential, be cost-effective, sustainable and show local ownership. It must fall under these selected thematic areas.

## Thematic Areas

- Distributed and Cluster computing
- Digital Forensics and Cybercrime
- The Internet of Things (IoT)
- Artificial Intelligence (AI)
- Renewable Energy (RE)
- Smart Grids And Energy Management Systems (SGEMS)

## Funding

Grants will be awarded in three categories:

- Gold Category (Two Awards with funding not exceeding GhC20,000)
- Silver Category (Four Awards with funding not exceeding GhC15,000 each)
- Bronze Category (Four Awards with funding not exceeding GhC10,000 each)

## Eligibility Criteria

- Team members must be postgraduate or undergraduate students of KNUST.
- The lead applicant must be a student from the College of Engineering.
- The team (comprising of 3 to 5 members) should include at least one female, (however a gender balanced composition is preferred). Teams with female leads are also encouraged.
- The proposal must be co-signed by a lecturer at the College of Engineering who will be a mentor to the team.
- Interdepartmental teams are highly encouraged

## Application

Project proposals can be submitted electronically until 8th March 2021 by e-mail via [keep@knust.edu.gh](mailto:keep@knust.edu.gh) For further information or enquiries contact Prof. K. A. Adjei (0249588470) or Mr Kwadwo Marfo (0249570820)  
Please note the change in submission email address

## Structure of Proposals

All applicants MUST use the CoE Innovation Proposal Template which can be downloaded from: [rebrand.ly/keeptemplate](http://rebrand.ly/keeptemplate)

## Project Duration

The project should be complete by the end of November 2021

## Project budget

The budget should cover only project expenses such as travels, data collections production of prototypes, laboratory cost etc.

Allowances and purchase of items like laptop, mobile phone, external hard disk, usb drives etc. are not allowed.

## Incentive

A maximum allowable amount of GhC1,000.00 may be budgeted for as stipend or accommodation for vacation stay for the whole duration of the project.

## Signing

The proposal has to be signed by the main applicant and their project mentor from the College of Engineering.

## Assessment

The submitted projects will be assessed according to the following criteria:

- The project fits with the theme(s) of the call.
- Team composition is gender balanced
- The project has a clear aim and problem description.
- The project is innovative with respect to solving a developmental challenge related to Digital development, Energy Manufacturing and oil and gas.
- The design of the project is suitable and feasible.
- The project is scalable in the long-term, considering the potential for growth into a business, both financially and in its social impact
- The project outcomes are clear.
- The application has a suitable dissemination, scaling up potential, and/or sustainability strategy
- There is a link to industry or a sector
- Match funding (added advantage).
- Has a proposed business model

## Fund Management

The project funds will be released through the project mentor who must be a lecturer at the College of Engineering.

## Timeline

What	Responsible	Deadline
Submission of proposals	All	8th March 2021
Reviewing proposals	Committee	March 2021
Selection of proposals	Committee	March 2021
Awarding project funds	Provost	April 2021
Kick off meeting for projects	Projects	April 2021





# ESTE 3 CONFERENCE

ENGINEERING, SCIENCE, TECHNOLOGY AND  
ENTREPRENEURSHIP CONFERENCE

## THEME

Technology and Innovation for a Post COVID Recovery  
and Growth:  
The Contributions of Industry and Academia

# CALL FOR SUBMISSIONS

## Thematic Areas

1. Food security and sustainable agric
2. Energy and transport
3. Water, sanitation and environment
4. Health, hygiene and medicine
5. ICT, digitisation and Artificial Intelligence
6. Green technology and new materials
7. Poverty, education and entrepreneurship

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1

**Abstract  
Submission**

1st November 2020  
to  
25th April 2021

2

**Deadline for  
Paper Submission**

16th June 2021

esteconferences 2021





**KNUST**  
Kwame Nkrumah  
University of Science  
& Technology, Kumasi

# COVID-19 PROTOCOLS

3Ws SAFETY PROTOCOLS TO HELP PREVENT THE SPREAD OF COVID-19 ON KNUST CAMPUS.



## WEAR FACE MASK

Masks provide simple barrier to help prevent your respiratory droplets from reaching others. Always wear your nose mask when in the company of others.

**NO FACE MASK, NO ENTRY!**

## WASH YOUR HANDS & USE HAND SANITIZER REGULARLY

When you wash your hands with soap under running water, a combination of molecules assemble into bubble-like structures called micelles trap viral matter and rinse them down the drain.

Alcohol-Based Hand Sanitizers contain chemicals that cause microbes to lose their protective coatings and become non-functional.



## WATCH YOUR DISTANCE

Covid-19 spreads mainly among people who are in close contact for a prolonged period. Spread happens when an infected person coughs, sneezes, or talks, and droplets from their mouth or nose are released into the air and land on people nearby. Stay safe by keeping at least one (1) metre social distance.

visit us at [www.knust.edu.gh](http://www.knust.edu.gh)



UNIVERSITY RELATIONS OFFICE  
Kwame Nkrumah University  
of Science & Technology, Kumasi



[uro@knust.edu.gh](mailto:uro@knust.edu.gh)

Follow KNUST on:



## KEEP Info

**Location:** KEEP in Room 304 on the 3rd floor of the Petroleum Building at the College of Engineering.

Follow KEEP on



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KNUST Engineering Education Project



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To make any enquiries about KEEP, you can send a mail to [keep@knust.edu.gh](mailto:keep@knust.edu.gh)

Contact the Project Manager for KEEP on **0502519057**