

# SDGs + Ashesi

How Ashesi University is supporting the UN Sustainable Development Goals



**Ashesi University’s mission is to propel an African renaissance by educating a new generation of ethical, entrepreneurial leaders.** Located in Ghana, Ashesi combines a multidisciplinary core with degree programs in Computer Science, Business Administration, Management Information Systems, and Engineering. All students take part in a 4-year leadership seminar series, as well as community service projects in the community at large. Recognizing the critical link between an ethical foundation and effective leadership, Ashesi was the first school in Ghana to institute an academic honor system. Voted into practice by the student body in 2008, this system sees each freshman class engage in rigorous debate on ethics and plagiarism. Students then pledge to hold themselves and their peers accountable for ethical behavior in examinations, which are thereafter administered without proctors. The collective Ashesi curriculum and experience results in an average of 94% of alumni finding placement in careers, graduate school, or starting businesses within six months of graduation — and 90% choose to stay and work for progress in Africa.

**1,418 students from 24 African countries live, work, and study together on our world-class campus.**

Ashesi students come from diverse economic, ethnic, and religious groups. Women make up 48% of students, and 43% of students receive need-based financial aid. Ashesi graduates are an increasingly diverse representation of African leaders — all equipped with the tools to identify problems and seek solutions in their workplace, communities and the continent at large. The Seattle-based Ashesi University Foundation exists to fundraise for Ashesi University and raise international awareness about the school’s impact.

**Ashesi supports the Sustainable Development Goals (SDGs) — a universal call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity.**

In 2019, Ashesi was recognized in the inaugural Times Higher Education global ranking of universities based on impact and contribution to the SDGs. The ranking acknowledged Ashesi’s main strengths in contributing to Quality Education (#4), Gender Equality (#5), Reducing Inequalities (#10), and Partnerships for the Goals (#17). The following examples highlight the ethics-grounded innovation and leadership by faculty, students, staff, and alumni required to achieve the SDGs.





## Goal 1: End poverty in all its forms everywhere.

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### MASO Rural Business Academy

Senior Lecturer of Entrepreneurship Dr. Sena Agbodjah works to alleviate poverty in Ghana's cocoa-growing regions by providing entrepreneurship training to local youth. "The objective of the MASO Business Academy is to help participants identify and engage with local employment opportunities," Dr. Agbodjah explains. "By so doing, they can earn an income and subsequently gain purchasing power to help boost economic growth in their localities." The program involves coaching, mentoring, and incubation for the entrepreneurs and their businesses. With expertise from other successful entrepreneurs, as well as Ashesi's faculty, the process allows participants to explore opportunity spaces, build and test business models, and receive grant support.

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*MASO Business Academy students have received entrepreneurship training from Ashesi Lecturer Dr. Sena Agyepong. With their new skills and income, students boost economic growth in their communities.*

## Ghana Poverty and Inequality Analysis

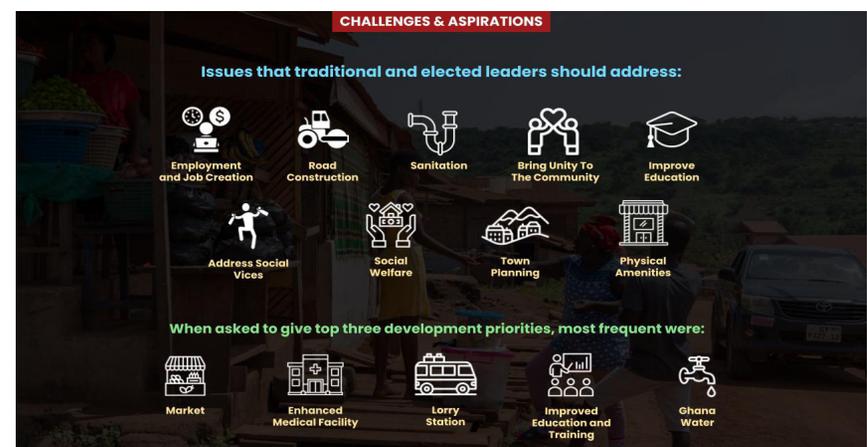
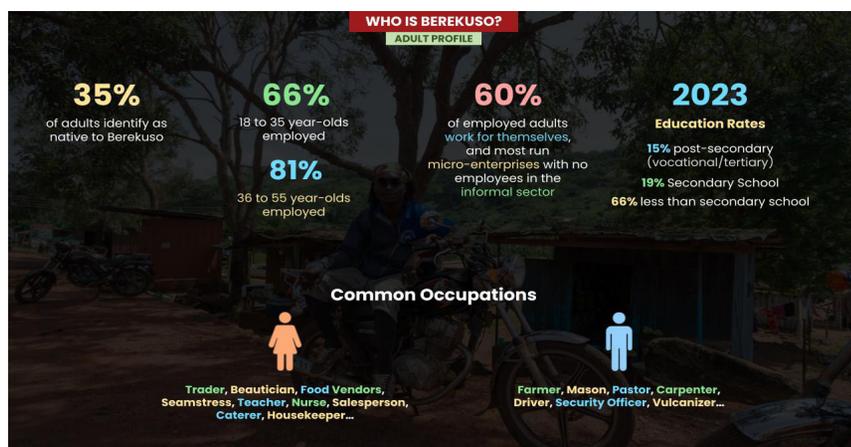
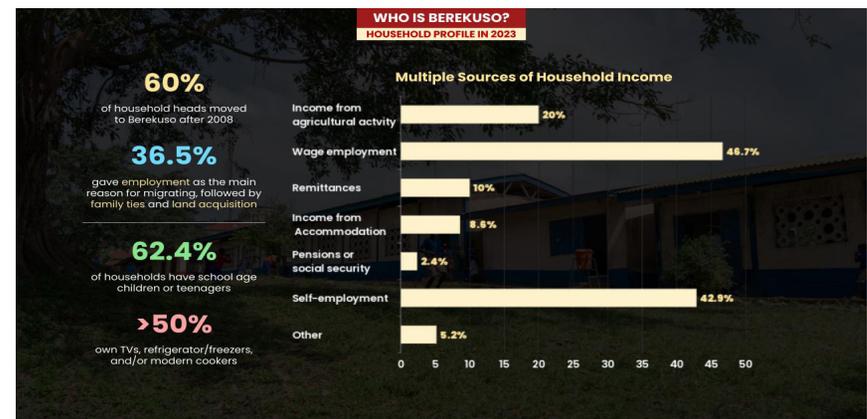
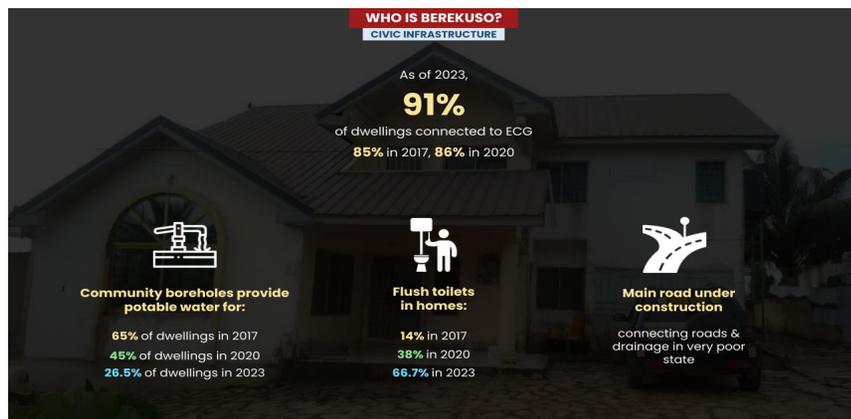
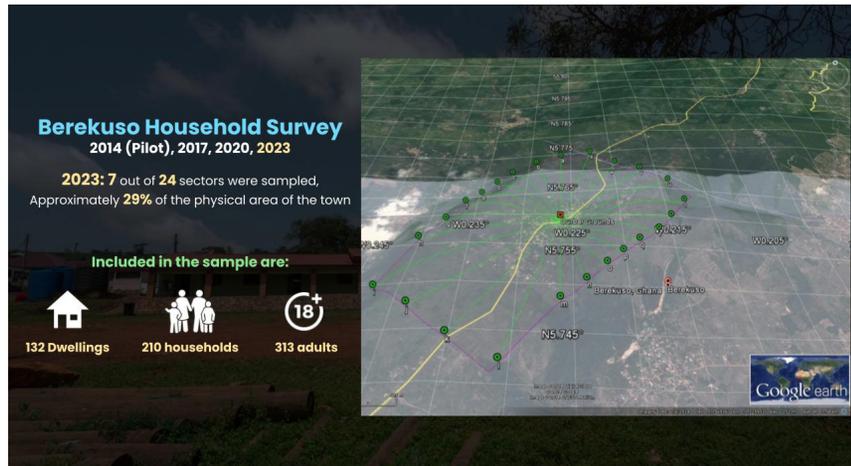
Despite a decline in the extreme poverty rate in Sub-Saharan Africa, population growth suggest that 113 million more people live in extreme poverty today than in 1990. At Ashesi, Economics Professor Dr. Edgar Cooke researches the state and impact of poverty in Ghana and assesses the relationships between growth, poverty reduction, and inequality. Dr. Cooke has collaborated with UNICEF in this research. The Poverty and Inequality analysis report reveals that although Ghana celebrates being a Lower Middle Income Country, the gap between the poorest 10% and the richest 10% of the population has been on the rise and has increased since 2006. The wealthiest decile now consume 6.8 times more than the poorest 10%. The report specifically aims to assess poverty trends and estimated inequality levels in Ghana since the 1990s, determine to what extent the very poorest are benefiting from Ghana's economic growth, and assess the relationships between growth, poverty reduction and inequality.

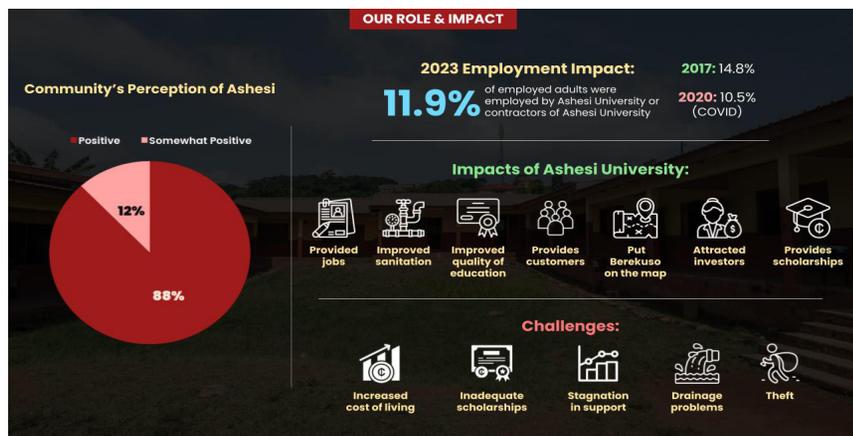
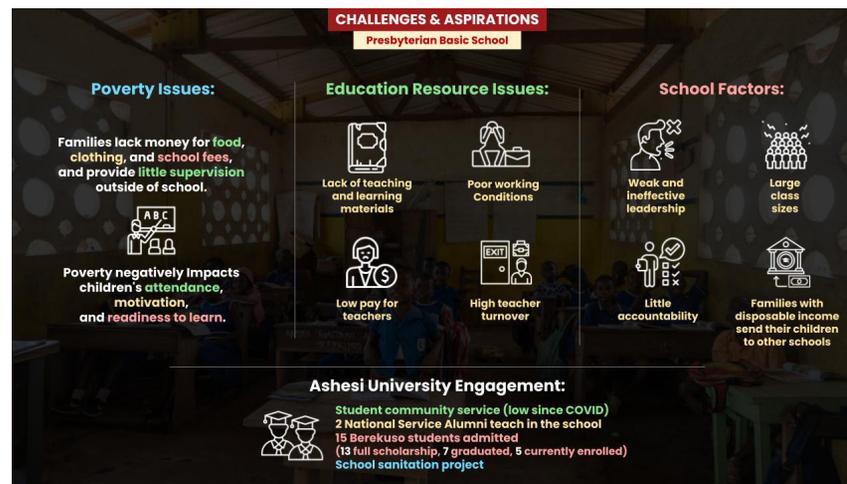
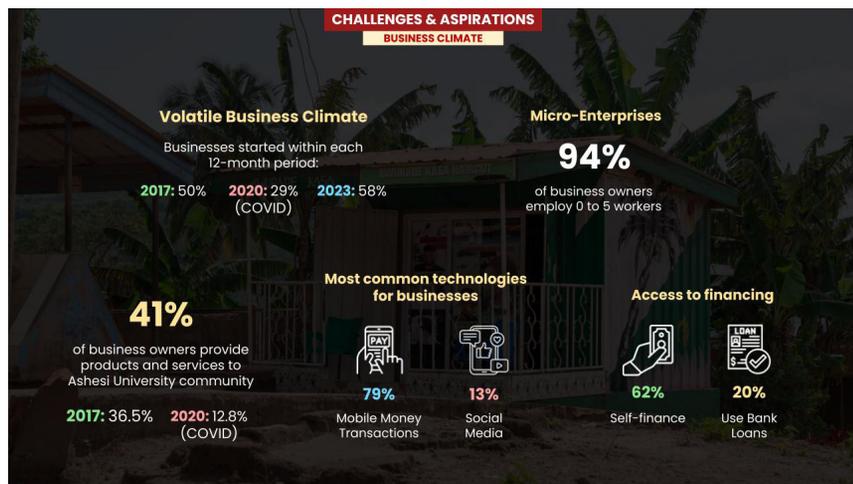
## The Berekuso Impact Study

Ashesi University is situated in a peri-urban rural community named Berekuso. Ashesi has studiously since its move from Accra to Berekuso conducted, every three years, an impact of its presence on the community to mitigate any adverse effects and to help alleviate socio-economic challenges. To alleviate poverty, one must understand the sources of the economic challenges to define the problem fully before solving. See next page for study summary to date:

Poverty negatively impacts children's school attendance, motivation, and readiness to learn.







**Ashesi University positively impacts Berekuso jobs, sanitation & quality of education**





## Goal 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture.

### Ashesi Alumni Support Organic Farming

Agriculture is a major driving force of the Ghanaian economy, contributing 25% of GDP and employing over 50% of the workforce. Still, most farmers struggle to make ends meet. “The onus lies on us, as diligent, committed global citizens to ensure that hardworking farmers are uplifted,” says Audrey S-Darko '19 (pictured above), a member of an Ashesi student team that won \$10,000 for their sustainable agricultural intervention. The team’s solution involves transforming bagasse, the main by-product of sugarcane farming, into bio-compost fertilizer. This fertilizer is now helping rural farmers in Ghana’s Volta Region achieve greater yields, reduce crop losses, and ultimately overcome poverty.

Moses Yangnemenga '18 started the Tieme Ndo initiative, which provides improved seeds, pesticides, and fertilizers to Ghanaian farmers on credit. Over one hundred farmers across four communities are now enrolled in Moses’ program. The results speak for themselves: One farmer’s yield jumped 150% since joining Tieme Ndo.

Wuyeh Jobe '19 and Muhammad Jammeh '19 are working to establish GamFruits, a modern fruit farm and learning hub for farmers in Gunjur, Gambia. “We hope to adopt organic means of production that will yield fruits that are healthy and nutritious. Above all, we want to sell these fruits at prices that will be affordable,” say Wuyeh and Muhammad.

## Novel Antimicrobial Solutions in Packaged Foods to Reduce Hunger

Dr. Danyuo Yiporo, a Senior Lecturer at Ashesi University, has conducted extensive research on the release kinetics of fungicidal antimicrobials in packaged foods. Alarming statistics from the UNFAO indicate that 32% of the world's food production, by weight, is lost or wasted. UNICEF reports that 821 million people are suffering from hunger, with over 150 million children facing stunted growth. Dr. Yiporo's research focuses on food preservation techniques by implementing controlled release kinetics of fungicidal antimicrobials in packaged foods, with the aim of curbing food waste. His findings indicate that the encapsulation and controlled release of protective substances from polymeric films, including acetate layers, can significantly extend the shelf life of packaged foods, presenting a potential solution to reduce global food waste and help mitigate hunger.

## Growing Leaders who Care about Food Security

At Ashesi, students engage in a comprehensive 4-part leadership seminar series as an integral component of their four-year coursework. Collaborating with esteemed NGOs like Food for All Africa, a team of students embarked on a transformative journey to combat food insecurity. Their initiatives centered around the distribution of packaged meals to underserved and vulnerable communities across Accra, with the overarching goal of fostering sustainable food security. Through their dedicated service-learning efforts, these students exemplify the core values of leadership and community impact nurtured at Ashesi University. Additionally, student-led, faculty supervised agricultural-focused clubs and initiatives such as the Agri-business Club funded by the Ashesi Entrepreneurship Center grants and capacity building work towards positive outcomes in the agricultural sectors of communities in Ghana and other African countries.





### **Goal 3: Ensure healthy lives and promote well-being for all people at all ages.**

Senior Lecturer in Engineering Dr. Elena Rosca (pictured above) researches how to use biologically inspired concepts to optimize cancer therapies and diagnoses in Africa by developing cost effective, non-invasive therapies and sensors. Dr. Rosca also advises Ashesi students in their cancer research. When Hudson Lekunze '17 learned from Dr. Rosca that low and middle-income countries like Ghana have little data available to properly understand local cancer situations, he was inspired to build a web-based app that streamlines cancer incidence data collection across Ghana. Hudson and Dr. Rosca are now working with oncologists in hospitals across the country to test the application.

Maxwell Aladago '18 dedicated his senior year at Ashesi to developing an algorithm for identifying the different growth- cycle stages of malaria parasites to help develop a low-cost tool for measuring the effectiveness of malaria drugs in rural areas. "The future of machine learning is in Africa," Maxwell says. "We see different challenges like precision agriculture, or health monitoring and surveillance, that machine learning can accelerate solutions for. We are well-positioned to use machine learning to create incredible impact across Africa." Maxwell's research has gained broad interest, and he was invited to share his work at IEEE's 2019 AFRICON conference in Accra. Now, Maxwell is pursuing a PhD in Machine Learning at Dartmouth College.



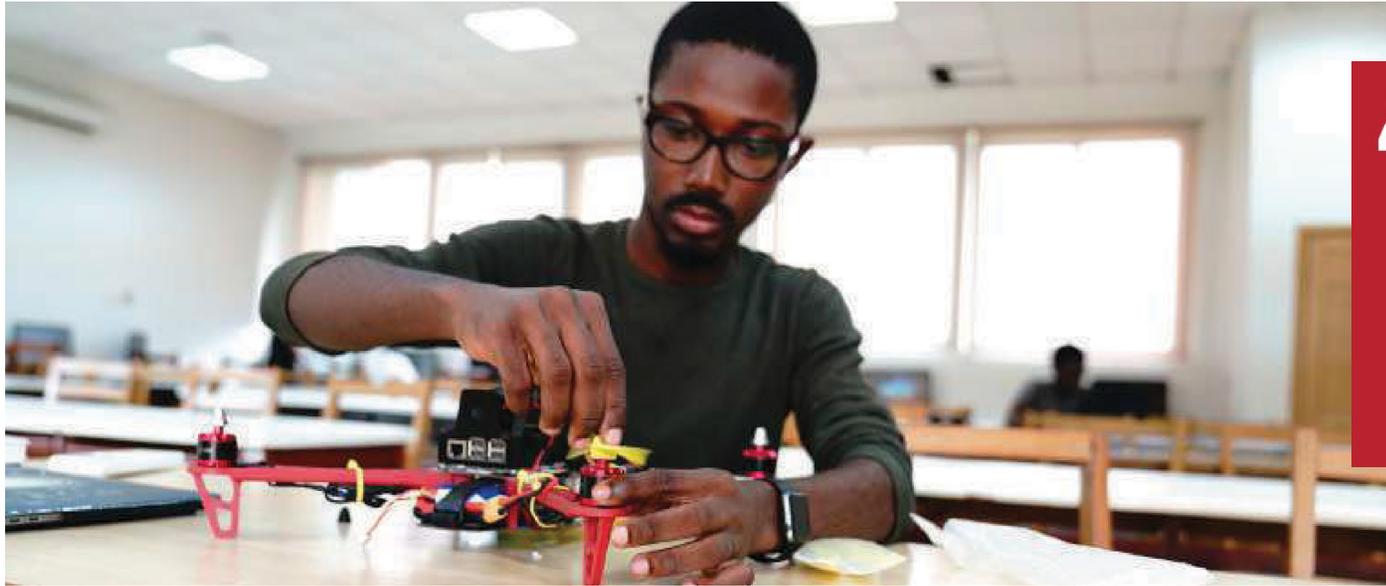
### Collaborating Partner

STOP-NCD is a five year NIHR Global health research center which aims to improve health and wellbeing of populations in West Africa, through comprehensive and sustainable capacity strengthening for high quality applied NCD research.

Our partnership is led by the London School of Hygiene and Tropical Medicine (LSHTM) and Ghana College of Physicians and Surgeons (GCPS), and involves Ashesi University (AU), Laboratoire d'Etudes et de Recherche sur les Dynamiques Sociales et le Développement Local [Research Laboratory on Social Dynamics and Local Development] (LASDEL) and Université Catholique de l'Afrique de l'Ouest - Unité Universitaire at Bobo-Dioulasso [Catholic University of West Africa - University Unit at Bobo-Dioulasso] (UCAO-UUB). The NIHR Global Health Research Centre for non-communicable diseases in West Africa is part of the NIHR and hosted by LSHTM and GCPS.

We aim to address the urgent need for improving control of non-communicable diseases in West Africa, where healthcare has been traditionally neglected and driven by disease-specific programmes, with limited engagement of local communities.





## Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

### Transformative Education

Ashesi is committed to ensuring an inclusive, life-transforming education to Africa's brightest students. 48% of current students are women, 43% of current students receive scholarships, and students come from varied national, ethnic, and religious backgrounds. Our goal is not just about inclusion but ensuring that the perspectives of Africans of all backgrounds guide the solutions to Africa's greatest challenges. Through the Education Collaborative, Ashesi offers a forum for higher education institutions in Africa to build programs and curricula that foster critical thinking and ethical, entrepreneurial leadership. Ashesi also offers educational programming to high school students. The Ashesi Innovation Experience (AIX) is a transformative two-week program centered on leadership, design, engineering, entrepreneurship, robotics, and the creative arts, and has impacted hundreds of students. In 2019, 132 high school students from 11 countries participated in AIX.

Passionate about making STEM education more engaging for young students, Professor Heather Beem launched PEN, a teacher training program where Ghanaian STEM teachers learn, design, and share hands-on activities to better engage their students. In the past two and a half years, PEN has impacted over 500,000 students.

## Operationalizing a quality Education at Ashesi

In traditional African universities, students often sit in huge lecture classes. They take classes only within their major, and often learn by rote. In contrast, Ashesi features a multidisciplinary and emerging transdisciplinary core curriculum designed to foster ethics and critical thinking, in addition to in-depth majors. Instead of traditional lecture-only classes, we offer a mix of small seminars, workshops, and hands-on learning through labs, community service and senior capstone projects. Students tackle problems based on complex, real-world scenarios. Ashesi aspires to be as demanding as a high-quality university anywhere in the world, with a curriculum designed for an African context. At Ashesi, we believe that for young Africans to stand up to corruption and bureaucracy, they must ask questions. To be innovative and entrepreneurial, they must stop memorizing old answers, and instead analyze problems in fresh ways, and create new solutions.





## Goal 5: Achieve gender equality and empower all women and girls.

Ashesi has built a strong reputation around empowering African women through higher education. We maintain gender balance in our faculty, staff, and student body and actively recruit female students from across Africa. Women comprise 60% of the senior leadership team, 55% of the university's Board of Directors, and 40% of Engineering students.

The first female student government president in Ghana's history was Ashesi alumna Yawa Hansen-Quao '07 (pictured sitting). After graduation Yawa founded Leading Ladies' Network, whose for-profit women's career coaching arm funds mentorship programs for thousands of women and girls. "I want to provide [the women of Africa] the stepping stones to success, to prepare them to participate at every leadership table," says Yawa.

Many Ashesi alumni are working to achieve gender equality and empower all women and girls. Regina Honu '05 founded Soronko Solutions, a software company focused on producing software solutions to support local SMEs. Through Soronko, Regina supports Tech Needs Girls, a social enterprise she founded to help to teach girls in underserved communities how to code. Since its inception, Regina has enrolled over 5,000 girls in her program, and created a mentor network spanning 200 women in Computer Science and Engineering.

**48%**  
*of Ashesi students are women;  
52% of women students  
receive scholarships. We are  
committed to gender equality.*



## Gender and Investment Decision-Making

Dr. Esther Laryea's research on issues pertaining to gender bias revealed that the impact of anchoring bias on investment decision-making was evidenced in Ghana. Such bias affects the dynamics of investor decision-making with regard to mutual funds, and the bias differs amongst gender as well as the level of financial knowledge. She also found that overall, investors were prone to be significantly influenced by the anchoring bias. There was a strong, albeit not significant, association between participants' susceptibility to anchor in both gender and the level of financial knowledge of participants. Females were observed to be more likely to anchor than their male counterparts. Also, a higher level of financial knowledge did not help to reduce the possibility of anchoring; it rather increased it. The study adds to the body of knowledge on the influences of behavioural biases in the sub-region to make investors aware of their biases in order to minimise the influence of these biases on their investment decisions, in particular female entrepreneurs.





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

### Water Conservation at Ashesi

“We have been committed to strengthening environmental sustainability at Ashesi since day one,” says Casper Annie, Ashesi’s Facilities and Logistics Director. Since Ashesi is not connected to the Ghanaian national water pipeline, the university utilizes groundwater and rainwater to meet its water use needs.

Underground water tanks beneath Ashesi buildings harvest rainwater for use all across campus. Connecting to three-stage filtration system that pumps water to taps and drinking fountains, and with a current storage capacity of some 100,000 gallons, these tanks provide a steady supply of clean, healthy water for the community.

**80,000**  
*plastic water bottles are saved from waste every year thanks to campus water fountains.*

In addition, Ashesi’s biogas plant treats wastewater and generates effluent water for campus gardens (target 6.3). “We try to conserve and reuse as much as we can,” says Casper, “and our treatment facility is always being expanded.” Student-led community service projects have also brought clean water and improved sanitation to rural and urban communities. Through these efforts, Ashesi is setting a new example for sustainability in large campuses.

## Ashesi University's Commitment to Sustainable Water Management

Some faculty members and faculty affiliates at Ashesi have conducted water-related research in countries such as Ghana, Kenya, and Bangladesh. Their endeavors have expanded the narrative on sanitation and household water management among stakeholders both within and beyond Ghana. In Prof. Chris Gordon's research (an affiliate faculty member) on the implication of climate variability on household water management, he found correlation between the perception and practices among rural womenfolk in four Ghanaian communities and water use, and climate change and general household behaviors.

## Favoring our fresh Waters over Gold in Ghana

Dr. Elena Rosca and her team of research interns were determined to develop a bio-sensor for gold quantification providing a non-toxic approach for small scale mining to extract gold from refractory ore, so as not to disrupt natural water or land. By enabling routine monitoring of the ore before a mining endeavour is undertaken, in particular mining that could affect fresh waters for drinking and bathing was key.

The researchers used genetically engineered *E. coli* with a gold specific gold binding protein (golB) attached to a green fluorescent protein (NowGFP) as a donor partner and an acceptor partner made up of golB and a red fluorescent protein (mRuby2). In the presence of free gold, the two parts are in proximity and thus an energy transfer can take place between the donor and acceptor proteins and the red protein will be excited by the donor giving off a fluorescent signal. The same process can be used for extracting gold on land.





## 7 AFFORDABLE AND CLEAN ENERGY



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

#### Good Stewards of Energy

Ashesi's Renewable Energy (RE) program was initiated in 2017, aimed at increasing the penetration of RE to 40% of total electricity consumption by 2025 (presently accounting for 13-15% of total grid electricity consumption). Grid electricity is heavily subsidised by solar PVE and solar water heaters with periodic energy audits to reduce wastage. The most recent energy audit conducted in 2022 recommended the installation of Export Control Technology (ECT) and a solar storage battery capacity of 552 kWh. This installation will capture the total energy loss to the national grid and reduce grid and cost of electricity consumption. The University's architectural setup incorporates green building concepts as a key adaptation response measure to improve the campus resilience to increasing temperatures and the heat stress caused by global warming. Climate-focused initiatives such as replacing all CFLs with LEDs are a sign of the University's commitment to energy wastage identification, and energy-efficient building and renovations. This strong minimises greenhouse gases and black carbon emissions as part of our Environmental Social and Action Plan (ESAP), in strong compliance with IFC's standards. Ashesi is also committed to increasing access to RE. Examples include Kaniya Energy, an Ashesi student-led initiative that provides affordable solar-powered lighting alternatives for households and individuals living in areas with inconsistent energy supply. Another example is alumnus Emmanuel Assaam '15 who provides clean, affordable energy from renewable sources to homes and businesses across Ghana and other communities as an alternative to charcoal and firewood through his start-up Gamma Energie.

## Kaniya Kotoku: Affordable Energy

Samuelle Asante won an extensive prize package from Mastercard Foundation, McGill University, AABN, and the Volta River Authority (VRA), as her reward for coming first in the Pitch Contest finals held in August 2021 at the Accra International Conference Centre. Her start-up idea was to develop a portable, renewable energy, light source for rural school children to use after hours to study. Her concept was contained in a school backpack, and named Kaniya kotoku, which means “electric light sack” in the Akan Ghanaian language.

Kaniya Kotoku provides safe, affordable and environmentally friendly energy/lighting alternatives. It is a backpack made from recycled plastics, lined with Organic Photovoltaic (OPV) cell technology that powers an LED flexible study lamp, allowing a student to study for at least two additional hours at night. Samuelle has received multiple funding to boost her business, test her prototype and gather feedback from users and prospective users.

Kaniya Energy satisfies the Sustainable Development Goals 7, 8, 12, and 13. With SDG 7 it ensures access to affordable, reliable, sustainable, and modern energy for all. SDG 7 targets improving the global rate of energy efficiency and enhancing international cooperation to facilitate access to clean energy research and technology. This SDG also focuses on advanced and cleaner fossil-fuel technology, renewable energy, and also promotes investment in energy infrastructure.

She has attained aspects of SDG 12, which refers to responsible consumption and production, because she uses recyclable materials. She also meets SDG 13 and SDG 8 to some extent, because Kaniya Kotoku impacts climate change and with her current employment of workers in manufacturing, she is providing Decent Work and Economic Growth.



## Research in Sustainable Energy

Some Engineering faculty have conducted multiple-research for improving energy outcomes. Faculty members Drs. Nathan Amanquah and Roy Smith (Affiliate faculty) have independently worked on research including rapid application development for mobile terminals, and advanced control research and experimental flight testing of airborne wind energy systems, respectively. As a student, Oheneba Aggrey designed and fabricated a bicycle pedal-powered, low-cost, maize sheller with high throughput (efficiency capacity for multiple concurrent maize shelling) and low kernel damage for rural Ghanaian farmers. His research paper on his work was accepted for knowledge dissemination at the IEEE conference.



## 8 DECENT WORK AND ECONOMIC GROWTH



### **Goal 8: Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.**

Whether Ashesi students join existing organizations or start their own, they act as job creators who carry forward entrepreneurial thinking in everything that they do. Ashesi maintains a goal for 20-25% of alumni to start their own business within ten years of graduating. Ashesi's entrepreneurship ecosystem includes the following programs and initiatives:

- **The Foundations of Design and Entrepreneurship course** prompts all first-year students to launch their own ventures to gain real-world experience in business development.
- **The Social Entrepreneurship course** guides students through the process of building a social enterprise.
- **The Entrepreneurship Capstone** teaches final-year students how to start a scalable business.
- **Ashesi Startup Launchpad** provides hand-on support and coaching to incubate student businesses.
- **Ashesi D:Lab** trains students in design thinking so that they may create, innovate, and grow their ideas.
- **Ashesi Venture Incubator** is a one-year alumni venture incubation experience in collaboration with MIT D-Lab, with funding from USAID. Fellows build their business through the incubator's provision of business coaching from local and global business leaders, business development sessions, and support services.

## Ashesi's Commitment to Decent Work

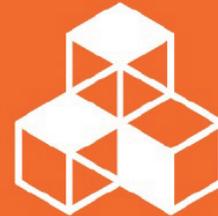
Ghana graduates 200,000 plus students each year to vie for 40,000 public jobs and possibly 20,000 private jobs. With such odds for decent employment, it is key to educate university students in design thinking and entrepreneurship. Ashesi has such courses, labs, and capstone options. Supported by Ashesi Career Service and its Student Life team, Ashesi students are exposed very early to job shadowing, internships, life coaches, and mentors to develop professionalism in and outside Ashesi. Each year Ashesi graduates at exit are privileged to have 90% employment rate, in comparison to the national average of 10%. Ashesi strives to ensure decent work for all its alumni and to reduce the the proportion of youth unemployed, uneducated, or untrained i.e., Target 8.6 of SDG 8.

Ashesi  
has **90%**  
employment  
rate





## 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



### Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.

Target 9.3 aims to support small-scale enterprise development. The Ashesi entrepreneurship ecosystem includes the following initiatives which support SME development in emerging economies:

- **Ashesi Entrepreneurship Center** provides proof of concept grants and soft loans to student entrepreneurs to help them validate their business models, products, and services.
- **The Makers Skills' Lab** enables students to try their hand at everything from 3D modeling to building electric circuits. In a perfect example of the intersection Ashesi fosters between engineering and creative thinking, a student recently designed and built an operational drone. Inspired by Ashesi's growing size, he now hopes to teach the drone to fly independently – the first step towards establishing a campus delivery startup.
- **Ashesi's world-class facilities** are designed and built to inspire student learning and innovation. Opened in 2018, The Fab Lab offers students a dedicated space to design and fabricate new products for their startups.

## Ashesi's Design Lab Nurtures Undergraduate-Led Industrial Innovations

The Design Lab of the Ashesi Entrepreneurship Centre's initiative is abuzz with students actively addressing local challenges through innovative industrial solutions. These undergraduates have keenly identified community issues and are pioneering impactful initiatives. One of their projects integrates inventive approaches such as the implementation of Hydroponics, a groundbreaking water conservation technique that reduces chemical usage in cultivating plants and uses a water-based nutrient solution instead of traditional soil. Through their dedicated efforts in developing this prototype, these students demonstrate concern for the communities and a desire to bring about transformative change.

## Industry, Innovation, and Infrastructure: Ashesi's Research Contributions

Dr. Andrea Carron, a lecturer in Mechatronics Engineering, pioneered research work in volume control systems for low-cost ventilators, equipped with an automated set-point adaptation mechanism. Jennifer Panashe, an Ashesi mechanical engineering alumna continued to work on her undergraduate research which involved the utilization of recycled plastic waste materials combined with bitumen at the right viscosity levels for road maintenance and repair. Led by Dr. Heather Beem, a mechanical engineering faculty member, the university established the Ashesi Resourceful Engineering Lab, dedicated to solving local problems using engineering designs. She and her team of research interns developed a biogas monitoring system that converts food waste to sustainable cooking gas. These collective research pursuits and many others, underscore the faculty's unwavering dedication to generating practical solutions.



Dedicated to solving local problems using engineering designs.



## Goal 10: Reduce inequality within and among countries.

Ashesi is committed to educating and equipping young Africans who have the potential to excel and make an impact, irrespective of sex, disability, race, ethnicity, origin, religion, economic, or other status. We understand that for Africa to unleash its full potential, its future leaders must be as diverse as their continent. Further, our graduates start and join companies with the ability to compete on a global level.

**43%** of current students receive scholarships. 52% of scholarship recipients are women. 25% of scholarship recipients receive full support for room, board, and tuition.

**48%** of current students are women. At Ashesi, we recruit high-potential women from across Africa as part of our commitment to gender equality.

**24** African countries are represented by students. Ashesi is a Pan-African community. 17% of our current students come from outside of Ghana to learn, live, and innovate.

## Nurturing Inclusivity, Reducing Inequalities

Committed to fostering inclusivity and reducing inequality in Africa, Ashesi dedicates and targets efforts through several of its units. The Admissions team is dedicated to recruiting hard-to-reach marginalized students and providing them scholarships commensurate with full fee paying admits. The Academic Affairs department is committed to ensuring all students have an equitable opportunity to succeed academically and graduate on time.

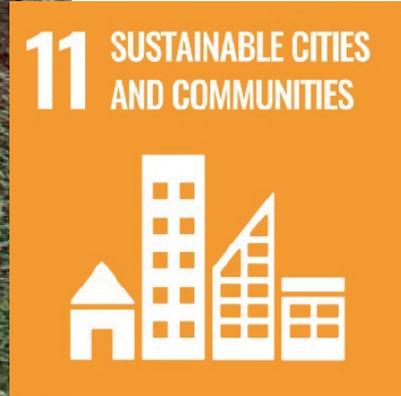
Individuals also contribute through research and knowledge sharing to inclusivity and equality. Dr. Millicent Adjei's research focused on remapping assumptions about international student adaptation to understand how such students form community and build trust in unfamiliar environments. Prof. Angela Owusu-Ansah's research highlighted the informal, intercultural experiences required of prospective teachers, that result in attitudinal and perceptive changes for improved and equitable teaching of culturally diverse populations.

## The Impact of Ashesi Alumni-Led NGOs in Reducing Inequalities

Several Ashesi alumni have translated their 40-hour service-learning projects into sustainable not-for-profit organizations dedicated to reducing inequalities by educating individuals and nurturing underprivileged communities. Alumni such as Nana Ama Boa Amponsem and Nancy Mba, through their initiatives, Think Education and MSmiles, have established several low-cost private schools in the northern part of Ghana, and supported multiple orphanages, respectively.

In 2021, Nancy Mba, a student at Ashesi University, created the Magnificent Smiles Foundation (MSmiles) out of compassion, empathy, and a deep commitment to addressing the issues of orphans. She discovered that, despite the urbanization of the city, some children, aged 12 to 13, were using computers for the very first time.

MSmiles' mission includes mentorship support, STEM and robotics education, leisure visits, and artistic exposure. Nancy and her team of 130 dedicated volunteers receive training which enables them to connect with the children effectively. One particularly exciting project was "Learn Robotics," in partnership with Innotech STEM Center, a prominent STEM institution in Ghana. It provided free robotics education for association members, who then passed on their knowledge to the children.



## Goal 11: Building sustainable communities using bio-engineering innovations i.e., self-illuminating ceiling tiles.

As part of a bioengineering course at Ashesi University a student proposed the development of ceiling tiles made of composite materials namely coconut fibers. He used bioluminescent organisms to manufacture ceiling tiles, and in the process reduced the coconut waste pollution. Coconut husk fibers have excellent mechanical properties and are very durable due to their large content of cellulose. Using engineered bio-luminescent organisms engineered to grow on cellulose she developed an alternative electricity-free illumination source which is eco-sustainable. The tiles can be used for aesthetic or for the enhancing of visibility in homes.

**224 million** *Coconut fruits are produced each year in Ghana, and smallholder farmers produce 179 million of the total production as of 2019. This makes it a good sustainable resource for mass production of luminescent ceiling tiles.*

### Ashesi's 360-Degree Sustainability Efforts

Ashesi campus wastewater generated from all residential and washroom facilities are treated in our biogas plant to generate effluent water as a resource for campus gardens. This significantly reduces waste in water use on campus through upcycling. Ashesi's campus recycling initiative also includes the location of waste classification bins on campus for recycling of organic waste for fertilisers in our gardens as well.

Teaching at Ashesi also emphasises the importance of sustainability in organisations and entrepreneurial ventures business practices. Faculty work with students to lead research into best practices to ensure sustainability in various industry sectors across Ghana. Jennipher Panashe '19 worked on a [research project](#) in collaboration with a faculty member, Dr. Danyuo Yiporo, to explore the optimization of plastic waste materials usage in road repair and maintenance after its construction.

Ashesi's Ghana Climate Innovation Center (GCIC) also serves as a green project incubation hub which helps entrepreneurs transform their innovative ideas into strong and viable businesses. One GCIC incubatee is the [Ghana Bamboo Bikes Initiative](#), a social enterprise addressing climate change, poverty, rural-urban migration, and youth unemployment by creating jobs for young people, especially women, through the building of bamboo bicycles. These bicycles serve as a more affordable alternative to transportation with little to no carbon footprint.

Every day in Accra, waste pickers sort out and recycle metals, plastics, and cardboard from 1,500 tons of waste that is dumped daily at the Kpone landfill, one of the two major landfills in Ghana's capital city. While their work plays a vital role in environmental conservation, mechanisms have not been developed to adequately compensate these 'informal recyclers' for the services they provide. Earning an average of \$40.00 per month, most of these waste pickers are unable to make ends meet. Students from Ashesi and MIT recently collaborated to create tools that will increase the earnings of Accra's waste pickers and provide them access to financial platforms to help grow their savings. The financial inclusion model will thereby support continued recycling and reuse efforts in Accra.

*"It's been a very exciting project," says Zoe Tagbota '20 of the Ashesi D:Lab. "We got to go into the field to understand how waste pickers actually operate, understand their importance to the society, and through design thinking, learn about different opportunities available to them. In addition, the exchange experience with the MIT team has also been exciting, taking advantage of the opportunity to learn about how they use their tools in projects they work on."*



## Sustainable Communities Reflecting Diversity

Every Ashesi building is accessible by the wheelchair user or physically disabled. With 3% of Ghana's population recorded as having some disability, Ashesi thought it ethical and equitable to ensure that 4% of the Ashesi community reflected the nation's population. Recruitment of faculty, staff and students is intentional to take that into consideration.

## Sustainability Education

Sustaining sustainability requires education. Ashesi has two elective courses in sustainability and climate change and has incorporated both in every syllabus to impact student, and to some extent faculty mindsets inherently. A climate and sustainability doctoral candidate worked with each faculty member to determine sectors of their syllabi most amenable to incorporating sustainability concepts to be taught.

## Sustainable Cities and Communities: Self-illuminating ceiling tiles

As part of a bioengineering course, a student proposed the development of ceiling tiles of composite materials with coconut fibers, using bioluminescent organisms and in the process reduced the coconut waste pollution. Coconut husk fibers have excellent mechanical properties and are very durable due to their large content of cellulose. Using engineered bio-luminescent organisms engineered to grow on cellulose she developed an alternative electricity-free illumination source which is eco-sustainable.





## Goal 12: Ensure sustainable consumption and production patterns.

### Sustainable Consumers and Producers

In our efforts to reduce waste generation, all waste generated on the Ashesi campus is efficiently disposed of or reused. Wastewater is treated in our biogas plant to generate effluent water for irrigating campus gardens. Organic waste from dining cafeterias and residential facilities is converted to compost for gardening purposes as well. (SDG 12 Indicator 12.5) Businesses that implement sustainable measures create long-term value when the effects of the organisation's operations in the ecological, social, and economic environments are considered. This is why learning at Ashesi emphasises the importance of sustainability in all classes to ensure students are mindful of this at all times (SDG 12 Indicator 12.8). Faculty and students lead research into ways various industry players can adopt sustainability in their business operations.

Jennifer Panashe '19 worked on a research project in collaboration with a faculty member, Dr. Danyuo Yiporo, to explore optimising plastic waste materials (polyethylene terephthalate) usage in road construction in Ghana (SDG 12 Indicator 12.6 and 12.7). Students from Ashesi and MIT recently collaborated to create tools to increase the earnings of Accra's waste pickers and provide them access to financial platforms to help grow their savings (SDG 12 Indicator 12.8). Ashesi's Ghana Climate Innovation Centre (GCIC) incubatee, Ghana Bamboo Bikes Initiative, is a social enterprise addressing climate change, poverty, rural-urban migration, and youth unemployment by creating jobs for young people, especially women, through the building of bicycles using bamboo, providing an affordable alternative to transportation with little to no carbon footprint. (SDG 12 Indicator 12.2)

## ASHESI GOES GREEN: Harnessing the Culture of Recycling

At Ashesi, food vendors and the convenience store have switched from:

- Plastic food packs to bio-degradable paper food packs
- Plastic carrier bags to reusable fabric tote bags
- Plastic cutlery to stainless steel/bamboo cutlery
- Plastic cups to bio-degradable paper cups and
- Plastic straws to bio-degradable paper straws.

This is the first of several phases to make our campus more green in line with our institutional goal of **“Integrating climate awareness into Ashesi’s culture.”**

Led by Ashesi Students Life Engagement Team, who will be providing the education needed to sustain efforts, we expect the following of the community:

- More dine-ins at the cafeteria, versus take-outs. In addition, dining in the cafeteria builds relationships. However, in the event where your schedule/circumstance may require you ordering a takeout, please come along with your own food container to campus. Glass bowls with a lid most preferred.
- Come along with your own silverware/flatware/cutlery. It is safer for you and the environment.
- Every community member has been given one (1) free tote bag, however you may come along with your own.
- This directive also applied to on-campus student vendors, and all their food packaging types have become bio-degradable.
- All campus events where food is served, have use environmentally-friendly packaging.
- We can only achieve zero plastics in the long-term with our collective resolve.

**NO PLASTICS**, please!





## Goal 13: Take urgent action to combat climate change and its impacts.

### Climate Smart Actions

The disruption to water systems as a result of climate change is the driving force behind Ashesi's water restriction and drought action plan, which includes: water catchment systems, energy efficient washing machines in hostel laundry facilities, low-flow shower heads and toilets, and a climate action plan on campus (SDG 13 Indicator 13.2). With a faculty member hired to advise and include climate friendly content in all academic courses, Ashesi has a working plan to ensure all students and graduates have sufficient understanding of climate adaptation practices, the risks involved and how to address them in their personal and professional lives. Faculty and students are committed to leading innovative projects in climate entrepreneurship (SDG 13 Indicator 13.3).

Alumna Audrey S. Darko '19 founded Sabon Sake, an organisation using clean, closed-loop carbon capture systems coupled with regenerative agriculture and an understanding of soil microbiology to solve the pressing challenges of soil degradation and food insecurity in today's climate-evolving world. Beyond Ashesi, the University seeks to create awareness of climate change and adaptation measures by engaging with local leadership (SDG 13 Indicator 13.3) and supporting climate-focused businesses through Ashesi's Ghana Climate Innovation Centre (SDG 13 Indicator 13.b).

Ashesi's effort to champion clean energy resources has influenced the local traditional authorities to install roof top solar PVE on the Chief's palace in Berekuso, where Ashesi is located. The chief's project is used to create awareness in the local community for potential adoption and uptake by members of the community. Examples of climate-focused businesses at Ashesi's GCIC include El Balicon Limited, whose vegetable farm enclave provides a consistent water supply through a furrow irrigation system to address the persistent shortage and non-availability of fresh vegetables on the Ghanaian market. Sesi Technologies develops affordable technologies to help African farmers and agribusinesses increase productivity and reduce losses.

### Climate Action Awareness and Adaptation Measures Implemented at Ashesi and Beyond

Increased temperatures and longer periods between rains driven by climate change are expected to continue exacerbating water supply issues in Berekuso, the peri urban locale where our university, Ashesi, is situated. Ashesi implemented a water restriction and drought action plan, which includes: water catchment systems, high-efficiency washing machines in hostel laundry facilities, low-flow shower heads and toilets, limiting water usage, and an emergency action plan. (SDG 13 Indicator 13.2) Ashesi was invited to be a member of the U7+ initiative and at the inaugural summit of the U7+ in Paris, Ashesi committed to creating courses available to all students related to climate, biodiversity, and sustainability. It will prepare them to address the key challenges and mitigation strategies regarding the earth and mainstreaming the information in core courses (SDG 13 Indicator 13.3). In fulfilling our commitment, we have hired a climate scientist who has begun the embedding process. In conjunction with Ashesi's institute of climate action, the Ghana Climate Innovation Center (GCIC), Ashesi faculty, and students whose research interests are in climate change conduct research on climate economics, climate and gender, and climate and entrepreneurship, to name a few, to pursue opportunities for generating new knowledge that will help society adapt to climate disruption.

Additionally, Ashesi's GCIC Business Incubation Program supports transformative entrepreneurs with innovative solutions and businesses that aid in mitigating or adapting to climate change (13.b). Incubatees implementing climate adaptation solutions to agriculture will improve production and increase the resiliency of small farmers to climate change. [El Balicon Limited](#) is a vegetable farm enclave in Wa, in the Upper West Region of Ghana. The vegetable Farm enclave is a mechanised drip, shower, or mist and furrow irrigation system with an Antor 17 HP diesel water pump and a 1.5 HP Shakti solar pump near the Black Volta River. It was created to address the lack of access to water on farmland for all-year-round production to further address the persistent shortage and non-availability of fresh vegetables on the Ghanaian market. Sesi Technologies develops affordable technologies to help African farmers and agribusinesses increase productivity and reduce losses. GrainMate, a product of [Sesi Technologies](#), is an affordable grain moisture meter that helps farmers accurately measure the moisture content in their grains to help them prevent post-harvest losses. Compared to commercial moisture meters on the market, which retail at about GHS 2000 locally, GrainMate is three times more affordable, retailing at only Ghc500.



Alumna Audrey S. Darko '19 founded Sabon Sake, a clean- using, closed-loop carbon capture system coupled with regenerative agriculture and an understanding of soil microbiology to solve the pressing challenges of soil degradation and food insecurity in a climate-evolving world. [Sabon Sake's](#) current products focus on improving soil health in rural communities.

Ashesi engages local leadership in dialogue to ensure that communities in Berekuso have access to credible, informative science. We work with leadership to identify opportunities for the institution to provide education, research, and pilot projects on adaptation; and for larger projects that can be pursued in collaboration to improve the resiliency of the community's infrastructure, energy systems, water system, food systems, and transportation systems (SDG 13 Indicator 13.3).

### **Reducing Waste and Reusing Water: We Conserve**

At Ashesi the wastewater generated is treated at the University's biogas plant facility with an integrated wastewater resources treatment system. Effluence meets the IFC/WHO and Ghana Standard Authority guidelines for wastewater treated for irrigation; Treated effluent water is reused for landscaping and greening of the campus all year.

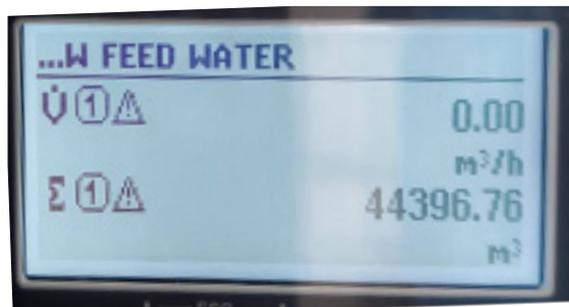
Ashesi University has adopted a number of water conservation policies and standards to ensure little or zero dependency on the Ghanaian utility service provider known as Ghana Water Company Limited. Ashesi University has adopted a Rainwater Harvesting plan where Rainwater is collected from the roofs of the school facilities and channeled into Concrete Water Storage Tanks that are situated below several buildings situated on the university's campus. This process has been inculcated into the Architectural Plans of the University from inception and therefore most of the buildings have been designed to have water storage tanks that meet BS EN 16941:2018 where water storage capacity should meet 18 days of water consumption by end users.

Ashesi University also meets Requirement G2 under Water Efficiency Regulations that insists on a daily consumption rate of 110 litres per person. The harvested water is then taken through stringent water purification processes to ensure the quality of the Water meets WHO Standards (GDWQ), parts of BS 8680 - 2020 of Water Safety Plan Code of Practice whilst the Water tanks are maintained to meet the standards of BS 8558 in the aspect of maintenance and quality assessment.

The Second adopted practice pertaining to Water Re-use has to do with Grey & Black Water Recycling as a Non-portable water supply for the purpose of Horticultural irrigation. This serves as an alternative to help avoid the use of high-quality drinking water for non-potable requirements. This helps to reduce consumption of quality drinking water by 75%.



See image below of Ashesi's Capex Water Treatment Plant with Smart flowmeters measuring the total water inbound and treated water consumption.





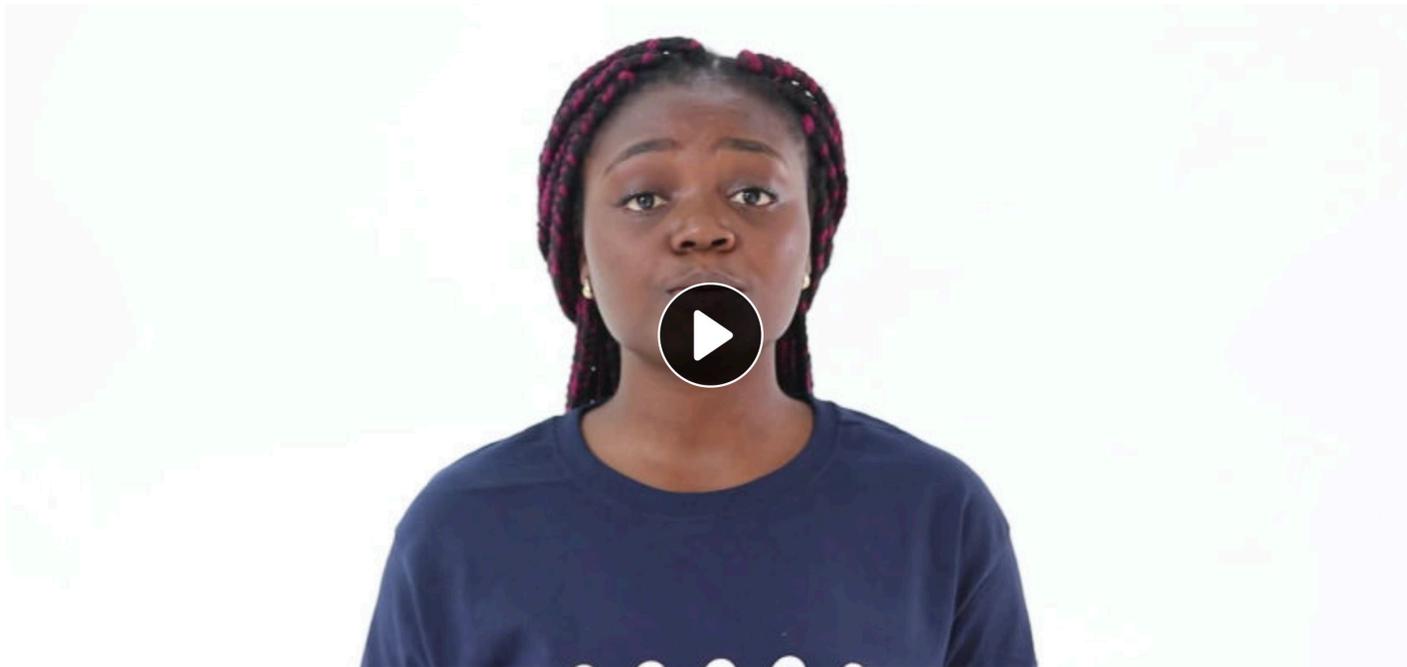
## Goal 14: Making Waves, Saving Fish.

Patrick Dwomfuor, an Assistant Lecturer at Ashesi, is exploring upwelling of oceans as part of his doctoral thesis. Upwelling is the process whereby cold water and nutrient from the deep part of the ocean is displaced to the surface of the coastlines. The cold water from upwelling affects the environment and the local climate. It cools the weather, increases biological activities of nutrient-rich phytoplankton and zooplankton food for fish and other living organisms in the ocean.

Patrick is analysing these upwelling events using satellite data to predict its patterns. Measuring the strength of upwelling over a time enables prediction in fisheries. Additionally, the knowledge could help minimize overfishing, manage climate change, increase biological activities in the ocean, and provide sustainable use of the marine and coastal ecosystems.

**50%**  
*of the world's fisheries landings are in coastal upwelling regions, although coastal upwelling regions account for only one percent of ocean surface. Coastal upwelling ecosystems, are some of the most productive ecosystems in the world and support many of important fisheries. This research helps provide insights into protecting the upwelling ecosystems along Africa's coasts.*

## The Coast busters: Saving the Coast One Bottle at a time in the Sea



<https://video.igem.org/w/8ddf129b-1df3-4612-85c7-0c643c4a52dd>

This project aims to design a living sea defense system (bio-concrete tetrapods) by incorporating organisms capable of carrying out plastics and bio- cementation bioremediation. Plastics used will be plastic waste found in the sea.

**Method:** Several organisms have been designed and engineered to achieve the goals of the project. The plastic degradation is achieved by introducing genes responsible for the plastic degradation to its constituent monomers, (ethylene glycol and terephthalate). The bio-cementation is achieved by adding genes capable to undertake the hydrolysis of urea inducing precipitation of the calcium carbonate and thus cementation. The organisms have a self-regulation ability to maintain a balanced environment and self-repair mechanisms induced by increase light in the tetrapod due to cracking. In addition, the tetrapod contains bioluminescent organism for a natural illumination of the environment.

In Ghana the coastal zone covers 6.5% of the 238,535km<sup>2</sup> land area (Armah & Amlalo, 1998). Coastlines worldwide account for about 26 percent of all biological diversity, composed of, but not limited to, seabirds, clams, crabs, starfish, anemones, fish, kelp, and marine mammals, among many others, is a beautiful place, with many different types of natural communities (PewTrust and National geographic)

In Ghana the coastal area is also “home to more than a quarter of the country’s population and contributes as much as 80% of the country’s annual capture fish production” (NDF, Worldbank WACA report, 2013, p.1). However, coastal erosion and flooding resulting from the impacts of human activities, inappropriate systems put in place for managing coastal ecosystems, climate change and sea-level rise remain major threats to coastal dwellers and their livelihoods. Severe erosion rates have been recorded for the eastern coast particularly following the construction of the Akosombo hydroelectric dam (Ly, 1980). Erosion has affected the social and economic life of local populations, threatened cultural heritage and hindered coastal tourism in addition to the destruction of houses and other physical infrastructure. Some of the most affected communities are found in the Keta Municipality, which forms part of the eastern coast (about 149km) stretching from Aflao at the Ghana/Togo border in the East to the Laloi lagoon in Prampram to the west. (NDF, Worldbank WACA report, 2013, p.1).

Ashesi’s bioengineering faculty member, Dr. Rosca and students in her bioengineering class sought out biological solutions to mitigate the coastal erosion problem to contribute to ensuring the conservation, restoration and sustainable use of terrestrial habitation (SDG 15.1). The proof of concept is under discussion with the Environmental Protection Agency, Ghana. It is our hope that it will potentially impact terrestrial and climate related policy. The goal of the project was to design a living sea defence system (bio-concrete tetrapods) by incorporating organisms capable of removing plastics along the coastline and converting to bio-cementation and bioremediation. It was to “take urgent and significant action to reduce the degradation of natural habitats and halt the loss of biodiversity.” (SDG 15.5)

The method used by Dr. Rosca and her students involved designing and engineering several organisms that have a self-regulation ability to maintain a balanced environment and self-repair mechanisms induced by increased light in the tetrapod due to cracking. The plastic degradation is achieved by introducing genes which have the capability and responsibility of degrading plastics to their constituent monomers (ethylene glycol and terephthalate). The bio-cementation is achieved by adding genes capable of undertaking the hydrolysis of urea -inducing precipitation of the calcium carbonate which results in cementation. The intent is to restore degraded land and soil (SDG 15.3). In addition, the tetrapod contains bioluminescent organisms for a natural illumination of the land and environment. Consequently, using bio-engineering techniques to reduce coastal erosion through bio-cementation, purging the sea of plastic pollution, and producing smart illumination of the coast, saves and improves the coastal area.



## Goal 15: Gold FEDS Gold detection, Liberation and Quantification.

At Ashesi we are encouraged to solve real life problems. One such challenge is illegal mining using harmful chemicals, which disturbs land-based ecosystems and affects sustainable livelihoods for generations to come. Students at Ashesi with their professor, Dr. Rosca, had one objective when they came up with the Gold FEDS project and it was to develop a bio-sensor for gold quantification; providing a non-toxic approach for small scale mining to extract gold from refractory ore.

The process enables routine monitoring of the ore before a mining endeavour is undertaken. It involves genetically engineered *E. coli* with a gold specific gold binding protein (golB) attached to a green fluorescent protein (NowGFP) as a donor partner, an acceptor partner made up of golB, and a red fluorescent protein (mRuby2). In the presence of free gold, the two parts are in close proximity thus an energy transfer can take place between the donor and acceptor proteins and the red protein will be excited by the donor giving off a fluorescent signal.



## Preserving our Land on Campus

On Green Ghana Day, the Ashesi Community members, including its President Dr. Awuah, engage in planting trees on campus. It is hoped that this remains an act to better protect our environment! In the photo is Dr. Awuah and the Director of Operations from the Ghana Forestry Commission, Hugh Brown.

Additionally, with Ashesi campus' slopes with broad shallow valleys and ridges running in the east-west direction foster arid conditions. The soil's condition consequently, necessitated the use of drought-tolerant plants such as; bougainvillea, the agaves, the acacias, royal palms, the euphorbias, ground covers (rheo-discolours), sedum, and coneflowers for the campus landscape sustained look and to minimize water use for landscaping and campus greening.





## 16 PEACE, JUSTICE AND STRONG INSTITUTIONS



### Goal 16: Building peace through national collaborations on conflict resolution workshops for local leaders.

#### Queen Mothers of Peace

Ashesi's Dr. Enyonam Kudonoo has advised the National Peace Council of Ghana for decades on conflict prevention, and especially during presidential election periods in Ghana. In 2020 she re-engaged in her decades work with local leaders and youth in tertiary education on building mediation skills. She focused on queen mothers in the Greater Accra Region of Ghana, to equip them with mediation skills necessary to effectively play their roles in dispute prevention and resolution. Thirty-four (34) Queen Mothers participated and enhanced their ability to resolve disputes and to consider effective approaches to dispute prevention.

#### Visuals Speak when Voices Fear to Speak

Faculty research spans principles that undergird peace and conflict negotiation, or causes of conflict, and ambiguous behavior which represents both peace and conflict depending on how political behavior impacted families. Dr. Oduro Frimpong emphasizes how some religious behavior deemed as fakery is often depicted by Ghanaian art which impacts communities. He investigates specific accusations of fakery related to some Christian religious leaders' acts in contemporary Ghana, moving images and other popular visual forms' (such as cartoons) contribution to assessments and accusations of fakery, the impact of religious leaders' actions that citizens consider fake. He argues that the various analyzed cartoons and memes by the community contribute to ongoing public discussions of the religious leaders' fakery as a conduit to make public accusations of fakery on Ghanaian religious matters, where it is often suppressed.



## Goal 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development

We understand that the SDGs can only be achieved by working together with partners. Ashesi supports the SDGs through cross-sector collaboration, the promotion of best practices, and the publication of data.

- **The Education Collaborative** convenes public and private higher education institutions from across Africa to harness best practices in teaching, management, and administration. Over 150,000 university students have been impacted in employability prospects and we have partnered with over 350 universities and engaged them at varying levels.
- **International university partnerships** enhance global cooperation in science, technology and innovation, and enhance knowledge. Ashesi signed new partnerships in 2018 with Connecticut College, Kenyon College, Arizona State University, Mälardalen University in Sweden, and Instituto de Empresa in Spain. In 2019, Ashesi joined the Association of Commonwealth Universities, which helps to connect universities in their work on the SDGs.
- **Government collaboration** is an important component of Ashesi's work to achieve the SDGs. Examples include the GCIC, funded by a grant from the Global Affairs Canada (see SDG #13) and the Ashesi Venture Incubator, funded by USAID (see SDG #8).
- **Faculty research** is tracked in relation to the SDGs and many publications include multi-national co-authors.

- Many global networks known for their contributions to the attainment of the SDGs have also partnered at varying levels of engagement with Ashesi University. They include but are not limited to the [Association of Commonwealth Universities \(ACU\)](#) \_ where we developed our skills in Blended Learning (SDG 4); [Global Business School Network \(GBSN\)](#) \_ where we continue to grow in entrepreneurship and economics;; [Open Society Universities Network \(OSUN\)](#) \_ where we have expanded our liberal arts offerings (SDG 4) and U7+ \_ where we have added our voice to principles of justice and peace (SDG16). Other global partnerships that help Ashesi implement and revitalize sustainable development include [Global Affairs Canada](#) \_ we have expanded green entrepreneurship for women (SDG 13 and 5) WHO \_ where we are building leadership skills in health workers (SDG 3); [ETH](#) \_ building Africa’s capacity for automated production (SDG 9); [UNICEF](#) \_ where we are part of the thought leadership on Quality education for all (SDG 4), [GCIC](#) and [IFC](#) \_ Infrastructure for education (SDG 4 & SDG 9); [USAID](#) \_ helped Ashesi develop a venture incubator (SDG 8), [Africa Health Collaborative](#) where we are working on Health Employability, Health Entrepreneurship and the Health Ecosystems and [STOP NCD](#) where we bring technology to prevent and monitor non communicable diseases in developing countries such as Ghana, Burkina Faso and Niger in West Africa

### Partnering for a Multiplier Effect

Ashesi University and ETH Zurich, Switzerland have partnered and collaborated with industry to develop a Master’s Programme in Mechatronic Engineering established on Ashesi’s campus, in Ghana, West Africa. The programme curriculum co-designed by the triad with an emphasis on the African context integrates core areas of automation and production engineering and leadership modules such as decision-making, economics, and management to help students build strong Engineering careers. Courses are co-taught in tandem with Ashesi and ETH faculty. The programme is intentional to recruit students from the lower 20th decile from different regions in Africa and provides full comprehensive scholarships sponsored by the industry partners. Ashesi also provides various forms of scholarships and ETH supports the operations of the programme. Industry partners were selected because of their operational presence on the continent and they include ABB, Barry Callebaut, Bühler, HPW, Holcim, Nestlé, and Tetra Pak. The involvement of these industry partners present in Africa, ensures that the programme addresses regional market needs. In addition to providing mentorship and industrial internships, our industry partners offer job opportunities in the region after a student’s successful completion of the programme. Students also indirectly learn how collaboration and partnerships work and the richness in knowledge transfer which emerges from such associations.

For example, with expert faculty from both Ashesi University and ETH Zurich students synthesize a variety of knowledges as seen from the research sampling of faculty below:

- A. Meike Akveli.  
[Improving mathematics diagnostic tests using item analysis](#)  
[The perceived impact of mathematics competitions on teachers and their classrooms in Puerto Rico, Switzerland, and the UK](#)
  
- B. Gudela Grote.  
Research Project: [Facing Change With Stability: The Dynamics of Occupational Career Trajectories](#)  
Research Project: [Boundaries for career success? How work–home integration and perceived supervisor expectation affect careers](#)
  
- C. Eleni Chatzi  
[Data-Centric Monitoring of Wind Farms: Combining Sources of Information](#)  
[Effects of improved on-farm crop storage on perceived stress and perceived coping in pregnant women—Evidence from a cluster-randomized controlled trial in Kenya](#)
  
- D. Thomas Bernauer  
[Policy framing, design and feedback can increase public support for costly food waste regulation](#)
  
- E. Edoardo Mazza  
[In-vitro investigation of endothelial monolayer retention on an inflow VAD cannula inside a beating heart phantom](#)
  
- F. Fritz Brugger  
[CSR and local conflicts in African mining communities](#)
  
- G. Fritz Brugger  
[Do Social Investments by Mining Companies Harm Citizen-State Relations? Experimental Evidence from Burkina Faso](#)

- H. Thomas Bernauer  
[Trade policy announcements can increase price volatility in global food commodity markets](#)
- I. Thomas Bernauer  
[Economic and political drivers of environmental impact shifting between countries](#)
- J. Thomas Bernauer  
[Environmental Concern Leads to Trade Skepticism on the Political Left and Right](#)

## Africa Health Collaborative

Ashesi University is one of the 8 African Universities in collaboration with the University of Toronto and MasterCard Foundation focused on providing sustainable health support to the continent, with a “vision of 3 million youth skilled to work in Africa’s health sector. We are an African health-focused collaborative dedicated to creating jobs through boosting youth employability, sustainable development, and enhancing primary healthcare ecosystems in Africa, by Africans, for Africans. Our transformative partnership is anchored in Africa and builds on networks that already exist on the continent and beyond. Together we are committed to prioritizing local, indigenous knowledge and expertise to create a strong foundation that cultivates self-sustaining communities and meaningful impact.”



