

A Green Action Plan for Ghana Christian University College – 2017-2022

1. Energy efficiency

Energy efficiency is making changes to existing buildings or making strategic choices when designing new buildings that consider the energy use and life-cycle costs during the capital construction phase. GhanaCU will make all the necessary effort to incorporate energy efficiency into its existing buildings, large energy systems, and new construction. The university will reduce energy use by over 10% by 2022. These savings will be realized in our utility bills but also through rebates and other incentives provided by our energy utilities.

GhanaCU will set even more aggressive goals for energy use in our buildings considering their age and use. These goals will be met through physical improvements to some of our buildings and strategically managing energy-related policies and programs.

2. On-campus renewable energy

We can only get so efficient in our use of electricity, natural gas, and other fuels. We can look to renewable energy to provide clean power for some part of our demand. On-campus renewable energy is already being used in a small way through solar panels installations. GhanaCU will explore on-site installations of solar thermal, photovoltaics, and wind turbines in the coming years as these technologies become more cost-effective and able to be integrated with facility operations and academic research.

3. Carbon offsets

Carbon offsets represent reductions in greenhouse gases that compensate for emissions from somewhere else. Offset projects such as methane capture from biodigesters or landfills on campus will help the university reduce our carbon footprint.

4. Carbon sequestration

Terrestrial, or biologic, carbon sequestration is the process by which trees and plants absorb carbon dioxide, release oxygen, and store carbon. Geologic sequestration is one step in the process of carbon capture and sequestration, and involves injecting carbon dioxide deep underground where it will stay permanently. GhanaCU's beautiful parks or grass surrounded by hundreds of trees and our botanical garden will support our carbon sequestration strategy.

GhanaCU Trees

GhanaCU student projects have inventoried tree communities on Amrahia Campus. We estimate annual sequestration for this Campus to be in a range between 3 and 8 metric tons for 502 trees (average 30cm diameter) surveyed. GhanaCU's trees are reducing our carbon footprint, but only by a small percentage when considered against our total greenhouse gas emissions.

Landscapes and soils

GhanaCU's campus is made up of traditional park-like landscapes including a mix of buildings, roadways, other hardscapes (permeable pavers and concrete), turf, and gardens. Each of these surfaces support different ecologies that breakdown and sequester carbon and other atmospheric pollutants at various rates. Restoring ecological function by introducing native species, either as part of the ornamental landscape can increase a soil's sequestration rate and capacity. Ecological restoration and sustainable vegetable garden practices on campus will help optimize the carbon sequestration rates of GhanaCU's soils.

5. Teaching and Research

Teaching

One of our most significant impacts as a university is how students are prepared in order to develop solutions on the pressing today's issues. This couldn't be more true in addressing climate change. Faculty members will be encouraged to incorporate green technology and green business ideas and sustainability topics into their teaching and research (see examples in sidebar). In an effort to promote more teaching of climate science and solutions, we will develop programs that provide climate change resources for faculty and incentives to integrate climate science into the academic experience for Loyola students.

Research

In order to inculcate the interest in issues in climate change science across the faculties in GhanaCU, research and teaching resources will be provided to faculty and students. Small research grants will be administered by the Office of Research Service (ORS) as and when funds are available. Teaching courses providing global and local examples of the climate change, Green energy, Green urbanism, Green buildings, Green IT and Green business will be shared in various seminars.

6. Accountability

Like any plan, our effort will not be successful without accountability. GhanaCU will therefore hold itself accountable through the following actions:

2. Hold an annual public meeting to discuss progress and challenges in meeting or Green and Climate Change goals. This may be chaired by a government

representative from the Environmental Protection Agency (EPA), Ministry of Environment or Ministry of Energy.

3. Give an annual presentation to University Senate (Academic Board).

7. Converting waste into energy

The Yeshua Tech Biodiesel Program focuses on production and research efforts centered on using waste products to create energy. Its products are designed to utilize University and some public waste to make usable products with the long-term goal of establishing a zero-waste process, especially on Campus.

This student-run enterprise is the first and only school operation producing biodiesel in the country.

In October 2016, the Green Energy Engineering final year class started to explore Biodiesel fuel production on the GhanaCU Amrahia Campus. Their aim to initiate the production of biodiesel oil by first building their own small reactor and use this to produce the biofuel from Waste Kitchen or Vegetable oil. The by-product, glycerol (also called glycerin) is used in producing soap for washing the toilets on campus.

The Yeshua Tech Biodiesel Program has set up a club responsible for the collection of waste oil from restaurants and homes. The same club also collects discarded watermelon seeds for the production of biodiesel.

This research program offers opportunities and hands-on experience that bring together students, faculty, staff, and community mentors to engage in interdisciplinary discussion and action around issues of environmental sustainability.

The Yeshua Tech Biodiesel Lab is run by student workers. These students build small domestic biodiesel processors and also oversee the production and sale of biodiesel, BioSoap, tiki torch fuel, GhanaCU hopes that this program can serve as a model for the rest of the University and general public.

8. What are we doing to address Climate Change?

- We **turn off lights and electronics** when not in use.
- We **do not cool (air condition) spaces** that are not being used.
- We **use natural daylight and fresh air** when we can to enhance the health and performance of students in learning spaces and of staff in offices.

Recycling, Reducing and Reusing at GhanaCU

Sharing many of the same benefits of recycling, reducing and reusing are important steps you can take to reduce your impact on the environment.

Recycling Waste

Recycling allows us to reduce the amount of raw materials and energy required to create new products.

1. Plastic, Glass, Aluminium, Paper

Why recycle plastic, glass, aluminum and paper?

Recycling these products reduces the amount of waste sent to landfills and incinerators. By recycling these items, you reduce the amount of energy required to create new products. Rather than starting from scratch, recycling allows many industries to reduce their energy inputs to create the products we consume.

Where can I recycle Plastic, Glass, Aluminum and Paper?

On campus, you will find clusters of large black containers outdoors labeled for paper, plastic/glass or aluminum. You will also find labeled blue or black bins inside some of the buildings on campus. All recycling containers throughout the University are labeled.

2. Printer Cartridges

Why recycle printer cartridges?

In addition to reducing waste and conserving resources, we recycle printer cartridges to prevent toxic chemicals and dyes from contaminating the environment.

What types of printer cartridges does the University recycle?

The University accepts all ink jet cartridges for PC and Apple compatible printers except for those, which are made of non-recyclable products. Large ink and copy cartridges can be dropped off at the campus computer laboratory. These large cartridges can also be returned to the vendor from whom you purchased the cartridge.

Where can I drop off printer cartridges?

You can find a printer cartridge recycling box in the computer laboratory. There is

also a drop off bin in the Kalb Technology Park.

Reducing Waste

Reducing simply means consuming and throwing away less. You can do this by purchasing more durable, long-lasting goods and by avoiding disposable products. Many of the items you throw away are still usable, even though you may no longer need it for its designed purpose. Next time you feel compelled to throw something in the bin, spend a second to think if it could be of use in a different capacity or to someone else.

1. Don't Dump, Donate

Everyone has things they need to get rid of now and then, but that doesn't necessarily mean throwing these things away. If you don't need it and it can't be recycled, consider giving (or even selling) it to someone who can reuse it.

2. Save a Tree, Conserve Paper

Print double-sided. Unfortunately most campus printers are not currently able to print double-sided, but you can easily do it on your own printer by printing odd pages, flipping and reloading the paper, then printing the even pages on the other side.

3. Energy efficiency

Most of the energy consumed in Ghana is produced from non-renewable sources. Our energy dependency can be costly in both economic and environmental terms. With the dumsor crisis and energy prices on the rise, a more energy efficient building can mean significant savings on your electricity and/or cooling bills. Environmental problems associated with the burning of fossil fuels range from smog pollution to global warming due to rising CO₂ emissions. The University is still doing a lot that we can do to reduce our own energy consumption.

Lighting

Turn out the lights when you leave a room, whether it's your own or a common space like a lounge, shared bathroom or classroom.

Cooling

Turn radiators or air-conditioners down or off when you are not in your room/apartment. It actually takes less energy to quickly cool a space when you return than it does to keep it at a constant temperature throughout the day.

Appliances

Energy Star ratings. When purchasing appliances, look for the logo. This label indicates an energy efficient product. For more information on the Energy Star program, see www.energystar.gov.

Share a fridge. Mini fridges consume a lot of energy and are generally not full.

Turn off electronic devices (computers, printers, etc.) when not in use.

Computers: set computers to automatically enter sleep mode after about 15 minutes of inactivity.

Unplug electronics. Appliances with built in digital clocks (like microwaves and VCRs), remote controls (TVs and radios), and appliances with transformers continue to draw energy as long as they're plugged in, even if they are supposedly "off." If you are not planning on using these appliances for a while, unplug them.

The Botanical garden

For birds, butterflies, squirrels, rats and all your nature needs, GhanaCU offers pretty much everything. The Amrahia campus is home to uncountable species of these animals. The Green Campus Initiative plans to create and maintain a fruit trees and **native plants garden** on the western section of campus.

Eating and drinking green

Healthy, environmentally friendly food choices become easier to make every year. Campus dining places and drinks sold now label vegan/vegetarian friendly options. Some drinks sold on campus are prepared by members of the university community and these are drinks produced from vegetables grown by students and some faculty members.

Green Campus Initiative (GCI)

The Green Campus Initiative (GCI) at the Ghana Christian University College is dedicated to reducing the environmental impact of the University. GCI promotes sustainable practices that include energy efficiency, waste reduction, and improved recycling. GCI works closely with all members of the university community to achieve our objectives. Its purpose is to encourage a culture of sustainability on campus that engages students, lecturers and administrative staff members in efforts to protect the environment and make responsible environmental choices.