

16th Quadrennial General Conference (QGC): Shaping the Future of Higher Education for Innovation and Sustainable Development in Africa

Monday 21 July 2025 - Friday 25 July 2025

Themes

Policy and Advocacy for Transforming Higher Education

The traditional model of higher education, characterized by rigid curricula and compartmentalized disciplines, is increasingly seen as inadequate in addressing contemporary global challenges. The World Economic Forum emphasizes that the future of education must be agile, interdisciplinary, and inclusive to prepare students for an ever-evolving job market and societal needs (Schwab, 2016). To achieve this, HEIs must undergo significant transformations in their structures, policies, and pedagogical approaches.

As exemplified by the University of British Columbia which has incorporated sustainability into its core curriculum, ensuring that students from all fields understand and address sustainability issues (UBC, 2019), Africa needs transformative educational policies at the local, national, and continental levels that promote the integration of sustainability and innovation across all disciplines; those that encourage collaborations between HEIs, industry, and government to foster innovation and practical solutions to real-world problems; and those that ensure equitable access to higher education, particularly for marginalized and underserved communities. Other educational policies should incentivize research focused on sustainable solutions and technological innovations. Highlighting successful examples of HEIs that have effectively integrated innovation and sustainability into their frameworks can inspire and guide other institutions. The Horizon Europe program by the European Union exemplifies this by funding projects that align with the UN's Sustainable Development Goals (European Commission, 2020).

Artificial Intelligence and Technology-Driven, Teaching and Learning in Higher Education Institutions

The advent of artificial intelligence (AI) and advanced technologies is revolutionizing higher education and offering unprecedented opportunities for innovation and sustainable development. Adaptive learning platforms like Coursera and edX tailor educational content to individual student needs to expand access to quality education. AI-powered smart classrooms, equipped with interactive whiteboards, real-time translation, and virtual labs, enhance the teaching and learning experiences while Virtual Reality (VR) and Augmented Reality (AR) create immersive learning experiences in fields such as medicine and architecture, allowing students to practice skills in a simulated environment (Stanford University, 2020). The University of Southern California's Center for AI in Society has developed AI tutoring systems that provide personalized assistance to students in subjects like mathematics, improving learning outcomes and reducing achievement gaps (USC, 2020). There are several successful African case studies. The University of Cape Town (South Africa) and Strathmore University (Kenya) have integrated technology-driven learning through the use of AI for predictive analytics to improve student retention and success rates. The University of Nigeria, Nsukka, has developed an AI-powered e-learning platform that includes virtual labs and AI tutors to support students in remote areas. Ashesi University focuses on using technology to foster innovation and entrepreneurship among students and have incorporated AI and machine learning into their curriculum, encouraging students to develop tech-driven solutions for local challenges.

More emerging AI-powered tools and technologies are accelerating research by automating data analysis, enabling researchers to focus on higher-order thinking and innovation. These tools are

also improving administrative efficiency and fostering innovative research. AI now reviews vast amounts of educational data to inform decision-making processes in HEIs. They can optimize campus operations for sustainability, from energy management to waste reduction. Smart campus initiatives employ AI to monitor and reduce energy consumption, contributing to its sustainability goals.

Governments and HEIs must, therefore, invest in the necessary infrastructure to support AI and technology integration, including high-speed internet, advanced computing resources, and cybersecurity measures. However, the implementation of AI in education must be guided by ethical considerations, ensuring data privacy, transparency, and fairness. The European Commission's Ethics Guidelines for Trustworthy AI is a useful framework for developing responsible AI policies (European Commission, 2019).

Curricula Re-engineering and smooth Credit Transfer System

A critical aspect of the capacity of HEIs to innovate and promote sustainable development is the re-engineering of curricula to be more adaptive and integrative, and the establishment of seamless credit transfer systems. Traditional curricula often lack the flexibility and interdisciplinary focus required to address the complex and interconnected issues of the modern world. Modern challenges, such as climate change and social inequality, require solutions that draw from multiple disciplines. Shifting from a time-based to a competency-based model ensures that students acquire the necessary skills and knowledge at their own pace. Embedding sustainability principles across all disciplines is also crucial, ensuring that all graduates are equipped to contribute to sustainable development.

Collaborating with industry to co-design curricula ensures that programs remain relevant and aligned with job market needs while a robust credit transfer system is essential for fostering student mobility, encouraging lifelong learning, and ensuring that students can easily transition between institutions without losing their academic progress. This system is pivotal in creating a more flexible and accessible higher education landscape. The Bologna Process in Europe (Bologna Process, 2019) and the European Credit Transfer and Accumulation System (ECTS) respectively aim to ensure comparability in the standards and quality of higher-education qualifications, and to facilitate student mobility and academic recognition across Europe (European Commission, 2020).

Initiatives in Africa are numerous. The African Union launched the African Higher Education Harmonization Strategy to standardize curricula across member states and establish a smooth credit transfer system. The Association of African Universities (AAU) has also launched several similar initiatives to improve the quality of education and facilitate regional integration. The Inter-University Council for East Africa (IUCEA) has developed the East African Community (EAC) Common Higher Education Area, a framework for curriculum re-engineering and a credit transfer system among universities in East Africa. The Pan Africa University (PAU), an initiative of the African Union, offers graduate programs with a harmonized curriculum across its institutes in different African countries to promote a credit transfer system that allows students to take courses at different PAU institutes and have their credits recognized universally. The Conseil Africain et Malgache pour l'Enseignement Supérieur (CAMES) has developed a regional qualification framework for Francophone Africa to ensure the quality and comparability of higher education programs across member states.

Utilizing online platforms to manage credit transfers can simplify the process for students and

administrators. The Transferology platform in the U.S. helps students see how their credits will transfer between participating institutions (Transferology, 2021). These are food for thought that guide the conference subtheme on curriculum re-engineering and smooth credit transfer systems.

Collaborative Research and Capacity Building

Capacity building ensures that research efforts contribute to societal well-being and long-term development goals. As global challenges such as climate change, health crises, and economic disparities grow increasingly complex, HEIs must adapt by promoting interdisciplinary research and enhancing the skills and knowledge of their stakeholders. Collaborative research brings together diverse perspectives, expertise, and resources to address multifaceted global issues. By breaking down traditional disciplinary boundaries, it encourages innovative solutions and enhances the impact of research outcomes. Collaborative research also enables the sharing of resources, such as data, laboratories, and funding while it also offers continuous professional development for faculty and researchers on current with emerging trends and methodologies.

Intercontinentally, the Carnegie African Diaspora Fellowship Program (CADFP) supports collaborative research and capacity-building projects between African universities and African diaspora scholars with the aims of building research capacity, improving teaching, and fostering innovation in higher education institutions.

On the African continent, the AAU's pivotal role in promoting research collaboration and capacity-building initiatives among its member institutions is unquestionable. The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM), a consortium of 129 universities in 38 African countries is focused on strengthening collaborative agricultural research and training to enhance food security and agricultural development. The West African Science Service Center on Climate Change and Adapted Land Use (WASCAL) is a collaborative initiative among West African countries that focuses on climate change research and capacity building by providing graduate training programs and supporting collaborative research to address climate change and land use challenges. The African Research Universities Alliance (ARUA) enhances research capacity through training and development programs, fostering a strong research culture in African universities (ARUA, 2020).

These examples and citations provide a comprehensive overview of how collaborative research and capacity building are shaping the future of higher education in Africa, supporting innovation, and promoting sustainable development across the continent.

Climate Change, Green Energy and Blue Economy

Higher education institutions have a critical role in addressing climate change through research, education, and community engagement by integrating this into their core activities to foster a generation of leaders equipped to tackle environmental challenges. Incorporating climate change education across all disciplines ensures that students understand the multifaceted impacts of climate change and are prepared to develop innovative solutions. Universities can also engage with local communities and local stakeholders in developing and implementing sustainability initiatives on and off campus.

Green energy is vital for mitigating climate change and achieving sustainable development. Offering specialized programs in renewable energy technologies equips students with the skills needed to

advance the green energy sector. Driving innovation in green energy can be achieved through dedicated research centers. Collaborating with industry enhances the practical application of green energy technologies.

The blue economy, which encompasses the sustainable use of ocean resources for economic growth, improved livelihoods, and ocean ecosystem health, is an emerging focus for HEIs. Offering programs in marine sciences and oceanography prepares students for careers in the blue economy.

University of Cape Town's African Climate and Development Initiative (ACDI) offers graduate programs and conducts research on climate resilience, green energy, and sustainable development. The Nelson Mandela University, South Africa has established an Ocean Sciences Campus to focus on the blue economy while the University of Dar es Salaam's Centre for Climate Change Studies (CCCS) conducts research and offers training programs on climate change adaptation and mitigation.

Entrepreneurship Skills and Competencies

To foster innovation and sustainable development, HEIs must equip students with entrepreneurship skills and competencies. These skills are crucial for driving economic growth, creating sustainable enterprises, and addressing global challenges. Entrepreneurship drives economic growth by creating jobs, fostering innovation, and stimulating local economies. Entrepreneurship education cultivates creativity, critical thinking, and problem-solving abilities. It prepares students to identify opportunities, develop innovative solutions, and build sustainable ventures. HEIs that prioritize entrepreneurship education contribute to a vibrant and dynamic economy. It also encourages the development of sustainable enterprises that address social and environmental challenges. For example, the University of Cape Town's Bertha Centre for Social Innovation and Entrepreneurship focuses on building businesses that create positive social impact (UCT, 2021).

The African Leadership University (ALU), Rwanda and Mauritius has a curriculum designed to develop entrepreneurial skills and leadership competencies. The university offers programs that focus on real-world problem-solving, critical thinking, and business development. Strathmore University's @iLabAfrica, Kenya is an innovation and incubation center at Strathmore University that supports technology-driven entrepreneurship. It offers training programs, startup incubation, and support for young entrepreneurs. The University of Cape Town's Graduate School of Business (GSB) Solution Space provides an ecosystem for early-stage startups and a hub for innovation. It provides students and entrepreneurs with access to resources, mentorship, and training programs in entrepreneurship.

Embedding entrepreneurship education across various disciplines ensures that all students, regardless of their field of study, gain essential entrepreneurial skills. Providing hands-on experiences through internships, incubators, and accelerators helps students apply theoretical knowledge in practical settings. Encouraging collaboration between students from different disciplines promotes diverse perspectives and innovative solutions. Organizing competitions and providing funding opportunities incentivizes students to develop and pitch their entrepreneurial ideas.

Funding Infrastructural Development in Higher Educational Institutions

Adequate and modern infrastructure supports cutting-edge research, enhances the learning environment, and fosters collaboration. This subtheme explores the importance of funding infrastructural development in HEIs, highlighting strategies and successful examples from around the world.

Modern infrastructure, such as smart classrooms and well-equipped laboratories, improves the quality of education and student engagement. State-of-the-art facilities support diverse learning styles and foster a collaborative and interactive environment. Advanced research facilities and technology are crucial for conducting high-quality research. These resources enable HEIs to remain at the forefront of scientific and technological advancements, contributing to innovation and sustainable development. Sustainable infrastructure, including energy-efficient buildings and renewable energy installations, reduces the environmental footprint of HEIs and sets an example for students and the community.

Governments have continued to play a crucial role in financing HEIs' infrastructural projects through direct funding, grants, and subsidies. In the United States, the Higher Education Emergency Relief Fund (HEERF) provides substantial financial support to HEIs for infrastructure and other needs (U.S. Department of Education, 2021). Collaborations between HEIs and private sector partners can leverage additional resources for infrastructure projects. Engaging alumni and philanthropic organizations can generate significant funding for infrastructure. Harvard University's extensive fundraising campaigns have successfully financed numerous infrastructural projects, enhancing its facilities and research capabilities (Harvard University, 2021).

Exploring innovative financing models, such as green bonds and social impact bonds, can attract investment for sustainable infrastructure projects. The University of Edinburgh issued a green bond to finance its sustainable campus initiatives, demonstrating a commitment to sustainability and innovation (University of Edinburgh, 2019). This World Bank-supported African Higher Education Centers of Excellence initiative has significantly improved the infrastructure of participating universities in Africa, enhancing their capacity for advanced research and training in various fields, including science, technology, engineering, and mathematics (World Bank, 2019). Likewise, the AfDB has funded several projects aimed at enhancing higher education infrastructure across Africa. Notable projects include the construction of modern laboratories, libraries, and ICT facilities in various universities.

Indigenous Knowledge and Presentation of Environment Through Culture

Indigenous knowledge and cultural practices offer invaluable insights into sustainable development and environmental conservation. Integrating these perspectives into higher education can foster innovation and a deeper understanding of sustainability. Indigenous knowledge encompasses the traditional wisdom, practices, and skills developed by indigenous communities over centuries. It is deeply rooted in local environments and ecosystems, offering sustainable approaches to resource management and conservation. Indigenous communities have long practiced sustainable living, maintaining a harmonious relationship with nature. Their knowledge of local biodiversity, water management, and agricultural practices can inform modern sustainability efforts (Berkes, 2018).

Indigenous knowledge systems are adaptive and resilient, providing effective strategies for coping with environmental changes and disasters. Incorporating these strategies can enhance the resilience of communities facing climate change (Folke, 2006). Preserving indigenous knowledge is crucial for maintaining cultural identity and heritage. HEIs can play a vital role in documenting and promoting these practices, ensuring their transmission to future generations. Thus, incorporating indigenous knowledge into academic curricula across disciplines can enrich students' understanding of sustainability. Collaborating with indigenous communities allows HEIs to integrate practical knowledge and cultural perspectives into their programs. Supporting research projects that focus on indigenous knowledge and sustainable practices can lead to innovative solutions. Establishing programs dedicated to the documentation and preservation of indigenous languages, arts, and cultural practices ensures the continuity of these traditions. Emphasizing indigenous knowledge and cultural practices enriches the academic environment, fostering respect for diversity and inclusivity. It also provides a broader perspective on sustainability and environmental stewardship.

The University of Botswana's Okavango Research Institute (ORI) focuses on research and education related to the sustainable management of the Okavango Delta. The institute integrates indigenous knowledge systems with scientific research to address environmental challenges and promote conservation. Mbarara University of Science and Technology's Indigenous Knowledge Centre, Uganda focuses on documenting and promoting indigenous knowledge systems. It collaborates with local communities to preserve cultural practices that support environmental sustainability, such as traditional agricultural methods and herbal medicine. The Centre for African Studies at Eduardo Mondlane University, Mozambique promotes the integration of indigenous knowledge into higher education curricula and emphasizes the importance of traditional ecological knowledge in environmental management and conservation.

Combining traditional knowledge with modern scientific methods can also lead to innovative solutions for sustainable development. This interdisciplinary collaboration enhances the relevance and impact of research and education. Incorporating indigenous knowledge and cultural preservation into higher education is therefore crucial for fostering innovation and sustainable development. By developing curricula that include indigenous perspectives, partnering with indigenous communities, and supporting relevant research, HEIs can play a pivotal role in promoting sustainability and cultural preservation.

Contribution of Higher Education to Sustainable Development Goals (SDGs)

This subtheme note explores how HEIs can contribute to the SDGs, highlighting strategies and successful examples from various institutions. HEIs educate future leaders and professionals, equipping them with the knowledge and skills necessary to address global challenges. As hubs of research and innovation and by aligning research agendas with the SDGs, HEIs can develop solutions to pressing global issues such as poverty, inequality, climate change, and health.

Integrating the SDGs into academic programs ensures that students understand the importance of sustainable development. Encouraging faculty and students to conduct research on topics related to the SDGs fosters innovation. The Massachusetts Institute of Technology (MIT) created the Abdul Latif Jameel Water and Food Systems Lab (J-WAFS) to address global water and food challenges, directly aligning with several SDGs (MIT, 2021).

HEIs can lead by example by adopting sustainable practices on campus, including energy-efficient buildings and waste reduction programs, supporting SDG 11 (Sustainable Cities and Communities). Forming global partnerships enhances the ability of HEIs to contribute to the SDGs. The Kwame Nkrumah University of Science and Technology (KNUST), Ghana hosts the Centre for Sustainable Development, which focuses on renewable energy, sustainable urban planning, and environmental management while the University of Nairobi's Institute for Climate Change and Adaptation (ICCA) conducts interdisciplinary research on climate change and sustainable development.

HEIs have to extend their impact beyond the campus through community engagement and partnerships. Collaborating with governments, businesses, and civil society organizations enhances the reach and effectiveness of sustainable development initiatives.