

**CSIR COLLEGE OF SCIENCE AND TECHNOLOGY
GHANA – WEST AFRICA**



STRATEGIC PLAN

2021 – 2026

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CSIR COLLEGE OF SCIENCE AND TECHNOLOGY (CCST)

The Council for Scientific and Industrial Research (CSIR) was established in 1958 with a mandate to organize and coordinate scientific and technological research for national development, and to expand the frontiers of scientific applications in Ghana. It has since become the largest employer of scientists, technologists and other research professionals in Ghana.

The CSIR has over the years, accumulated a rich stock of scientific and technological expertise that it uses to carry out its research activities. It's highly trained and experienced human resource, laboratory facilities, institutes, research and field stations provided CSIR the opportunity to take up a complementary role of developing research capacity at the postgraduate level for graduates of the physical and life sciences. CSIR consequently established the CSIR-College of Science and Technology (CCST) in 2015 as a university to train students at the postgraduate level, using the massive human resource as well as infrastructural and other facilities of CSIR. CCST obtained accreditation from the National Accreditation Board in 2016 and is affiliated to University of Cape Coast.

CSIR believes that using its research facilities to support postgraduate training yields clear benefits for the national and sub-regional research systems in:

- Growing Science and Technology research capacity for national and sub-regional development,
- Improving research-Industry linkage and collaboration,
- Expanding the platform for STI training at the postgraduate level and
- Helping to focus student research on generating practical solutions to national and sub-regional socio-economic problems.

CCST AS A RESEARCH UNIVERSITY

One of CCST's goal is to be recognized as a leading research university on the African continent. CCST's prime mission as an aspiring chartered research university is to generate research and produce postgraduate students in STEM. Its main focus is on the research of its teaching staff and postgraduate students. CCST as a postgraduate university runs postgraduate programmes at the MSc, MPhil and PhD levels. As an aspiring chartered research university CCST aims to produce new and exciting research by attracting best human resource and affording students and faculty access to state of art equipment, latest technology, latest research techniques and methods. The teaching staff and students have access to the laboratories of CSIR. These facilities constitute a unique learning environment that provides students with opportunities for enquiry, innovation and effective learning through literature study, laboratory and field research as well as by hands-on, project approach to problem-solving. CCST however seeks to establish its own facilities including lecture halls, offices, state of art laboratories, etc, in addition to the CSIR facilities which are available to the College. As an aspiring research university, courses taught in class incorporate research results generated within the CSIR and research organizations and universities both home and abroad. Students are able to have internships in research laboratories, and have access to good facilities for research publication. The faculty members are able to have collaborative research projects with scientists from different parts of the world.

CCST has the following Departments and run the following postgraduate programmes;

1. DEPARTMENT OF NATURAL RESOURCES MANAGEMENT hosted by CSIR-Forest Resources Institute of Ghana, Kumasi.
 - MSc Climate Change and Integrated Natural Resources Management.
 - MPhil Climate Change and Integrated Natural Resources Management.

2. DEPARTMENT OF AGRO-PROCESSING TECHNOLOGY AND FOOD BIO-SCIENCES hosted by the CSIR-Food Research Institute, Accra.
 - MPhil Food Science and Technology

3. DEPARTMENT OF ANIMAL RESOURCES DEVELOPMENT hosted by CSIR-Animal Research Institute. Accra.
 - MPhil Industrial Animal Nutrition and Feed Production
 - MSc Industrial Animal Nutrition and Feed Production
4. DEPARTMENT OF PLANT RESOURCES DEVELOPMENT hosted by Crops Research Institute, Kumasi
 - MPhil Plant Breeding and Biotechnology
5. DEPARTMENT OF SOIL RESOURCES MANAGEMENT hosted by CSIR-Soil Research Institute.
 - MPhil Soil Health and Environmental Resources Management
 - MSc Soil Health and Environmental Resources Management
6. DEPARTMENT OF FISHERIES SCIENCE AND AQUACULTURE hosted by Water Research Institute, Accra.
 - MPhil Fisheries Science
 - MSc Fisheries Science
 - MPhil Aquaculture
 - MSc Aquaculture

The College is seeking accreditation to run Ph.D programmes in the Departments.

Student and Staff Population

As at July 2020, CCST has a total number of 129 students and a teaching staff of 71 members (student-teacher ratio of 1.8:1) including 10 full Professors (One female and Nine males) and 18 associate professors (two females and sixteen males). The College graduated 18 MPhil and 2 MSc students in 2020 made up of 15 males and 5 females.

Registration

CSIR College of Science and Technology is registered as a company limited by guarantee, with its registered office in Accra. It has two campuses one in Accra and the other in Kumasi.

Governing Structure

The College is governed by a College Board made up of 11 members. The College Board is in charge of the management and administration of the finances and properties of the College. Also, the Board has the overall control over the affairs and public relations of the College including the use of the common seal of the College. The College Board constitutes the apex of a hierarchical structure of a system of committees for the management of the College.

Principal Officers

The Principal Officers of CCST are:

The Chairman of College Board

The President

The Vice-President

The Registrar

THE STRATEGIC PLAN

Core Values

Our researchers, faculty, staff and students profess a set of complementary values that are fundamental to CCST's identity and provide the foundation for its practices.

We value excellence in:

- Leadership
- Teaching and Learning
- Scholarly research and Innovation
- Public engagement
- Staff Performance

We also value:

- Partnership and Strategic Alliances, Free exchange of ideas, Openness and inclusiveness and Accountability.

VISION

To become the leading provider of quality science and technology education, research, innovation and entrepreneurship in Africa.

MISSION

To equip stakeholders in the physical and life sciences with appropriate skills and attitudes to enhance their contribution to sustainable development in Ghana.

CCST Objectives

CCST seeks to pursue the following objectives:

- To expand the platform for STI capacity and entrepreneurship at the post graduate level for national and sub-regional development.
- To improve research-industry linkage and collaboration.
- To help focus students research on generating practical solutions to national socio-economic challenges.

SWOT ANALYSIS

STRENGTHS:

- Historical status
- Longevity of service of large proportion of the staff
- Strong Science and technology Human Resource Capacity for teaching and research within the CSIR distributed nationwide.
- Infrastructural Facilities (Research and teaching) distributed nationwide.
- Experience in technology development and transfer.
- Proven track record in collaboration with national and international universities and scientific institutions.
- Greater emphasis faculty work on a research university will not be a challenge for creating research and innovation university
- Excellent linkages with industry and the private sector
- Multidisciplinary research expertise
- Adequate IT and library facilities.
- Congenial environment for teaching, learning, research and innovation nationwide.
- Excellent field facilities in all the agro-ecological zones for teaching, learning and research.

WEAKNESS (AREAS FOR IMPROVEMENT)

- Limited financial resource.

- Teething problems, being a young tertiary educational institution.
- Inadequate expertise in some specialized areas.
- Relatively low remuneration vis-à-vis analogous institutions for starter staff.
- Infrastructural deficits (e.g. modern teaching auditorium, students' hostels, sports and recreational facilities).
- Absence of well-configured approach to institutional fundraising.
- Deficiencies in record keeping and storage of many types of records

OPPORTUNITIES:

- Unique institution for graduate Science, and Technology and Entrepreneurial programmes.
- Attract students from Ghana and sub- region seeking self-employable skills.
- Filling S & T skills gaps arising out of accelerated industrial development in Ghana and the sub-region.
- Research university allows for training in and pioneering emerging disciplines within Science, Technology and Innovation (STI).
- Stronger linkages with local stakeholders and businesses to ensure relevance of post graduate programmes.
- Research university system provides for greater disciplinary and inter-disciplinary research
- Capacity for greater national and international community engagement
- Enhanced capacity to undertake consultancies for private and public sector institutions

THREATS:

- Competition for students and poaching of excellent faculty and non-academic staff by industry.
- Inadequate operational funding
- Workloads that affect time CSIR-related work and time for teaching and supervision of research at CCST.
- Weakening economic environment in Ghana and sub-region.
- Unstable political environment in the sub-region.
- Donor reluctance due to global economic downturn.
- High cost of capital.

THE TRANSFORMATION PROCESS: FROM COLLEGE TO A CHARTERED RESEARCH UNIVERSITY

The new Education Regulatory Bodies Act, 2020 of Ghana requires that a newly established university must charter within four (4) years. If it fails, it is given an extension of two (2) years. If the university is still unable to charter it is closed down. The major challenge of CCST, therefore, is to charter as soon as possible. Presently CSIR College of Science and Technology has accreditation from the National Accreditation Board to run postgraduate programmes as a University College. The National Accreditation Board requires that a university college in the sciences must have a minimum of two (2) Faculties, and each Faculty having a minimum of two (2) Departments. Each Department must have a minimum of three (3) full time lecturers.

CCST is to satisfy the requirements for a university college. CCST will set up a committee to lead the process to get the university college charter as a full fledged university.

GOALS OF THE STRATEGIC PLAN

The goals of this strategic plan of CCST are:

1. To transform CCST into a Chartered Research University.
 - (i) Transform CSIR College of Science and Technology into a university college.
 - Establish two Faculties each with a minimum of two Departments.
 - (ii) To become financially sustainable
 - Improve student enrollment
 - (iii) Improve infrastructure.
 - Attract funding from local and foreign sources.
 - (iv) Establish a committee to pursue charter

2. To work towards establishing CCST as a leading research university for training research scientists and academics on the African continent through:
 - (i) Running MSc, MPhil and PhD programmes in all departments of CCST.
 - (ii) Establishing an office for institutional Advancement to raise funding to support research
 - (iii) Establishing state of art laboratories.
 - (iv) Obtaining funding to support student thesis projects, and lecturers research projects.

- (v) Facilitating human resource development through exchange programmes.
- (vi) Engaging in collaborative research with top universities and research organizations.

“A research university requires placing extra emphasis on faculty working towards greater research output. This means the University will have to create a result-driven environment by introducing performance criteria to reward outstanding research/teaching performance. The result-driven environment can guide distribution of funding where resources are weighted according to the performance of each college.”¹

The following can be used:

- Number of academic publications
- Number of quoted references
- Quality of teaching activities
- Amount of public funding obtained competitively on research projects
- Research grants from private sources
- Competitive international research funding received by Faculty from external sources
- Use of research results (licenses, copyright, patents, spinoffs, artifacts, and services provided)
- Participation in collaborative international research projects
- Number of students in research masters and PhD programmes
- Number of students successfully completing research Masters and PhD programmes
- Percentage of students finishing within a designated period of time for study
- Number of female PhD candidates
- Percentage of female professors in a Faculty/Department
- Students in Masters and PhD programmes with foreign BSc and masters degrees

This strategic plan has a number of operational objectives which underpin the two goals for the period 2021 to 2026. These objectives are designed to evolve systems and competencies to build a full-fledged research university reputed to be a leader in the training of research scientists and academics on the African continent by 2026. A logical framework which provides a matrix of Goals, Objectives, Actions Required, Expected Results, Responsibilities, Start and End Periods and Performance Indicators is presented below. The thematic areas which are covered but not indicated in the matrix are Financial Sustainability, Physical Infrastructural Development, Human

¹ J. Anamuah-Mensah & Peter French (2013). Defining purpose to achieve progress: The Proposed Collegiate System at the University of Ghana: Report of the Consolidated Findings of the four College Committee Reports on University Colleges.

Resource Development, Teaching, Learning and Scholarship Services, Public Image and Meeting Manpower Challenges.

The Plan is scheduled to be rolled out by September 2021.

LOGICAL FRAMEWORK

Goal 1: *To transform CCST into a Chartered University*

Objective	Actions	Expected Results	Responsibility	Start Date	End Date	Performance Indicator
1. Convert CCST programmes into Departments	Appoint a minimum of three fulltime lecturers for each programme to meet criteria for a department.	A minimum of six Departments established from the six approved programmes.	President	Sept 2021	Dec 2021	Departments approved by National Accreditation Board.
2. Establish a minimum of two Faculties.	Place a minimum of two Departments under a Faculty.	Two or more Faculties established, each headed by a Dean.	President/College Board	Sept 2021	Dec 2021	Approved by National Accreditation Board.
3. To become financially sustainable by improving student enrollment.	<p>Advertise CCST aggressively.</p> <p>Use private recruitment agencies to recruit national and international students.</p> <p>Provide scholarships for students from local and foreign sources e.g. MAG, Scholarship Secretariat.</p>	Student number exceeds breakeven point.	President	Sept 2021	Sept. 2026	<p>-Record of student numbers.</p> <p>-Increase in college income by 30%</p> <p>Increase foreign students' enrolment by 10%</p> <p>20 students awarded scholarships</p>
(iii) Improve infrastructure	<p>Conduct infrastructural audit.</p> <p>Develop a Master Plan for CCST.</p>	<p>Infrastructural deficit documented.</p> <p>Architectural drawings of CCST</p>	<p>Registry</p> <p>College Board</p>	Sept 2021	On-going	<p>Infrastructure audit report available</p> <p>A master plan developed</p> <p>Enough funding secured</p>

Objective	Actions	Expected Results	Responsibility	Start Date	End Date	Performance Indicator
	Source local and foreign funding to implement master plan.					for implementing master plan
(iv) Establish a committee to pursue charter of CCST as University.	All requirements for charter as university identified and implemented by CCST.	CCST chartered as a full-fledged university.	President	Immediately	Sept. 2022	Certificate of Charter from National Accreditation Board in the next 3 years.

Goal 2: To work towards establishing CCST as a leading research university for training research scientists and academics on the African continent.

Objective	Actions	Expected Results	Responsibility	Start Date	End Date	Performance Indicator
(i) Run MSc, MPhil and PhD programmes in all departments of CCST.	Develop curriculum for all the programmes required.	Programme accreditation obtained for all the new programmes.	Heads of Departments	On-going	Sept 2022	Programmes being offered by the Departments
(ii) Establish state of art laboratories.	Engage in donor funded collaborative research projects.	State of art laboratory equipment acquired through donor funded projects.	Heads of Departments	On-going	Dec 2026	State of art analytical equipment available in CCST laboratories.
(iii) Obtain funding to support	Appoint a full time Research Projects Officer (professor) to	CCST will gain	Research Projects Officer	Sept. 2021	Sept 2026	CCST lecturers and students involved in a 4

Objective	Actions	Expected Results	Responsibility	Start Date	End Date	Performance Indicator
student thesis projects, and lecturers research projects.	identify project proposal Calls and organize teams to write and present proposals.	international recognition and improve its research facilities and capability.				donor funded research projects.
(iv) Facilitate human resource development through exchange programmes.	The Research Projects Officer to identify Calls of Mobility Projects for exchange of CCST lecturers and students with foreign reputable universities.	Exchange of CCST lecturers and students with reputable foreign universities.	Research Projects Officer	Sept. 2021	Sept 2026	Exchange of 5 CCST lecturers and 10 students with reputable foreign universities.
(iv) Engage in collaborative research with top universities and research organizations.	Research Projects Officer to identify Calls for donor funded Collaborative projects and organize teams to write and present proposals.	CCST will gain international recognition and improve its research facilities and capability.	Research Projects Officer	Sept. 2021	Sept 2026	CCST lecturers involved in a five collaborative advanced research projects with reputable foreign scientists.

Recommendations:

A change Management Team should be established to track the implementation of this strategic plan. It is suggested that the composition of the team should include the following:

- a. President, CCST
- b. Vice President, CCST
- c. Registrar, CCST
- d. Rep, Heads of Department, Accra Campus
- e. Rep, Heads of Department, Kumasi Campus
- f. Accountant, CCST

Functions

- Develop and implement an index of research productivity occurring in each Department and Faculty
- Monitor timely completion of Masters and PhD programmes in each Department and Faculty
- Incentivize faculty productivity to stimulate research
- Monitor enrolment by gender in departments
- Identify strategies to balance the enrollment of full-time students and part-time students
- Monitor the use of digital technologies and face-to-face in a hybrid mode.