Feasibility Study
For the

Technology Consultancy Centre (TCC) to be designated as a Category II Centre under the auspices of UNESCO as a centre of Excellence in Engineering Innovations, Manufacturing and Technology Transfer
in Kumasi, Ghana

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Executive Summary

This report presents the outcome of a feasibility study on the proposal to designate the Technology Consultancy Centre (TCC), currently located at the Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana, as a Category II Centre under the auspices of UNESCO, as a centre of Excellence in Engineering Innovation, Manufacturing and Technology Transfer. The proposal is an initiative of the Government of Ghana, Ministry of Education. An initial proposal was submitted to UNESCO in October 2020 and was reviewed at the first meeting of the Intersectoral Review Committee (IRC) for Category II Institutes and Centres on 27 November 2020.

The Committee recommended that a full feasibility study be completed in line with the practice of UNESCO and along the directions contained in the 2019 UNESCO Strategy for such centres. This report is expected to be presented to the 212th Session of the Executive Board to give recommendations to the 41st UNESCO General Conference.

The study was conducted during May-June 2021 by an international consultant and a national consultant based in Ghana. Due to COVID-19 restrictions, the study was conducted by desk top review of relevant documents provided by the Technology Consultancy Centre liaison representatives and by virtual and in person interviews with key stakeholders. The documents that were reviewed and list of interviewees and interview reports are in the Annexes.

The review of the capacity of TCC to operate successfully as a UNESCO Category II Centre has shown that there is a strong case for the TCC to be designated as such a Centre and it is expected to make a significant contribution to UNESCO programmes and priorities as well as to national development in Ghana and regional development in West Africa for the following reasons:

1) TCC was established in 1972 and has a proven track record of excellence over nearly 50 years, in UNESCO’s fields of competence, with excellence in science, technology and engineering research, training and skills development, capacity building, policy advocacy, manufacturing skills and innovation and is expected to play an important role in the translation of research and innovation into commercial outcomes;

2) TCC’s programmes and activities are relevant and aligned with UNESCO’s Approved and Budget (C/5), including global strategies and action plans, as well as sectoral programme priorities including Global Priority Africa, Global Priority Gender;

3) As the first UNESCO Category II Centre in engineering in Africa, TCC’s activities complement other UNESCO programmes and activities and do not overlap with those of other category II institutes or centres in engineering around the world or with other Category II centres that currently exist in Ghana. TCC has a Strategic Plan and objective that align with and is expected to deliver several key priorities of UNESCO in relation to education and capacity building in engineering and technology and the engagement and training of women and girls in this sector;

4) The activities of TCC contribute to national goals by developing essential innovations, manufacturing skills and technology transfer programmes for the economic development in Ghana and the region, achieving several of the UN
Sustainable Development Goals, especially Education (Goal 4), Gender Diversity (Goal 5), Economic Development (Goal 8), Innovation (Goal 9), Reduced Inequalities (Goal 10) and Partnerships (Goal 17);

5) The regional, interregional and global impacts of TCC are already significant. TCC has established national, regional and international networks and as these grow and develop further and extend to other existing institutes or centres, it is evident that it would expand UNESCO’s significance especially in Africa and is expected to contribute to the Africa Union 2063 Plan. TCC has already provided and is expected to continue to provide policy advice and capacity-building especially in Africa and is expected to promote North-South cooperation;

6) TCC is anticipated to also play an essential role in developing STEM skills for women and girls in Africa. TCC thus fits well with UNESCO’s objectives in general and also adds to its two global priorities, Africa and Gender in the field of technology and STEM skills;

7) As a Category II Centre, TCC is expected to contribute to global and regional agenda and further develop its reputation, programmes and collaborative partnerships. UNESCO can be a catalyst for building further capacity by lending its technical and organizational expertise, as well as providing access to its vast network (UNESCO Chairs, field offices, category 1 and 2 institutes and centres, etc.). UNESCO can act as a bridge to other countries, international organizations and relevant NGOs working to develop innovative and manufacturing capacities for sustainable development;

8) The actions of TCC are international and regional in scope. TCC already has successful national, regional and international partnerships and relationships between university, industry and government in Ghana and demonstrated success in capacity building nationally and in the region. It is committed to supporting the West Africa region and the national development agenda in these countries.

9) The TCC is expected to be financially sustainable with written confirmation from the Ghana Minister of Education that the government will provide the emoluments of staff at the Centre and contribute to the Centre an amount of at least 2 million US dollars over the first eight years for the administration and proper functioning of the Centre;

10) TCC already has professional management and an interim Governing Board is already in place for appropriate oversight of activities and it is expected to establish a Governing Board in accordance with Article 7 of the Tripartite Agreement;

11) The Government of Ghana, KNUST and UNESCO is expected to enter into a Tripartite Agreement that define the terms and conditions and other pertinent issues regarding the operation of TCC and is generally in alignment with the model Tripartite Agreement in the UNESCO 2019 Strategic Plan and decision in relation to Category II Centres;

12) TCC is expected that to formalise support from KNUST via a Memorandum of Understanding (MoU) that will ensure that TCC will continue to be located at KNUST and use the established organization capacity, structures, human resources facilities and laboratories as well as administration infrastructure and systems at no cost.
Conclusion

Based on the findings of the feasibility study, the proposed Technology Consultancy Centre, designated as a Category II Centre under the auspices of UNESCO, fits well with UNESCO’s strategic and programmatic objectives, and corresponds to the 40C/5 Expected Result 5 of Major Programme I, II, III and IV.

The feasibility study has ascertained that the TCC will be a great advantage to the country, region and the continent as a whole as it will be the first Category II Centre for engineering in Africa. It aligns well with UNESCO’s mandate on engineering education and the Government of Ghana and the Kwame Nkrumah University of Science and Technology (KNUST) is committed to supporting the Centre, with ongoing collaboration through all its colleges and with ongoing access to its facilities.

TCC has a demonstrated history of excellence over nearly 50 years in core areas of engineering innovation, manufacturing and technology transfer and will advance UNESCO Global Priority for Africa and Global Priority for Gender and is expected to contribute to the entire set of the UN Sustainable Development Goals and in particular, Goal 4 (education), Goal 8 (Economic Growth and Development), Goal 9 (Innovation), Goal 10 (Reduced inequalities) and Goal 17 (Partnerships).

TCC has established national, regional and international partnerships and has demonstrated success in developing manufacturing skills, technology transfer and innovation. It has made a strong contribution to the national and regional economic and skills development agenda and had contributed and will continue to contribute to the Africa Union Development Agenda.

The proposal fulfils and complies with most of the guidelines and criteria regarding the establishment of relations between UNESCO and the institutes and centres to be placed under its auspices, as stipulated by the General Conference in 40 C/99.

It is noted that a number of administrative processes are in progress to re-establish the TCC as an autonomous institute with its own legal capacity, a key requirement for such UNESCO Category II Centres.

KNUST Legal Department has advised that there are no legal impediments to establish TCC as an autonomous institute with its own legal capacity. The processes have commenced and are expected to take no more than 12 months.

The Government of Ghana has confirmed that it will undertake to effect all measures to establish TCC as an autonomous institute and will provide financial support to cover staff costs and contribute an amount of at least US 2 million dollars over the first eight years of its establishment as a Category II Centre.

TCC will sign an MoU with KNUST for ongoing collaboration with the university and use of facilities.

The Government of Ghana and KNUST have proposed a Tripartite Agreement to be executed by UNESCO to establish the Centre. The Tripartite Agreement is generally in alignment with the UNESCO Model Tripartite Agreement.
Recommendation
It is recommended that the Technology Consultancy Centre be designated as a Category II Centre under the auspices of UNESCO and located at Kwame Nkrumah University of Science and Technology (KNUST) in Kumasi Ghana, as all criteria required under the UNESCO 2019 Strategy for Category II Centres are substantially satisfied.
1. Background

The UNESCO General Conference at its 40th Session in November 2019, adopted 40C/Resolution 99 that recommended The 2019 Strategy for Category II Institutes and Centres Under the Auspices of UNESCO, as a global network of Institutes of excellence in the Organisation’s domain of competence. The Category II centres (C2C) are to, in a meaningful way and based on their expertise, contribute to the implementation of UNESCO’s priorities, programmes and global development agendas during a defined period, through international and regional cooperation, research, knowledge production, policy advice and capacity development. UNESCO has established several of these centres across the world in the field of Natural Sciences.

The proposal for the Technology Consultancy Centre (TCC), currently located at Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana, to be designated as a Category II Centre under the auspices of UNESCO as a centre of Excellence in Engineering Innovation, Manufacturing and Technology Transfer, is an initiative of the Ghana Government. A proposal was submitted to UNESCO, with letter of support dated 30th October 2020 from the then Minister of Education, Hon. Matthew Opoku Prempeh. The proposal was reviewed at the first meeting of the Intersectoral Review Committee (IRC) for Category II Institutes and Centres on 27 November 2020.

A preliminary assessment of the proposal was made by the Committee which recommended that a full feasibility study be completed in line with the practice of UNESCO and along the directions contained in the 2019 UNESCO Strategy for such centres. The report of the feasibility study was expected to be presented to the 212th Session of the Executive Board to give recommendations to the 41st UNESCO General Conference.

This report presents the results of the feasibility study. The Terms of Reference of the Study are in Annex 1.

2. Purpose of the feasibility study.

The purpose of the feasibility study is:

a. to obtain sufficient information on the proposed Category II Centre to inform the decision-making process for the designation of Category II status to the Technology Consultancy Centre, to ensure its alignment with the requirements of the 2019 Strategy for Category II Institutes and Centres, and its contribution to the Strategic Programme Objectives of UNESCO, notably in the Natural Sciences.

b. to assess the conformity of the proposed Centre with the requirements for a Category II Centre and focus on the extent to which:

1) the institution’s programmes and activities are relevant and aligned with UNESCO’s Approved Programme and Budget (C/5), including global strategies and action plans (C/4), as well as sectoral programme priorities;

2) the activities of the institution contribute to the global development agendas including the advancements of the UN SDGs;
3. Methodology.

Due to the travel limitations arising from the COVID-19 pandemic, the feasibility study has been conducted by an International Consultant, Dr Marlene Kanga, a chemical engineer, based in Sydney, Australia, with extensive leadership and governance experience including as a board member of some of the largest organisations in Australia and the immediate past president of the World Federation of Engineering Organisations (WFEO) and in working with UNESCO on various projects. Virtual interviews and meetings were led by Dr Kanga for this project.

A National Consultant: Dr Francis Boateng Agyenim, located in Ghana, was appointed to liaise with local officials and stakeholders in Ghana and be present at the various interviews. Dr Agyenim is Director, Institute of Industrial Research, Council for Scientific and Industrial Research (CSIR), Accra.

A detailed work plan was submitted to UNESCO and weekly meetings on progress were held with stakeholders from the Technology Consultancy Centre, UNESCO officers based in Ghana and Paris and the consultants. The work plan is in Annex 5.

The work plan included a desk review of relevant documentation from Kwame Nkrumah University of Science and Technology (KNUST) and the Technology Consultancy Centre (TCC), including:

- Technical reports of completed projects;
- Progress and activity reports of current projects;
- Examples of curricula of training workshops;
• List of current and proposed staff;
• Examples of key publications;
• Example list of donors and project partners;
• Minutes of the Governing Board meetings;
• Example listing of beneficiaries, people trained, and countries assisted.
• Proposed operational budgets and sources of funding;
• Documentation of steps taken to date to establish the institute with autonomy
  for the execution of its activities and legal capacity to contract, institute legal
  proceedings and to acquire and dispose of movable and immovable property,
  as required by UNESCO for designation as a Category II Centre;
• Documentation of the proposed Tripartite Agreement between UNESCO, the
  Government of Ghana and the Technical Consultancy Centre.

A list of key documents that were reviewed is in **Annex 2**.

Interviews were conducted with relevant key stakeholders (e.g., academics and
professionals, industry, regional and international partners) who have been involved in or
benefitted from the work of the TCC to provide in-depth information on issues that are
relevant to the feasibility of the proposed Category II Centre. A list of stakeholders that
have been interviewed is in **Annex 3**. Reports of interviews are in **Annex 4**.

# 4. Findings

## 4.1. Introduction to Technology Consultancy Centre

The Technology Consultancy Centre (TCC) was established in January 1972 with
assistance from the Intermediate Technology Development Group Ltd. U.K. to serve as
the interface between the research and development activities taking place at the
University, and the entrepreneurial aspirations of Ghana.

In 2004, the TCC was absorbed into the Kwame Nkrumah University of Science and
Technology (KNUST) College of Engineering when the collegiate structure was adopted.

## 4.2. Vision and Objectives of the Centre

The strategic **vision** of the TCC as a Category II Centre is to be an internationally
recognised centre of excellence in engineering innovation, manufacturing and technology
transfer with a **mission** to provide cutting edge engineering services for the technological
advancement of Ghana and West Africa.

The ultimate goal is to be unsurpassed in excellence, adaptive research and
development, technology innovation and transfer, manufacturing skills development and
impactful entrepreneurship development.

The current and proposed functions of the TCC are:

- **Knowledge Production**: undertake collaborative research to develop and transfer
  innovative engineering solutions and manufacturing technology for the
  sustainable development of the West Africa Sub-region and beyond;
b. *Capacity Building*: provide space for product development, dissemination and knowledge uptake, and facilitate continuous professional development in relevant areas of engineering and technology within the West Africa Sub-region and beyond;

c. *Technical Service*: provide technical assistance to improve competencies and promote standards in manufacturing and technology;


e. *Policy Advocacy and Information Sharing*: develop policy briefs to inform and influence national and sub-regional policy direction on engineering innovation, manufacturing and technology transfer;

f. *Building Partnerships*: seek and promote collaboration with regional and international partners to achieve the sustainable development goals.

### 4.3. Demonstrated Excellence in UNESCO’s field of competence

Over nearly 50 years, since it was established in 1972, TCC has demonstrated leadership and excellence in research, talent and skills development, policy development and advocacy and in developing strategic alliances and partnerships in the region and internationally. All these align with UNESCO priorities and fields of competence.

The TCC as a centre, collaborating in research and development in science, engineering, technology and innovation (SETI), brings together expertise and skills from within the KNUST and other engineering and technology-based institutions country-wide and internationally, generating and sharing innovations in engineering, manufacturing and technology. The TCC has provided leadership in best practices, support and training in engineering, manufacturing and technology transfer.

TCC’s capacity and facilities to deliver on its core mandate expressed as *engineering innovation, manufacturing and technology transfer* has been demonstrated by:

a. *Research and Knowledge Production* – development of training manuals and training programmes for advanced manufacturing technologies including 3D printing, Computer Numerical Control for various metal handling technologies, plasma technologies etc.;

b. *Talent and Skills Development and Capacity Building* – For example the Masters Programme in Entrepreneurship and Technology Management delivered in collaboration with KNUST Mechanical Engineering Department and the development of technical service - standards for manufacturing, for example since 2015, a cook stove testing and training laboratory (C-lab);

c. *Modernising indigenous technologies* - through practical training and access to the KNUST machine shops for prototyping and fabrication, ceramic kilns and ovens for manufacture of cook stoves, water filters and construction;

d. *Policy advocacy* - such as to establish an automotive manufacturing industry and to intensify collaboration with universities, industry and government through the establishment of a Technology Park, supported by Ghana’s National Development
Planning Commission;

e. **Partnerships** – regional, such as WASCAL (West African Science Service Centre on Climate Change and Adapted Land Use) and international, such as Royal Academy of Engineering, for technology transfer and capacity building, especially in West Africa.

### 4.4. Relevance and alignment with UNESCO programmes and priorities

Under the integrated, comprehensive strategy approved by the UNESCO General Conference, each Category II centre shall contribute to the achievement of UNESCO’s strategic programme objectives and sectoral or intersectoral programme priorities and themes. The Kwame Nkrumah University of Science and Technology (KNUST) is the largest in Ghana with a student population of 81,000. Currently it is ranked the Best University in West Africa and the 12th in Africa (US News & World Report, 2020). TCC is expected to contribute to the culture of excellence in engineering education as a result of its close connections with KNUST and all its colleges including Planning, Industrial Art, Social Work, Architecture and many more where visiting Fellows contribute to the breadth of outcomes achieved by TCC. As per UNESCO 40/C5, the proposed Centre is expected to directly contribute to **“Support Member States in the implementation of SDG 4”**.

KNUST is a leader in encouraging gender diversity in engineering and technology and approximately 40% of students are female. TCC is expected to increase the participation of women in engineering and technology and thus **“make a systematic and comprehensive contribution to gender equality and women’s empowerment”**, a key UNESCO priority.

With TCC as a Category II Centre under the auspices of UNESCO, UNESCO will be positioned as a visible actor at the international, West Africa regional and Ghana national level in promoting gender equality in all its fields of competence, especially through the development of STEM skills for women and girls.

The Centre would holistically address cross-programme actions between Major Programme I - Education, Major Programme II - Natural sciences, Major Programme III - Social and Human Sciences and Major Programme IV - Culture Sector. The Centre is aligned to programmatic priorities including

- "**Equitable and responsive TVET (Technical and Vocational Education and Training) systems established to equip youth and adults, both women and men, with relevant skills for employment, decent work, entrepreneurship and lifelong learning (contributing to SDG targets 4.3, 4.4 and 8.6);” and**
- "**Improved national policies and capacities to increase access for all women and men to equitable, affordable and quality-assured higher education and to advance the recognition of studies (contributing to SDG target 4.3)”**.

The proposed activities of the Centre are also well-aligned with UNESCO’s Major Programme II – Natural Sciences (40 C/5) which include:

- "**Strengthening science, technology and innovation systems and policies nationally, regionally and globally**
- **Gender Equality in Education**” (contributing to SDG targets 4 & 5)".
Further, the proposed activities seek to empower Ghana and participating countries with requisite skills in engineering, digital manufacturing, ICT, robotics and industrial automation as envisaged by UNESCO 40 C/5.

4.5. Unique contribution as a UNESCO Category II Centre

TCC will be the first UNESCO Category II Centre for engineering in Africa.

There are four Category II Centres in Engineering under the Engineering programme at the UNESCO. These are:

1. Aalborg, Denmark – International Centre for Problem-Based Learning (PBL)
2. Beijing, China – International Knowledge Centre for Engineering, Science and Technology (IKCEST)
3. Beijing, China - International Centre on Engineering Education (ICEE), CAE & Tsinghua University
4. St. Petersburg, Russia - International Competence Centre for Mining-Engineering Education

TCC is anticipated to complement the role of these engineering institutions as its activities are in engineering and technology and developing skills, manufacturing innovation and technology transfer in Ghana and West Africa. The Technology Consultancy Centre is expected to be uniquely positioned to make a unique contribution to UNESCO and its priorities and also contribute to the economic development of Ghana and West Africa.

Ghana already has two UNESCO Category II Centres:

- Africa Institute for Mathematical Sciences (AIMS-Ghana) and
- Institute for Educational Planning and Administration (IEPA).

Both are supported by the Ghana Ministry of Education. Neither of these centres are focused in the areas of engineering and in capacity building and skills development in manufacturing and innovative technologies.

4.6. Contribution to national development

The Government of Ghana, through the Ministry of Education has confirmed that the TCC as a UNESCO category II Centre will contribute to national priorities as it “will help accelerate the Government’s industrialisation agenda and the aspirations of African Nations as contained in the AU Agenda 2063 Goals 2 and 4. It will also help the government achieve its Manifesto promise to ‘Establish in collaboration with the private sector, a flagship system of Ghana Centres of Excellence to network all higher Education Institutes to support research and innovation.’ “ - Letter dated 7 June 2021, Minister of Education, Dr Yaw Osei Adutwum.

An example of national impact is the Intermediate Technology Transfer Unit (ITTU) established by TCC in 1980 at the Suame Magazine which is home to the largest concentration of informal industrial establishments in the subregion, to support artisans with transfer of new technologies. The technology transfer that followed was so effective that it led to the emergence of a strong local manufacturing capability and resulted in the
Government of Ghana establishing the Ghana Regional Appropriate Technology Industrial Service (GRATIS) Project to replicate the TCC’s ITTUs in all regional capitals.

More recently, TCC has collaborated with various national and international institutions including Massachusetts Institute of Technology (MIT), State University of Pennsylvania and Michigan University, to develop and design innovation processes for community development solutions. It is also upgrading and modernizing its manufacturing capability with support from the Royal Academy of Engineering (RAEng), UK to develop the manufacturing skills of final year students of KNUST and four other technical universities in Ghana.

TCC has collaborated with national partners in industry to support student internships and industrial training, and industrial experience for academic staff, for example with Desert Lion International, Denco Foundry, Springs and Bolts and Queentech Initiative.

The Skills Development Fund (SDF) in Accra is supporting TCC to upgrade its prototype and digital manufacturing capabilities and training programmes. The Rural Enterprises Programme of the Ministry of Trade and Industry, Ghana, has worked with the TCC to carry out research into the Kente cloth value chain in Ghana. About 20 small-scale industrial partners collaborate with TCC by hosting engineering student interns from KNUST in the Suame Magazine industrial enclave in Ghana each year.

The TCC has also been an effective advocate for national policies, for example, for developing the manufacturing sector in Ghana and in establishing a Technology Park.

4.7. Contribution to Africa Union 2063 Plan and regional development

The TCC is also expected to contribute to regional priorities and the priorities of the Africa Union Development Agenda by developing STEM and entrepreneurial skills in Africa and technology development and transfer mechanisms for national and regional development.

UNESCO’s Global Priority Africa is supported by establishing the TCC as a centre of excellence for training in manufacturing, innovation and entrepreneurship and through partnerships with other institutions across Ghana and the region.

Though independent of UNESCO, Category II institutes and centres are a privileged partner of the Organization with access to UNESCO’s logo, international and intergovernmental bodies and networks, and may leverage UNESCO’s international reach and convening powers. Therefore, as a designated Category II Centre, TCC is expected to strengthen the strategic partnerships with African Member States, the African Union Commission (AUC) and the Regional Economic Communities (RECs), including through the reactivation of the UNESCO-AUC Joint Commissions; the United Nations agencies particularly through the Regional Coordination Mechanism (RCM) for Africa, by ensuring increased participation and contribution to Africa’s development agenda.

TCC already has a track record of significant impact in the West African region, supporting other African nations in building capacity in skills development and technology transfer. For example, the Intermediate Technology Transfer Unit is a model that has been adopted in West Africa including Sierra Leone, Ivory Coast and the Burkina Faso.

The University of Zambia established the Technology Development and Advisory Unit (TDAU), modelled on the TCC. From 1993-1995, TCC undertook a World Bank
Consultancy to establish an Appropriate Technology Centre at the Magomero Community Development College in Malawi.

4.8. Contribution to Global Development Agenda and advancement of UN SDGs

In line with the 2030 Agenda for Sustainable Development and UNESCO’s 40th session of the General Conference, the activities of TCC is expected to contribute to the development agenda of Ghana and participating partners in the sub-region and beyond. The nature of the work of the TCC is expected to contribute to the entire set of the UN Sustainable Development Goals and in particular, Goal 4 (education), Goal 8 (Economic Growth and Development), Goal 9 (Innovation), Goal 10 (Reduced inequalities) and Goal 17 (Partnerships).

The TCC is also anticipated to contribute to the objectives of UNESCO’s Global Priority Gender, especially in Africa as stated in the UNESCO medium term strategy 37/C4 and related budget priorities 40/C5 and proposed 41/C5 and UN Sustainable Development Goals 5 (Gender Equality).

40% of students at KNUST are women and the TCC is committed to programmes that develop relevant STEM skills for women in Ghana and the region and provide access to information and training in STEM. The advocacy and dissemination efforts of the TCC is expected to address the issue of gender technology and digital divide and advocate for gender sensitive policy development in Ghana and the region.

As a designated UNESCO Category II Centre, TCC will be able to strengthen these partnerships and develop more programmes for the benefit of Ghana and the West African region.

4.9. Engagement with international partners

TCC already has well-established partnerships with the world’s leading universities. As a designated UNESCO Category II Centre, TCC will be able to use UNESCO’s comparative advantage, to develop further international partnerships with the world’s leading universities to bridge the technology and knowledge divide in West Africa, providing improved learning opportunities in technology and manufacturing and remove economic, racial, cultural, gender, disability and linguistic disparities.

TCC has engaged effectively with relevant regional and international partners for decades. For example, it is currently completing a project on the development of manufacturing skills with support from the Royal Academy of Engineering UK. It has also successfully completed projects on the modernising of indigenous technologies with support from MIT Design Labs USA, the University of Pennsylvania USA, the International Development Innovation Network with support from USAID and the Practical Impact Alliance which includes a number of large US Corporations and NGOs.

The UNDP and the Energy Commission of Ghana are providing support for the training of manufacturers of improved institutional cook stoves and have also established a testing laboratory for stoves. This is a good demonstration of engineering solutions for climate change.

The impact of TCC has been so significant that almost all major International Development Agencies including the USAID, ODA, CIDA, GTZ, the IDU of the
Commonwealth Secretariat and OXFAM, have all provided funding to support the various initiatives.

5. Organisation Capacity

5.1. Administration, human and physical resources

TCC has been in operation since 1972 and has the demonstrated capacity to deliver various programmes and activities and the human resources and systems for effective and efficient management of the institution and implementation of its vision and objectives.

The proposed Category II Centre is expected to be a centre of Excellence for Engineering Innovation, Manufacturing and Technology Transfer and is located at the Kwame Nkrumah University of Science and Technology (KNUST) and as such has all the facilities and capabilities available for its work. The centre’s office is located at the KNUST campus with facilities on various parts of the campus of the University and outside. It also leads the 10 Intermediate Technology Transfer Units (ITTU) across Ghana.

The current director of the TCC is expected to be appointed as the Acting Director General until the formation of TCC is finalised. TCC has developed a Strategic Plan and has a road map for successful outcomes of the Plan.

TCC is expected to continue to be supported by KNUST which has indicated that it will continue to offer its facilities at no extra cost. These facilities include continued use of offices, meeting and workshop facilities and manufacturing facilities for training programmes and IT and administration systems.

TCC’s staffing requirements will be supported by visiting faculty (called Fellows) from KNUST which is part of the in-kind support KNUST is committing to the TCC. Fellows of TCC will be appointed as experts from the College of Engineering and other colleges and units of the university to continue to contribute to the culture of excellence in innovation and related fields and to make their expertise available to TCC to execute its projects. They will not be part of the management or organization of TCC. These arrangements are to be confirmed via an MoU between KNUST and TCC once it is established with its own autonomy and legal capacity.

The key staff of the TCC are expected to be:

1. The Director General
2. The Director of Engineering Innovation and Technology Transfer
3. The Director of Manufacturing Systems
4. The Director of Administration and General Services

TCC has established the position description and roles responsibilities of these key staff.

The proposed organisation structure of the TCC once established with legal autonomy as a UNESCO Category II Centre is shown in Figure 1:

**Figure 1: Proposed Organisation Structure of Technology Consultancy Centre as a UNESCO Category II Centre**
5.2. Autonomy and Legal Capacity

At its 40th session (November 2019) UNESCO’s General Conference adopted 40 C/99 by which it approved a new “Strategy for Category II Institutes and Centres under the auspices of UNESCO”, also referred to as the “2019 Strategy” (document 40 C/79). A key requirement is that the institute enjoys autonomy for the execution of its activities and legal capacity to contract, institute legal proceedings and to acquire and dispose of movable and immovable property.

In its review of the proposal to designate TCC as a Category II Centre under the auspices of UNESCO, the Intersectoral Review Committee (IRC) agreed that, “should a Member State submit a strong proposal which meets with all the criteria outlined in the 2019 Strategy for C2Cs except that the proposed institute does not have its own legal personality, the IRC would be willing to consider accepting a deviation from the rule, on a case by case basis.” TCC was recognised as not yet having autonomy and legal capacity at the time, but nonetheless a full feasibility report on the proposal was recommended in November 2020.

In the case of TCC, it is currently a part of Kwame Nkrumah University of Science and Technology (KNUST). It is noted that TCC was originally established as an independent Institute in 1972. In 2004 it became a part of KNUST as a consequence of a restructuring and adoption of the collegiate system.

KNUST proposes, via a decision of the University Council, to establish TCC as an autonomous institute with its own legal capacity.

As KNUST itself is part of a current Government review, the decision of the University Council to establish TCC as an autonomous institute with its own legal capacity will be delayed until the new University Council is appointed and the review of universities, currently in progress, is completed.

The current Vice Chancellor has indicated that a decision to make TCC an autonomous institute will be made once the new University Council is appointed, and included in the University Recorder. This will be a statutory decision that must be upheld by the Ministry of Education. The decision to make this transfer has been confirmed in interview by the Vice Chancellor of KNUST and by letter dated 7 July 201.
The Minister of Education has confirmed government support for TCC to be re-established as an autonomous institute with its own legal capacity.

In his letter dated 7 June 2021, the Minister of Education, Dr Yaw Osei Adutwum has stated that, “The Ministry has been assured by the authorities of the University that steps have been initiated for the Centre which was once autonomous until the University adopted the collegiate system, to regain its autonomy in line with the rules governing the establishment of UNESCO Category II Centres.”

In his letter dated 5 July 2021, the Minister of Education, Dr Yaw Osei Adutwum has stated that, “The Government of Ghana undertakes to effect measures required for the transformation of the Technology Consultancy Centre (TCC) of the Kwame Nkrumah University of Science and Technology (KNUST) into a Category 2 Centre of Excellence for Engineering Innovation, Manufacturing and Technology Transfer under the auspices of UNESCO.

5.2.1. The Government of Ghana has therefore confirmed that there it will effect measures to ensure that TCC becomes a legally autonomous institute. Review by KNUST Legal Department

The KNUST Legal Department has reviewed the requirement for TCC to be re-established as an autonomous institute with its own legal capacity and submitted that KNUST has the requisite capacity to set up other entities including incorporated companies for the purpose of fulfilling its mandate. This position was also independently confirmed by the KNUST Law Faculty by email to Prof. Ampadu, Chair of the TCC-C2C Committee, 11 June 2021. The Legal Department observed that the combined effect of sections 1(2) and 12 of the KNUST Act, 1961 (Act 80) supports the position that the University has capacity to set up another entity in furtherance of its objectives under the Act. In their determination they observed that Section 12 of the Act is instructive. It states:

12. Property and Contracts (1) The University may for a purpose which in the opinion of the University Council is necessary or expedient for or in connection with the performance of the functions of the University, acquire and hold moveable or immoveable property, sell, lease, mortgage or otherwise alienate or dispose of that property, and to enter into any other transaction.

This provision therefore makes it possible for the University not only to acquire or dispose of property in pursuance of the performance of its functions but also to enter into any other transaction and has the legal mandate to set up other units with legal autonomy.

KNUST is therefore going through the steps required to set TCC up as a legal entity within the Ghana national legal system.

5.2.2. Steps to establish TCC as an autonomous entity with legal capacity

Following national elections in November 2020 and the inauguration of a new government on 7th January 2021, all statutory boards including the University Council are being reconstituted. Since some of the activities required to set up TCC as a legal entity requires action of the University Council, the timing of these activities is dependent on the reconstitution of the University Council.

The KNUST legal department has indicated steps deemed necessary for completion of the granting of legal autonomy. These are administrative processes and the table below
shows the activity and the authority/individual responsible. *The university administration has either already completed or far advanced in those activities that are completely within its authority and has confirmed that it will be working on those that require University Council approval as soon as the Council is in place.*

<table>
<thead>
<tr>
<th>STEP NO.</th>
<th>DESCRIPTION</th>
<th>TIMING/STATUS OF COMPLETION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TCC reconstituted as an autonomous unit with an independent transitional Board - VC with approval from Council Chairman</td>
<td>Completed</td>
</tr>
<tr>
<td>2</td>
<td>Determination of KNUST capacity to set up units with legal autonomy - <em>KNUST Legal Department</em></td>
<td>Completed</td>
</tr>
<tr>
<td>3</td>
<td>Independent transitional Board for TCC constituted and inaugurated - <em>Minister/University Council Chairman</em></td>
<td>On-going</td>
</tr>
<tr>
<td>4</td>
<td>Relationship between TCC as C2C and KNUST defined in an MoU - <em>University Registrar</em></td>
<td>On-going</td>
</tr>
<tr>
<td>5</td>
<td>Council ratifies MoU between KNUST and TCC as C2C - <em>University Council</em></td>
<td>December 2021</td>
</tr>
<tr>
<td>6</td>
<td>University Council decision placed in the RECORDER - <em>University Registrar</em></td>
<td>March 2022</td>
</tr>
<tr>
<td>7</td>
<td>TCC incorporated as a legal entity - <em>University Registrar</em></td>
<td>June 2022</td>
</tr>
</tbody>
</table>

It is therefore anticipated that TCC will eventually be re-established as an institute with autonomy for the execution of its activities and legal capacity, in the territory of Ghana, to contract, institute legal proceedings and to acquire and dispose of movable and immovable property, including intellectual property, and to exercise its functions in accordance with the laws of Ghana.

While these processes are in progress, and TCC remains a part of the University. KNUST, as a University, is an authorised legal entity and can execute the required Tripartite Agreement with UNESCO and the Government of Ghana to establish the Category II Centre.

The TCC is expected to retain its name as the Technology Consultancy Centre, for the time being, and will retain current key staff including its current director who will be the Director General.

As stipulated by the UNESCO General Conference, while Category II centres are associated with UNESCO, they are legally outside the Organization. They enjoy legal and functional autonomy. Hence, the leadership of TCC recognises that UNESCO is not
legally responsible for its activities and UNESCO shall bear neither responsibility nor liabilities of any kind, be it managerial, financial or otherwise.

5.3. Governance

The proposed Centre will be overseen by a Governing Board, which will include representatives of the Government of Ghana, the Vice Chancellor of KNUST and other academic leaders, senior experts from public as well as private institutions within Ghana, representatives from Member States of UNESCO and a representative of the Director-General UNESCO.

A transitional Board, chaired by the Vice Chancellor of KNUST, has been established with a 1-year term to 31 May 2022.

Once the TCC is established as an autonomous entity, a new Board is expected to be appointed with composition and functions that are in accordance with Article 7 of the proposed Tripartite Agreement.

5.4. Financial Sustainability

The Ministry of Education already supports the Africa Institute for Mathematical Sciences (AIMS-Ghana) and Institute for Educational Planning and Administration (IEPA) which are both UNESCO Category II Centres, and is committed to supporting TCC as a designated UNESCO Category II Centre, in a similar manner.

The Minister of Education has confirmed financial support by the Government of Ghana for TCC to be designated as a UNESCO Category II Centre and to cover staff and administrative costs. We understand that the Government of Ghana has committed US $2 million over eight years to cover staff costs and other operating costs.

In his letter dated 7 June 2021, the Minister of Education, Dr Yaw Osei Adutwum has stated that, "The Ministry will enhance it support to the centre like it is doing for the Africa Institute for Mathematical Sciences (AIMS-Ghana) and Institute for Educational Planning and Administration (IEPA) which are all UNESCO Category II Centres. The support will be in the form of subvention to cater for staff cost and administrative expenses."

In his letter dated 5 July 2021, the Minister of Education, Dr Yaw Osei Adutwum has stated that, "The Government shall provide the emoluments of staff at the Centre and contribute to the Centre an amount of at least 2 million US dollars over the first eight years for the administration and proper functioning of the Centre. The amount will subsequently be reviewed."

In interview with the Vice Chancellor, she confirmed that KNUST is committed to continue to provide premises and administration support such, as IT systems, and other infrastructure for the TCC at no additional cost. An MoU will be required between KNUST and the re-established autonomous TCC to confirm these arrangements.

In addition, TCC is expected to complete existing collaborative projects that are funded by international partners such as the Royal Academy of Engineering, U.K.

There is strong likelihood that further international funding will be available once the TCC becomes a designated Category II Centre, based on the very positive support expressed by international partners in interviews.
Income from consultancies and training programmes will also be a source of additional income.

Ongoing support from the Government of Ghana beyond 2025 is also anticipated, as has been the case in the past, so that the TCC is expected to be financially sustainable in future.

Table 1 shows the annual income and expenditure outlay of the TCC Centre up to the year 2025. Staffing is expected to increase from the current 10 staff to 22 staff over 4 years. Information on expected revenues and proposed budgeted expenses has been provided by TCC in June 2021.

5.5. Tripartite Agreement
The Government of Ghana, KNUST and UNESCO is expected to enter into a Tripartite Agreement that define the terms and conditions and other pertinent issues regarding the operation of TCC. The Agreement is generally in alignment with the model Tripartite Agreement in the UNESCO 2019 Strategic Plan and decision in relation to Category II Centres.

The proposed Tripartite Agreement has been submitted to the Director General UNESCO by the Ghana National Commission for UNESCO by letter dated 7 July 2021 with copies to the Ghana Ministry of Education, the Vice Chancellor KNUST and Director TCC so that all parties to the Agreement are informed. The Agreement is included in Annex 6.

6. Conclusions
The review of the capacity of TCC to operate successfully as a UNESCO Category II Centre has shown that there is a strong case for the TCC to be designated as such a Centre and it is expected to make a significant contribution to UNESCO programmes and priorities as well as to national development in Ghana and regional development in West Africa for the following reasons:

1) TCC has a proven track record of excellence over nearly 50 years in UNESCO’s fields of competence with excellence in science technology and engineering research, training and skills development, capacity building, policy advocacy, manufacturing skills and innovation and is expected to play an importance role in the translation of research and innovation into commercial outcomes;

2) TCC’s programmes and activities are relevant and aligned with UNESCO’s Approved Programme and Budget (C/5), including global strategies and action plans, as well as sectoral programme priorities including Global Priority Africa, Global Priority Gender;

3) As the first UNESCO Category II Centre in engineering in Africa, TCC’s activities complement other UNESCO programmes and activities and do not overlap with those of other category II institutes or centres in engineering around the world or with other Category II centres that currently exist in Ghana. The TCC has a Strategic Plan and objective that align with and is expected to deliver several key priorities of UNESCO in relation to education and capacity building in engineering and technology and the engagement and training of women and girls in this sector;
(4) The activities of TCC contribute to national goals by developing essential innovations, manufacturing skills and technology transfer programmes for the economic development in Ghana and the region, achieving several of the UN Sustainable Development Goals, especially Education (Goal 4), Gender Diversity (Goal 5), Economic Development (Goal 8), Innovation (Goal 9), Reduced Inequalities (Goal 10) and Partnerships (Goal 17);

(5) The regional, interregional and global impacts of TCC are already significant. TCC has established national, regional and international networks and as these grow and develop further and extend to other existing institutes or centres, it is evident that it would expand UNESCO’s significance especially in Africa and is expected to contribute the Africa Union 2063 Plan. TCC has already provided and is expected to continue to contribute to policy advice and capacity-building especially in Africa and is expected to promote North-South cooperation;

(6) TCC is anticipated to also play an essential role in developing STEM skills for women and girls in Africa. TCC thus fits well with UNESCO’s objectives in general and also adds to its two global priorities, Africa and Gender in the field of technology and STEM skills;

(7) As a Category II Centre, TCC is expected to contribute to global and regional agenda and further develop its reputation, programmes and collaborative partnerships. UNESCO can be a catalyst for building further capacity by lending its technical and organizational expertise, as well as providing access to its vast network (UNESCO Chairs, field offices, category 1 and 2 institutes and centres, etc.). UNESCO can act as a bridge to other countries, international organizations and relevant NGOs working to develop innovative and manufacturing capacities for sustainable development;

(8) The actions of TCC are international and regional in scope. TCC already has successful national, regional and international partnerships and relationships between university, industry and government in Ghana and demonstrated success in capacity building nationally and in the region. It is committed to supporting the West Africa region and the national development agenda in these countries;

9) The TCC is expected to be financially sustainable with written confirmation from the Ghana Minister of Education that the government will provide the emoluments of staff at the Centre and contribute to the Centre an amount of at least 2 million US dollars over the first eight years for the administration and proper functioning of the Centre;

10) TCC already has professional management and an interim Governing Board is already in place for appropriate oversight of activities and it is expected to establish a Governing Board in accordance with Article 7 of the Tripartite Agreement;

11) The Government of Ghana, KNUST and UNESCO is expected to enter into a Tripartite Agreement that define the terms and conditions and other pertinent issues regarding the operation of TCC and is generally in alignment with the model Tripartite Agreement in the UNESCO 2019 Strategic Plan and decision in relation to Category II Centres;

12) TCC is also expected to formalise support from KNUST via a Memorandum of Understanding (MoU) so that TCC will retain its established organization capacity, structures, human resources and ongoing commitment from KNUST to continue to
use its premises, facilities and laboratories as well as administration infrastructure and systems at no cost.

7. Recommendation

Based on the findings of the feasibility study, the proposed Technology Consultancy Centre, designated as a Category II Centre under the auspices of UNESCO, fits well with UNESCO’s strategic and programmatic objectives, and corresponds to the 40C/5 Expected Result 5 of Major Programme I, II, III and IV.

The feasibility study has ascertained that the TCC will be a great advantage to the country, region and the continent as a whole as it will be the first Category II Centre for engineering in Africa. It aligns well with UNESCO’s mandate on engineering education and the Government of Ghana and the Kwame Nkrumah University of Science and Technology (KNUST) is committed to supporting the Centre, with ongoing collaboration through all its colleges and with ongoing access to its facilities.

TCC has a demonstrated history of excellence over nearly 50 years as in core areas of engineering innovation, manufacturing and technology transfer and will advance UNESCO Global Priority for Africa and Global Priority for Gender and is expected to contribute to the entire set of the UN Sustainable Development Goals and in particular, Goal 4 (education), Goal 8 (Economic Growth and Development), Goal 9 (Innovation), Goal 10 (Reduced inequalities) and Goal 17 (Partnerships).

TCC has established national, regional and international partnerships and has demonstrated success in developing manufacturing skills, technology transfer and innovation. It has made a strong contribution to the national and regional economic and skills development agenda and had contributed and will continue to contribute to the Africa Union Development Agenda.

The proposal fulfils and complies with most of the guidelines and criteria regarding the establishment of relations between UNESCO and the institutes and centres to be placed under its auspices, as stipulated by the General Conference in 40 C/99.

It is noted that a number of administrative processes are in progress to re-establish the TCC as an autonomous institute with its own legal capacity, a key requirement for such UNESCO Category II Centres.

KNUST Legal Department has advised that there are no legal impediments to establish TCC as an autonomous institute with its own legal capacity. The processes have commenced and are expected to take no more than 12 months. These include approval by the newly constituted KNUST University Council and is expected in the next few months.

The Government of Ghana has also confirmed that it will undertake to effect all measures to establish TCC as an autonomous institute and will provide financial support to cover staff costs and contribute an amount of at least US 2 million dollars over the first eight years of its establishment as a Category II Centre. TCC will sign an MoU with KNUST for ongoing collaboration with the university and use of facilities.
The Government of Ghana and KNUST have proposed a Tripartite Agreement to be executed by UNESCO to establish the Centre. The Tripartite Agreement is generally in alignment with the UNESCO Model Tripartite Agreement.

Recommendation:

It is recommended that the Technology Consultancy Centre be designated as a Category II Centre under the auspices of UNESCO and located at Kwame Nkrumah University of Science and Technology (KNUST) in Kumasi Ghana as all criteria required under the UNESCO 2019 Strategy for Category II Centres are substantially satisfied.
Table 1: Proposed Revenues and Budget for Technology Consultancy Centre as a UNESCO Category II Centre

<table>
<thead>
<tr>
<th>Description</th>
<th>2020</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue (GH₵)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R1 GOG</td>
<td>832,741</td>
<td>1,356,049</td>
<td>2,378,109</td>
<td>2,634,618</td>
<td>2,766,349</td>
<td>2,904,667</td>
</tr>
<tr>
<td>R1.1 Emoluments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R1.2 GOG commitment of $1 million over 4 yrs</td>
<td></td>
<td>1,437,500</td>
<td>1,437,500</td>
<td>1,437,500</td>
<td>1,437,500</td>
<td>1,437,500</td>
</tr>
<tr>
<td>R1.3 GOG Grants - IFE [Note 1]</td>
<td></td>
<td>700,000</td>
<td>17,700,000</td>
<td>17,700,000</td>
<td>17,700,000</td>
<td>17,000,000</td>
</tr>
<tr>
<td>Total GOG Support</td>
<td>832,741</td>
<td>2,056,049</td>
<td>21,515,609</td>
<td>21,772,118</td>
<td>21,903,849</td>
<td>21,342,167</td>
</tr>
<tr>
<td>R2 KNUST</td>
<td></td>
<td>93,948</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2.1 Equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2.2 Maintenance of Buildings</td>
<td>49,262</td>
<td>51,189</td>
<td>43,307</td>
<td>35,638</td>
<td>48,202</td>
<td>50,200</td>
</tr>
<tr>
<td>Total KNUST Support</td>
<td>49,262</td>
<td>145,136</td>
<td>43,307</td>
<td>35,638</td>
<td>48,202</td>
<td>50,200</td>
</tr>
<tr>
<td>R3 Grants</td>
<td>621,000</td>
<td>415,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R3.1 Funding from RAE [Note 2]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R3.2 Funding from SDF [Note 3]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R3.3 Funding from other grant sources</td>
<td>130,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Grants</td>
<td>621,000</td>
<td>545,000</td>
<td>250,000</td>
<td>250,000</td>
<td>250,000</td>
<td>250,000</td>
</tr>
<tr>
<td>R4 Consultancies</td>
<td>256,212</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R4.1 Funding from REP [Note 4]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R4.2 Funding from Energy Commission [Note 5]</td>
<td>150,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R4.3 Funding from other consultancies</td>
<td>250,000</td>
<td>250,000</td>
<td>250,000</td>
<td>250,000</td>
<td>250,000</td>
<td>250,000</td>
</tr>
<tr>
<td>Total Consultancies</td>
<td>256,212</td>
<td>150,000</td>
<td>250,000</td>
<td>250,000</td>
<td>250,000</td>
<td>250,000</td>
</tr>
<tr>
<td>R5.1 Internally Generated Funds</td>
<td>57,000</td>
<td>68,970</td>
<td>75,867</td>
<td>83,454</td>
<td>90,000</td>
<td></td>
</tr>
<tr>
<td>R5.2 Funding from Workshops and Laboratories</td>
<td>57,000</td>
<td>62,700</td>
<td>68,970</td>
<td>75,867</td>
<td>83,454</td>
<td>90,000</td>
</tr>
<tr>
<td>Total IGF</td>
<td>57,000</td>
<td>62,700</td>
<td>68,970</td>
<td>75,867</td>
<td>83,454</td>
<td>90,000</td>
</tr>
<tr>
<td>Total Revenue</td>
<td>1,816,215</td>
<td>2,958,885</td>
<td>22,127,886</td>
<td>22,383,623</td>
<td>22,535,505</td>
<td>21,982,367</td>
</tr>
</tbody>
</table>

NOTES:
1. IFE: Investment for Employment, Funding yet to be received, awaiting response to proposal. Value of Funding estimated 1.5 million GH₵.
2. REP: Royal Academy of Engineering Funded Projects: the sum of 893,000 Pounds to be received over 2 years ending December 2021.
3. GOG: Ghana Development Fund, Ghana Funded Project (the sum of 395,640 Ghana Cedis over 2 years ending December 2021).
4. IMF: International Monetary Fund, awaiting response to proposal. Value of Funding estimated 1.5 million Ghana Cedis.
5. GOG: Ghana Development Fund, awaiting response to proposal. Value of Funding estimated 1.5 million Ghana Cedis.
7. GHS: Ghana Cedis, 1 US Dollar = 2.36 GHS.
8. GH₵: Ghana Cedis, 1 US Dollar = 2.36 GHS.

Technology Consultancy Centre as a UNESCO Category II Centre

EXPENDITURE BUDGET 2021-2025-EXPENDITURE

<table>
<thead>
<tr>
<th>Description</th>
<th>2020</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of Expenses (GH₵)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Emoluments of Staff [NOTES 1]</td>
<td>832,741</td>
<td>1,356,049</td>
<td>2,378,109</td>
<td>2,634,618</td>
<td>2,766,349</td>
<td>2,904,667</td>
</tr>
<tr>
<td>2 Infrastructural projects [NOTES 2]</td>
<td>1,000,000</td>
<td>16,152,000</td>
<td>16,604,238</td>
<td>15,951,788</td>
<td>14,551,978</td>
<td></td>
</tr>
<tr>
<td>3 Laboratory equipment [NOTES 3]</td>
<td>441,600</td>
<td>219,148</td>
<td>1,775,500</td>
<td>1,776,500</td>
<td>1,776,500</td>
<td>1,777,000</td>
</tr>
<tr>
<td>4 Cost of implementing projects supported by grants</td>
<td>170,200</td>
<td>78,000</td>
<td>85,508</td>
<td>86,100</td>
<td>92,200</td>
<td>95,000</td>
</tr>
<tr>
<td>5 Cost of implementing projects supported by Consultancies</td>
<td>86,393</td>
<td>51,032</td>
<td>56,136</td>
<td>61,749</td>
<td>67,924</td>
<td>68,200</td>
</tr>
<tr>
<td>6 Cost of running workshops and Laboratories</td>
<td>42,000</td>
<td>31,350</td>
<td>34,485</td>
<td>37,904</td>
<td>41,727</td>
<td>45,000</td>
</tr>
<tr>
<td>7 Cost of supporting administrative activities and other costs (Travels, Secretarial materials etc.)</td>
<td>30,000</td>
<td>32,200</td>
<td>35,200</td>
<td>34,000</td>
<td>34,400</td>
<td>35,000</td>
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<tr>
<td>8 Maintenance of vehicles</td>
<td>22,000</td>
<td>22,800</td>
<td>23,200</td>
<td>23,900</td>
<td>24,200</td>
<td>24,700</td>
</tr>
<tr>
<td>Total Expenditure</td>
<td>1,657,196</td>
<td>2,841,768</td>
<td>20,583,445</td>
<td>20,754,175</td>
<td>20,863,288</td>
<td>19,551,745</td>
</tr>
<tr>
<td>Expected Deficit or Surplus:</td>
<td>156,019</td>
<td>117,117</td>
<td>1,544,442</td>
<td>1,629,448</td>
<td>1,732,217</td>
<td>2,430,622</td>
</tr>
</tbody>
</table>

NOTES:
1. Based on Organogram of TCC as C2C with a 5% annual increase.
2. Total value of Expected Grant 10 m EURS from GOG.
3. Supplies and Maintenance

Feasibility of Technology Consultancy Centre to be a UNESCO Category II Centre
8. Annexes

8.1. Annex 1: Terms of Reference

Terms of Reference for the Feasibility Study of the Center of Excellence in Engineering Innovations, Manufacturing and Technology Transfer in Kumasi, Ghana as a Category 2 Centre under the auspices of UNESCO

1. Background

The UNESCO General Conference at its 40th Session in November 2019, adopted 40C/Resolution 99 that recommended the 2019 Strategy for Category 2 Institutes and Centres Under the Auspices of UNESCO, as global network of Institutions of excellence in the Organisation’s domain of competence. The Category 2 centres (C2C) are to, in a meaningful way and based on their expertise, contribute to the implementation of UNESCO’s priorities, programmes and global development agendas during a defined period, through international and regional cooperation, research, knowledge production, policy advice and capacity development. UNESCO has established several of these C2C centres across the world in the field of Natural Sciences. There are currently four Engineering Cat2 Centres (C2C) established under the Engineering Programme at the UNESCO. These are:

- Aalborg, Denmark – International Centre for Problem-Based Learning (PBL)
- Beijing, China – International Knowledge Centre for Engineering, Science and Technology (IKCEST)
- Beijing, China - International Centre on Engineering Education (ICEE), CAE & Tsinghua University
- St. Petersburg, Russia - International Competence Centre for Mining-Engineering Education

Context: Ghana has for decades been a major player in the West African Sub-region in the field of research, collaboration, capacity building and technology transfer. The Center of Excellence in Engineering Innovations, Manufacturing and Technology Transfer in Kumasi, was established in January 1972 as the Technology Consultancy Centre (TCC) to serve as the interface between the research and development activities taking place at the University, and the entrepreneurial aspirations of the Ghanaian Public.

In August 1980, TCC set up an Intermediate Technology Transfer Unit (ITTU) in Light engineering at the Suame Magazine which is home to the largest concentration of informal industrial establishment in the sub-region. This led to the emergence of a strong local manufacturing capability whose impact was so visible that in 1984, a second ITTU was set up in Tamale (Northern Ghana) and in 1986, the Government of Ghana set up the Ghana Regional Appropriate Technology Industrial Service (GRATIS) Project to replicate the TCC’s ITTUs all 10 regional capitals. The products from these initiatives for many years served Sierra Leone, Ivory Coast, Nigeria, Mali and the Burkina Faso all in the subregion and in Malawi in southern Africa. In the recent past TCC has collaborated with various national and international organizations and institutions including MIT, Penn State, Michigan University, among others to develop design and innovation processes for community development solutions. TCC has sought to upgrade and modernize its manufacturing capability and is collaborating with the Royal Academy of Engineering (RAE), UK to develop the manufacturing skills of final year students of KNUST and other technical universities in the country.

The initiative of the Ghana Government to apply for the designation of TCC at the Kwame Nkrumah University of Science and Technology (KNUST) as C2C Centre of Excellence as contained in the then Minister of Education, Hon. Matthew Opoku Prempeh’s letter of support of 30th October 2020 is to give TCC a unique direction in Engineering Innovation, Manufacturing and Technology Transfer.
The proposal was reviewed at the first meeting of the Intersectoral Review Committee (IRC) for Category 2 Institutes and Centres (C2C) on 27 November 2020. A preliminary assessment of the proposal was made. The Committee recognised that Ghana’s proposed C2C mandate is international, and its work can contribute to that of the engineering education and professional training, research and innovation in the Natural Sciences Sector. TCC is hosted by KNUST, the Government of Ghana provides subventions, and it has a track record and the governance structure already existed. However, as a C2C, at the time of application, TCC’s governance system did not give it sufficient autonomy for it to attain its own legal personality. Since then TCC has made the necessary modifications. A feasibility study was therefore recommended to be conducted in line with the practice of UNESCO along the directions contained in The 2019 Strategy for such centres.

The report of the feasibility study is expected to be presented to the 212th Session of the Executive Board to give recommendations to the 41st General Conference

2. Status and purpose of the Category 2 Centre.

The proposed Category 2 centre is a Centre of Excellence for Engineering Innovation, Manufacturing and Technology Transfer) is hosted by the Kwame Nkrumah University of Science and Technology and as such has all the facilities and capabilities available to be tapped for its work.

The TCC as a centre, collaborating in research and development in science, engineering, technology and innovation (SETI), brings together expertise and skills from within the KNUST and other engineering and technology-based institutions country-wide and internationally, generating and sharing innovations in engineering, manufacturing and technology. The TCC provides leadership in best practices, support and training in engineering, manufacturing and technology transfer. The purpose is to provide an environment that encourages, enables and supports stakeholders to generate innovative solutions to engineering and technology and share for the well-being of society. The centre’s office is located at the KNUST campus with facilities on various parts of the campus of the University and outside and parent of the 10 ITTUs in the country.

The activities of the Centre will contribute to the development agenda of Ghana and participating partners in the sub-region and beyond. The nature of the work of the Centre will contribute to the entire set of the SDGs.

The functions derived from the objectives of the Centre include:

- **Knowledge Production**: undertake collaborative research to develop and transfer innovative engineering solutions and manufacturing technology for the sustainable development of the West Africa Sub-region

- **Capacity Building**: provide space for product development, dissemination and knowledge uptake, and facilitate continuous professional development in relevant areas of engineering and technology within the West Africa Sun-region

- **Technical Service**: provide technical assistance to improve competencies and promote standards in manufacturing and technology,

- **Modernizing Indigenous Technologies**: promote modernisation and automation of indigenous manufacturing and industrial practices, using modern digital and smart technologies

- **Policy Advocacy and Information Sharing**: develop policy briefs to inform (and influence) national and sub-regional policy direction on engineering innovation, manufacturing and technology transfer.

- **Building Partnerships**: seek and promote collaboration with regional and international partners to achieve sustainable development and global citizenship targets
3. Rationale for the feasibility study and underlying principles

Category 2 institutes and centres under the auspices of UNESCO are a global network of institutions and centres of excellence in the Organization’s domains of competence. Given their expertise, these institutes and centres contribute in a meaningful way to the implementation of UNESCO’s priorities, programmes, and global development agendas during a defined period, through international and regional cooperation, research, knowledge production, policy advice, and capacity enhancement. Though independent of UNESCO, category 2 institutes and centres are a privileged partner of the Organization with access to UNESCO’s logo, international and intergovernmental bodies and networks, and may leverage UNESCO’s international reach and convening powers. Category 2 institutes and centres under the auspices of UNESCO are an integral part of the Organization’s Comprehensive Partnership Strategy.

At its 40th session (November 2019) UNESCO’s General Conference adopted 40 C/Resolution 99 by which it approved a new “Strategy for Category 2 Institutes and Centres under the auspices of UNESCO”, also referred to as the “2019 Strategy” (document 40 C/79¹), which supersedes all relevant prior resolutions by the General Conference on the subject.

According to the 2019 Strategy, the designation of “Category 2 Institutes and Centres under the auspices of UNESCO” comprises seven stages:

Submission of a proposal to UNESCO
Preliminary assessment by the Intersectoral Review Committee
Feasibility study
Assessment by the Intersectoral Review Committee
Examination by the Executive Board
Approval by the General Conference
Signature of agreement and entry into force

This TORs refers to the feasibility study step for the proposed Category 2 Centre which follows the positive preliminary assessment of the IRC which concluded that the proposal was complete, fits with the principles of eligibility outlined in B.1 of this Strategy, and falls within the fields of action of the Organization, in particular the programme priorities set by the Natural Science Sector.

The feasibility study shall be undertaken by a team of gender-balanced independent experts, in line with the provisions of this Strategy, as well as relevant sectoral strategies. UNESCO shall be responsible for the management of the feasibility study and contracting the independent experts in accordance with its rules and regulations. The institution or the Member State(s) concerned shall meet the costs of the feasibility study.

4. Purpose and scope of the feasibility

The main purpose of the feasibility study is to inform the decision-making process for the designation of Category 2 status to the proposed Centre, ensure its alignment with the requirements of the 2019 Strategy for Category 2 Institutes and Centres, and its contribution to the Strategic Programme Objectives of UNESCO, notably in the Natural Sciences. The findings of the feasibility study will be included in the Director-General’s report to the 212th session of the Executive Board, with her recommendations as to whether the designation as C2C under the auspices of UNESCO should be approved.

The scope of the feasibility study is to assess the conformity of the proposal with the requirements for a Category 2 Centre. The feasibility study, which shall be drafted in English consultation with UNESCO, shall focus on the extent to which:

1. the institution’s programmes and activities are relevant and aligned with UNESCO’s Approved Programme and Budget (C/5), including global strategies and action plans, as well as sectoral programme priorities.

2. the activities of the institution contribute to the global development agendas;

3. the actions of the institution are international or regional in scope;
(4) the institution enjoys the autonomy for the execution of its activities and legal capacity to contract, institute legal proceedings and to acquire and dispose of movable and immovable property;

(5) the institution has a proven track record of excellence of at least two years in UNESCO’s fields of competence;

(6) the institution’s organizational structure, the composition of its Governing Board or comparable body and its existing human resources allow for an effective and efficient management of the institution, and implementation of the functions foreseen;

(7) the institution engages relevant regional and international partners in its actions;

(8) the institution is financially sustainable; and

(9) the institution’s activities complement UNESCO’s programmes and activities and do not overlap with those of other category 2 institutes or centres or with other similar institutions created and operated by other United Nations system organizations.

One requirement of the feasibility study is to produce a draft of the tripartite Agreement between UNESCO, the Government of Ghana and the Center of Excellence in Engineering Innovations, Manufacturing and Technology Transfer as regards to its designation as a Category 2 Centre under the auspices of UNESCO.

The draft agreement, which shall conform to the provisions of the model Agreement included in attachment 2 of document 40 C/79, and take into consideration the recommendations of the feasibility study, shall be prepared by UNESCO in consultation with the Government of Ghana and the TCC in the working languages of UNESCO Secretariat (English and or French). Should there be additional language versions of the agreement, in the case of discrepancies, the English or French version of the agreement would prevail.

The feasibility study and the negotiations with the Government of Ghana and the TCC on the draft agreement shall be completed and submitted to the Intersectoral Review Committee (IRC) by 30 June 2021. The Intersectoral Review Committee (IRC) shall screen the proposal along with the feasibility study and draft agreement, by end of July 2021.

If the proposal and its feasibility study as well as the draft agreement are endorsed by the Intersectoral Review Committee, the Executive Board shall examine the proposal for designation of the TCC as a new category 2 centres, along with the Director- General’s recommendations and the draft agreement, at its 212th session.

5. Consultant for the Feasibility study

A team of two gender balanced independent experts, one international and one local, will be selected to conduct the feasibility study. The expert located in Ghana shall undertake travel within the country to speak with partners, site visits (hub and nodes) and other logistical matters. Meetings will be organised online to allow the non-resident expert of the team to be fully involved.

The qualifications of the team of two experts should be:

Required:

**International:**
- At least 10 years of professional experience in research and / or capacity-building in the field of engineering sciences or related matters.
- Academic degree (PhD preferred) in the above-mentioned field.
- At least five years’ experience in policy and programme assessment with strong knowledge and skills in applying various feasibility assessment methodologies and methods of data collection.
- Excellent communication and report-writing skills in English.
- Knowledge of the role and mandate of UNESCO and its programmes
- Experience in UNESCO feasibility studies procedures
National:
- At least 7 years of professional experience in research and/or capacity-building in the field of engineering sciences or related matters.
- Academic degree (PhD preferred) in the above-mentioned field.
- Proven experience in institutional audit including financial and legal frameworks in Ghana.
- Excellent communication and report-writing skills in English.
- Excellent knowledge of the national educational and academic environment in Ghana.
- Knowledge of scientific institutions in the country and in the region.
- Desirable for one of the team:
- Understanding and application of the UN Mandates in Human Rights and Gender Equality.

Verification of these qualifications will be based on the provided curriculum vitae. Moreover, references, web links or electronic copies of one recently completed feasibility study conducted by the consultant should be provided as part of the technical proposals, preferably relevant to the thematic areas of the review.

6. Feasibility study methodology

The feasibility study methods to be employed are to be clarified in the review framework to be proposed by the external expert, showing how each of the feasibility study dimensions mentioned in the scope section above will be addressed with regards to data sources and data collection methods. Among others, the following methods should be considered:

- Document review (desk study)
- Interviews with stakeholders (face to face, phone/skype)
- Direct observations through field visit(s), and
- Questionnaires/surveys with stakeholders, such as Partners institutions and beneficiaries (trainees).

KNUST and the Center of Excellence for Engineering Innovations, Manufacturing and Technology Transfer (TCC) will provide the expert with relevant documentation to be reviewed in the desk study. Interviews are to be conducted with relevant key stakeholders (e.g., academics and professionals, trainees) who have been involved in or benefitted from the work of the TCC.

TCC/KNUST will make all relevant documents and information available to the expert, including:

- Technical reports if applicable
- Progress and activity reports;
- Curricula of trainings
- Financial reports;
- List of staff;
- List of key publications;
- List of donors and project partners;
- Minutes of the Governing Board meetings;
- Available audit and evaluation reports (if available);
- List of beneficiaries, people trained, and countries assisted.

A number not exceeding of 21 working days per consultant are estimated to be required for the realisation of this feasibility study.

7. Planning and implementation arrangements

7.1 Management arrangements

SC/PCB will assist in the preparation and organisation of the feasibility study. The expert will be responsible for being self-sufficient as regards logistics (office space, administrative and secretarial support, telecommunications, printing of documentation, travel costs etc.). However, suitable working space, when necessary, will be provided during the visit to Kumasi, Ghana. While the expert is/are primarily responsible for the dissemination of all methodological tools (surveys, questionnaires), SC/PCB will facilitate this process to the extent possible (providing contact information, email addresses, etc.).
Relevant stakeholders are being requested to provide documents relevant to the feasibility study.

7.2 Time schedule and deliverables:

The feasibility study will result in three deliverables, as follows:
1. The expert should submit an inception report consisting of:
   i. Background, objectives and refined key questions.
   ii. Methodology (customized framework of how the exercise intends to cover the entire scope of the feasibility study and Work plan).

2. Draft feasibility study: The process for preparing the feasibility study shall allow adequate time for a discussion of the findings and the recommendations that have been proposed with KNUST and pertinent stakeholders, including the Government of the Ghana and TCC.

3. Final feasibility study: The final feasibility study (maximum 30 pages excluding annexes) should be structured as follows:
   - Executive summary (maximum four pages);
   - Purpose of the feasibility study;
   - Scope of the feasibility study;
   - Methodology;
   - Findings;
   - Recommendations;
   - Annexes (including interview list, mission reports, key documents consulted, Terms of Reference) + draft tripartite Agreement.

The language of all reports will have to be English.
8.2. Annex 2: Documents Reviewed (*)

**KNUST - TCC designated as Category II Centre - Documents reviewed**

**TCC Governance, structure, finance**

1. Letter from Dr. Matthew Opoku Prempeh (MP.), Minister for Education & Chairman of the Ghana National Commission to UNESCO, Proposal to established TCC as a UNESCO Category II Centre, 30 October 2020

2. Support Letter from KNUST Vice Chancellor Prof. Rita Akousa Dickson, in support of TCC being established as a UNESCO Category II Centre, 26 October 2020

3. Establishment of Transitional Board for TCC with KNUST Vice Chancellor (Chair) and Members - Provost of Engineering, Provost of Science, Representative of Association of Ghana Industries, Representative of Ghana Institution of Engineering, Acting Director General TCC, for 1 year term commencing 1 June 2021, dated 27 May 2021.

4. Letter from Dr. Yaw Osei Adutwum (MP), Minister for Education, confirming financial support for staff and administrative costs and support to establish an autonomous legal entity for TCC as a UNESCO Category II Centre, 7 June 2021.

5. Proposed staffing and costs, expenditure budget and revenues for TCC as a UNESCO Category II Centre, 2021-2025

6. Establishment of separate bank account for TCC with TCC Director General and KNUST Vice Chancellor, added as signatories, 28 May 2021

7. History, functions, vision objective and proposed governance and staffing and management of TCC, May 2021

8. Proposal for TCC to be designated a UNESCO Category II Centre

9. List of staff and Fellows at TCC

10. TCC Current capacity and facilities

11. TCC Strategic Plan 2019-2024

12. TCC Strategic Plan 2019-2024, Mid-term review, May 2021

13. Financial statements 2019-2021

14. Review by KNUST Legal department to establish TCC as a legal entity

15. Ministry of Trade and Industry – Nomination of representative to Ghana National Commission to UNESCO to support TCC proposal for Category II Centre

16. Ministry of Environment, Science, Technology and Innovation – Nomination of representative to Ghana National Commission to UNESCO to support TCC proposal for Category II Centre

17. Letter from Dr. Yaw Osei Adutwum (MP), Minister for Education, confirming financial support for staff and US$2 million over eight years for additional costs and support to establish an autonomous legal entity for TCC as a UNESCO Category II Centre, 5 July 2021

18. Support Letter from KNUST Vice Chancellor Prof. Rita Akousa Dickson to Director General UNESCO, clarifying process and commitment to establish TCC as an autonomous institute at the University dated 7 July 2021


**Examples of student and intern beneficiaries of Projects and Workshops**

1. List of students and interns who have benefitted from TCC programs 2018-2020


### KNUST - TCC designated as Category II Centre - Documents reviewed

2 List of industry internships arranged for KNUST students, July- Aug 2020
3 Student evaluation of internship programs July-August 2020
5 List of students on four teams for capstone projects with industrial applications
6 Report on training on institutional cook stove manufacturing, Jan 2021
7 Student evaluation of various Workshop programs

### Examples of Projects involving International and Regional Collaboration

1 Project Report - Royal Academy of Engineering Feb 2020-Feb 2021, total funding GBP 200,000 to Dec 2021.
2 Project Report, Practical Impact Alliance, Design-Labs, MIT, USA July 2015
   Project Report - World Bank Consultancy to establish an Appropriate Technology Centre at the Magomero Community Development College in Malawi, 1995
3 Project Report - WASHCost Sierra Leone Project, January 2013
   Project Report - Short Course on Sustainable Municipal Solid Waste Management at the Université Félix Houphouët-Boigny, Cote D'Ivoire, run by KNUST WRESCK, August 2019
   Project Report - Short Course - Borehole Drilling and Construction at the National Water Resources Institute, Kaduna-Nigeria, October 2019
   Project Report - Short Course - GIS & Remote Sensing in Environmental Systems at the Cheikh Anta Diop University (UCAD), Dakar- Senegal, July 2019
   Project Report - Short Course - Sanitation Technologies and GIS in Spatial Planning in the Gambia, October 2019
   Curriculum for Technology Entrepreneurship and Technology Management Programmes (MSc/MPhil), one-third of intake is female.
6 TCC Energy Efficient Stove, sponsored by Design Burn Labs USA

### Examples of Training programs, workshops and capacity building

Publication: Industrial Training and capacity Building Resource Series published by TCC with support from Skills Development Fund -3D printing for artisans and engineering practitioners
2 Publication: Industrial Training and capacity Building Resource Series published by TCC with support from Skills Development Fund -Computer Numerical Control Milling for artisans and engineering practitioners
3 Publication: Industrial Training and capacity Building Resource Series published by TCC with support from Skills Development Fund -Computer Numerical Control Turning for artisans and engineering practitioners
4 Publication: Industrial Training and capacity Building Resource Series published by TCC with support from Skills Development Fund -Computer Numerical Control Sheet Metal Folding for artisans and engineering practitioners
5 Publication: Industrial Training and capacity Building Resource Series published by TCC with support from Skills Development Fund -Metal Product Finishing techniques for artisans and engineering practitioners
6 Publication: Industrial Training and capacity Building Resource Series published by TCC with support from Skills Development Fund -Pattern Making linked to 3D Printing for artisans and engineering practitioners
7 Publication: Industrial Training and capacity Building Resource Series published by TCC with support from Skills Development Fund -Solidworks for artisans and engineering practitioners
KNUST - TCC designated as Category II Centre -Documents reviewed

8 List of key publications 2014-2021

Examples of Policy and Advocacy

Submission to Ministry of Technology and Innovation (MoTI) : Engineering Perspective: Motif Sponsored Participation in Sub-Saharan Automotive Components manufacturing Workshop and Fair and Tour of Toyota Motor Manufacturing Plant, D urban, South Africa, April 2019, including advocacy and recommendations for developing manufacturing capability through developing infrastructure and training and capacity development


Concept Note on provision of Technical Support to the 1-District-1 Factory Programme of the Government of Ghana

Examples of Partnerships

Skills Development Fund, Development of training programs to upgrade agro-processing equipment manufacturers, Nov 2019-19-June 202)


(*) Documents listed above are provided as separate attachments

8.3. Annex 3: Interview list

<table>
<thead>
<tr>
<th>Category of Stakeholder</th>
<th>Stakeholder</th>
<th>Contact</th>
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<tbody>
<tr>
<td>KNUST/TCC</td>
<td>Vice Chancellor</td>
<td>Prof. Mrs. Rita Dickson</td>
</tr>
<tr>
<td></td>
<td>Provost College of Engineering</td>
<td>Ing. Prof. M. Adom-Asamoah</td>
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<tr>
<td></td>
<td>Director TCC</td>
<td>Prof Sackey Mensah</td>
</tr>
<tr>
<td>GHANA NATIONAL COMMISSION TO UNESCO</td>
<td>Secretary General</td>
<td>Ms Ama Serwah Nerquaye-Tetteh</td>
</tr>
<tr>
<td>ENGINEERING ORGANIZATIONS (GHANA, AFRICA)</td>
<td>Past President, Ghana Institution of Engineers</td>
<td>Ing. Mrs. Carlien Bou-Chedid (FAEO President)</td>
</tr>
<tr>
<td>Technical University</td>
<td>Dean of Engineering, Kumasi Technical University</td>
<td>Dr Abena Obiri-Yeboah</td>
</tr>
<tr>
<td>REGIONAL COLLABORATORS</td>
<td>West African West African Science Service Centre on Climate Change and Adapted Land Use, WASCAL (Covers 11 West African Countries), Executive Director</td>
<td>Dr. Moumini Savadogo</td>
</tr>
<tr>
<td>INTERNATIONAL PARTNERS OF TCC</td>
<td>Professor of Mechanical Engineering, North Carolina Agricultural and Technical University</td>
<td>Professor Owusu-Ofori</td>
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<td></td>
<td>Ms Anastasia Shown</td>
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<td>AND COLLEGE OF ENGINEERING</td>
<td>University of Pennsylvania Study Abroad Programme University of Pennsylvania Study Abroad Programme</td>
<td>Ms Megan Doherty</td>
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<td></td>
<td>Royal Academy of Engineering, UK (Skills Gap Programme)</td>
<td>Ms Catriona MacArthur</td>
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8.4. Annex 4: Interview reports (*)
Reports of interviews that were completed are in a separate attachment.

8.5. Annex 5: Work Plan for Feasibility Study (*)
The Work Plan and inception report are in a separate attachment.
DRAFT AGREEMENT BETWEEN

THE UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION (UNESCO),

AND

THE GOVERNMENT OF GHANA

AND

THE CENTRE OF EXCELLENCE IN INNOVATION, MANUFACTURING AND TECHNOLOGY TRANSFER OF THE KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

REGARDING

THE DESIGNATION OF TECHNOLOGY CONSULTANCY CENTRE, KUMASI, GHANA AS A CATEGORY 2 CENTRE UNDER THE AUSPICES OF UNESCO

The draft is available here: https://fr.unesco.org/sites/default/files/final_knust_tripartite_agreement_exb212.pdf