

# KNUST-DANISH CONSORTIUM PARTNERSHIP

## BUILDING STRONGER UNIVERSITIES PROJECT PHASE THREE (BSUIII)

### IMPLEMENTATION PLAN

DECEMBER, 2017

#### 1. Summary Fact Sheet

##### 1.1 Partners

BSUIII is a partnership between the following parties:

- I. Kwame Nkrumah University of Science and Technology (KNUST), website: [www.knust.edu.gh](http://www.knust.edu.gh). The KNUST Coordinator is **Professor Robert Clement Abaidoo**, Director of the Office of Grants and Research (OGR), KNUST, Ghana. Email: [abaidoorc@yahoo.com](mailto:abaidoorc@yahoo.com) Tel: +233208438958; and
- II. A Consortium of Danish Universities (DU) made up of Aarhus University, University of Copenhagen and Aalborg University) led by Aarhus University, Denmark. The Coordinator for the DU is Dr. **Torsten Rodel Berg**, Senior Advisor at the Department of Agroecology, Aarhus University, Denmark. Email: [torsten.berg@agro.au.dk](mailto:torsten.berg@agro.au.dk); Tel:+4524858115

BSUIII is South-led, meaning that KNUST is directly responsible for the overall implementation and accountability of the project. KNUST is one of Ghana's public tertiary education institutions. The University was established in 1961 and started awarding its own degrees in June 1964. The University runs both undergraduate and postgraduate programmes with a student population of about 40,000 and about 900 academic staff. Total graduate output of KNUST has increased from about 2000 students in the 1999/2000 academic year to over 10,000 students in 2016/2017 academic year.

The vision of KNUST is to advance knowledge in science and technology for sustainable development in Africa and other nations. The mission of KNUST is to provide an environment for teaching, research and entrepreneurship training in science and technology for the industrial and socio-economic development of Ghana, Africa and other nations. KNUST also offers service to the wider community. The University is open to all, and positions itself to attract scholars, industrialists and entrepreneurs from Africa and the international community. The University operates a collegiate system with six (6) academic colleges namely: (1) College of Agriculture and Natural Resources (CANR); (2) College of Art and Built Environment (CABE); (3) College of Humanities and Social Science (CoHSS); (4) College of Engineering (CoE); (5) College of Health Sciences (CHS); and (6) College of Science (CoS). The Colleges are made up of Faculties and Departments, most of which are located on campus. It also has a business incubator for strengthening collaborations with industries.

##### 1.2 Objectives

The overall objective of BSUIII is to contribute to KNUST's mission of providing an environment for teaching, research and entrepreneurship training in science and technology for sustainable development of Ghana, Africa and other continents.

The specific objective of BSUIII is to strengthen KNUST's frameworks, systems and practices for research to the extent that it is better able to engage with private and public sector stakeholders for the generation of new knowledge (innovation) to address specific societal problems.

### **1.3 Project Duration**

BSUIII has a four (4) year duration starting from October 2017 until September 2021.

### **1.4 Key thrust of themes and Outputs**

BSUIII is largely about consolidating the deliverables from BSUII. Therefore the four work package themes under BSUII have been maintained. These are (1) Climate-Smart Agriculture and Environmental Management (WP1), (2) Innovation and Entrepreneurship (WP2), (3) Health Delivery Systems (WP3) and University-wide Research Support Services and Facilities. However, in BSUIII, the scope of activities and outputs under these themes has been focused towards more specific areas that will generate better and more sustainable outcomes.

In line with the overall objectives of BSUIII and KNUST's vision, three main outcome areas are envisaged under BSUIII. These are (1) strengthening the administrative capacity to support research; (2) improving outreach/stakeholder collaborations for high quality research and (3) improving university capacity by strengthening research and outreach practices and networks. These outcomes will be achieved by carrying out activities under the four WPs as outlined in the attached project logical framework and Gantt chart.

### **1.5 Budget**

BSUIII has a budget of 13 million Danish Kroner, which is shared equally between KNUST and the Danish consortium led by Aarhus University.

## **2. Rationale, and main lessons learnt during BSUII**

The BSUII initiative contributed to developing research capacity at KNUST in line with the university's key research and teaching mandate. Under the three thematic areas, namely Climate-Smart Agriculture and Environmental Management (WP1), Entrepreneurship and Job Creation (WP2) and Health Delivery Systems (WP3), short courses, methods-oriented workshops, engagement with industry and mentored pilot projects have provided the opportunity for a number of young researchers in the Colleges involved, to hone their research skills. Under BSUII, over 80 KNUST staff have benefited directly from research capacity building activities that were facilitated by both the south and north partners. The knowledge acquired is evident in the ability of the participating staff members to undertake pilot research projects, develop research proposals for external funding as well as the writing of manuscripts for publications. The pilot research projects in the fore-stated three thematic areas, have contributed to building capacity with respect to problem-based research concepts for addressing the societal problems that fall within KNUST's research remit.

In the area of postgraduate education, three new and one revised PhD curricula were developed to address specific needs in the areas of Climate-Smart Agriculture and Entrepreneurship (WP1 and WP2). To augment KNUST's efforts to reach out to industry partners, WP2 under BSUII has sponsored the development of an Academia-Industry (AI) linkage database and the creation of office space to facilitate the process. The AI database has created a common platform for KNUST researchers to interact with other researchers, industry partners, donors, alumni and students to exchange ideas and create mutual opportunities.

In addition, BSUII engaged in activities that were aimed at strengthening the university-wide research support systems, including ready access to literature, laboratory services, and grants management. This has yielded the dual benefit of strengthening the administrative capacity for sustainable research processes as well as equipping the staff to conduct high quality research. Under the University-wide research support Work Package (WP4), a number of university-wide research support initiatives were introduced, all of which should be considered important elements for KNUST's framework for institutionalizing a research-responsive administrative system. This framework will facilitate the consolidation of grants and research as well as graduate education and training guidelines for easy access by internal and external stakeholders.

These gains notwithstanding, BSUII faced a number of challenges during implementation. The delayed start of the project, coupled with the short timeframe for implementation resulted in the need for a no-cost extension to enable the effective completion of activities. Implementation of activities with a relatively high number of Danish partners was also challenging. The relatively high number of different people involved in the different work packages sometimes made it difficult to follow through and achieve timely implementation, optimum knowledge sharing, synergies and efficiency. The BSUIII partnership will therefore aim at enhancing south-led initiation of Terms of Reference (TOR), the preparation, joint and timely negotiation of timelines suitable to south and north team members, improved communication between north and south partners and timely submission of assignment completion reports. These measures are expected to lead to timely completion of activities by assignment holders, more continuity in terms of assignment holders, coherence and greater degree of institutionalization of the outputs.

The overall objective of BSUII was that the partnering African universities would enhance their roles as providers of scientific knowledge and of research-based education and advice to society. This objective is well aligned with the vision of KNUST. BSUII has thus created a sound foundation to further advance the research capacity of KNUST. However, the institutionalization of novel research paradigms and support systems is a long-term and continuous process that requires further efforts within the three thematic areas, as well as with respect to creating sustainable research support systems. In the case of a large university such as KNUST, the aim is primarily to address the objective at the College level; specifically in the Colleges of Agriculture and Natural Resources, Science, Health Sciences, Engineering as well as the Humanities and Social Sciences. KNUST thus acknowledges the need to consolidate and focus activities for better effect in the Colleges that reflect the WP thematic areas. BSUIII will therefore strive to achieve this aim.

### **3. Strategic direction of a continued partnership in BSUIII**

#### **3.1 Research Capacity development focus**

The strategic research capacity development areas for the BSUIII partnership are conduct of problem-based (demand-driven) research (PBR), innovation, entrepreneurship, outreach and research support systems and structures. In BSUII, capacity building for conduct of research was at a pilot scale, directed at and carried out by specialized groups and individuals with limited diversity as regards disciplines, expertise and skills. While useful research has been carried out and capacity built among those involved, we expect that adoption of the new research paradigm at college level, as well as development of better outreach strategies will be more effective through multi-disciplinary research groups. As will be accounted for later, capacity building of these research groups will revolve around a climate-smart agriculture, environment and health research nexus, with focus on one or more catchment areas with the promotion of innovation and entrepreneurship as key ingredients. This nexus aligns with KNUST and national priorities, reflects the competences and resources of the work packages, and holds promise for integrated training and research needed for the achievement of KNUST's vision.

#### **3.2 Theory of Change**

Multi-disciplinary research groups are central to the strategies of the world's best universities, as they are seen to foster collaboration with external stakeholders, and have the potential to conduct high quality research that addresses societal problems in a relevant and holistic manner. In this regard, BSUIII aims to enhance the capacity of staff and students involved in this process through training, peer learning, networking and learning-by-doing. To ensure the success and sustainability of this process, other administrative structures such as the Office of Grants and Research, the Library, the Central Laboratories and the School of Graduate Studies will be equipped with the relevant resources. This will be provided through staff training, equipment support and the automation of graduate students' educational processes, and creation of databases. These will improve the ability of both staff

and students to proffer innovative solutions to address specific problems through teaching and research, which will ultimately accelerate the achievement of KNUST's vision. This is illustrated in Annex 4.

In BSUIII, KNUST will form cross-theme and cross-college research teams to promote synergies in the research processes and better respond to societal demand and enhance collaboration among staff and between colleges. This will stimulate and lead to adoption of multi-disciplinary research approaches with a view of enhancing problem setting and solving by the scientific research teams. Furthermore, KNUST will apply a more demand-driven approach to research than was the case in BSUII. This will involve more intense consultations with relevant stakeholders from industry, the public sector and communities. This is with a view to placing KNUST's research in the relevant innovation landscape.

The scientific themes of BSUIII will focus on issues that are relevant to Ghana especially in the achievement of Sustainable Development Goals 1, 3, 6, 9 and 13, Ghana National Climate Change Policy as well as other relevant national policy documents. While the three thematic areas under BSUII will be maintained, the focus will be narrowed to developing capacity for conducting problem-based/ demand-driven research, through the application of innovative processes and the fostering of entrepreneurial mindsets, as opposed to research of a purely scientific and theoretical nature. Research groups will be formed to address research questions on Climate Smart Agriculture and Environmental Management (WP1); and Health Delivery Systems research questions (WP3), respectively.

WP2 (Innovation and Entrepreneurship) in BSUII will be used and applied as a more focused tool to foster innovative processes and entrepreneurial thinking in conducting research. Thus, WP2 will focus its activities on training and mentoring, of the research groups in WP1 and WP3 with the aim of ensuring that innovative and entrepreneurial processes and opportunities are explored in research. WP2 will also be used to expand KNUST's business incubation concept to unearth innovative ideas by staff and students for job creation. Lessons will be learnt from the Danish model of business incubation, particularly at Aalborg University, to improve upon KNUST's existing model.

WP4 (Research Support Services and Facilities) will continue to focus on University-wide research support services and facilities. The Office of Grants and Research, Library, Central Laboratory and the School of Graduate Studies will continue to be supported to provide quality research support services to staff and students of KNUST. In particular, the Office of Grants and Research will continue to improve its research-responsive support system to facilitate the institutionalization of research and research-based educational programmes across the university. Pilot research projects will be designed to collect baseline data needed for the development of externally funded research projects. With the institutionalization of BSUIII outputs and other processes, KNUST will be better placed to serve as a knowledge hub that provides innovative solutions to developmental problems in Ghana, Africa and beyond. Furthermore, the outputs of BSUIII will contribute to the improvement of the academic ranking of KNUST because of the improved research culture, increased research publications, citation counts and online presence.

#### **4. Objectives, Outcomes and Outputs for the Partnership in BSUIII**

##### **OBJECTIVES**

The specific objectives of BSUIII are to:

1. strengthen the frameworks, systems and practices for conducting research
2. promote stakeholder collaboration for demand-driven research and
3. promote innovation and entrepreneurship in teaching and research

## **OUTCOMES**

1. KNUST staff have access to highly improved research-responsive administrative processes and systems
2. KNUST has strong stakeholder collaborations and able to offer tailor-made solutions to societal problems through the conduct of demand-driven research
3. KNUST adopt the culture of innovation and entrepreneurship in teaching and research to enhance technology transfer and commercialization of knowledge

**OUTPUTS** (see annex 1 & 2 for logical framework and detailed Gantt chart)

**I. DANIDA Outcome Area 1: University capacity is improved by strengthening administrative processes and systems for research**

The outputs under this outcome area predominantly fall under WP4 (i.e., University-wide Research Support Services and Facilities) and are as follows:

**Output 1.1 Timely and accurate financial monitoring and reporting on externally funded research projects**

The use of the Grants Accounting Software and training of accountants and researchers in grant financial management will increase timeliness and accuracy in project reporting.

**Output 1.2 Research Management Information Systems providing synchronized data on research expertise and activities across the university**

Training on research management and the use of the Research Management Information System (ReMIS) will ensure that such information across the university is centrally available and accessible.

**Output 1.3 KNUST Library has the capacity to provide data management services to support staff and students research**

Under BSUIII the KNUST library will be supported to provide research data management services to staff and students. This will be done by continually training library staff on the necessary tools and skills including research poster design and data management. This also requires the purchase of relevant softwares to support staff training. This process will eventually result in the provision of support for researcher data collection and analyses and storage of datasets that will serve as baseline for further research.

**Output 1.4 Increased usage of Central laboratory services by researchers**

The central and affiliate laboratory system will reach out to the research community in the University and industry, and provide equipment specific and application training in order to promote and expand use of the state-of-the-art central laboratory. Use of Standard Operating Procedures (SOPs) and initiation of ISO certification that will eventually ensure that the laboratory is providing quality services to users.

### **Output 1.5 Doctoral College operational and providing university-wide PhD courses**

A Doctoral College will be established at the School of Graduate Studies to institutionalize the provision of PhD skill enhancement training through the offer of mandatory PhD courses that were developed under BSUII, in consultation with selected Departments.

### **Output 1.6 Functional automated and integrated system used for PhD education processes**

The automated and integrated system for postgraduate education and training processes developed in BSUII will be operationalized. Further upgrade will be done to capture the entire spectrum of graduate students' training processes at KNUST. Training of supervisors and students will facilitate understanding and appreciation of their specific roles and responsibilities towards enhanced postgraduate training and education processes.

## **II. Outcome Area 2: University capacity is improved by strengthening organization and systems for researcher education and research processes.**

The Outputs under this outcome area relate to element of the three thematic areas: WP1-Climate Smart Agriculture and Environmental Management (CSAEM), WP2-Innovation and Entrepreneurship (I&E) as well as WP3-Health Delivery System (HDS).

### **2.1 & 2.5 Four functional multi-disciplinary research groups established**

Multi-disciplinary research groups have proven to be one of the most effective ways of obtaining high quality holistic and relevant research findings whilst capitalizing on the benefits of team dynamics. The research group concept in KNUST is not well developed neither at the College level, nor across Colleges; rather, research is undertaken on an individual basis and in single-disciplinary fashion. As a result, capacity development and internalization at the collective level is limited, and while the research produced may be excellent in its own right, the societal relevance that may be achieved through the addition of multi-disciplinary perspectives, usually becomes limited.

Under BSUIII, four multidisciplinary research groups (3 on CSAEM and 1 on HDS) will be established. The core research groups will compose of at most 10 members from at least five different academic disciplines. The groups will be taken through intensive trainings on research team building, innovation and entrepreneurship and stakeholder engagements to enable them function as strong research entities in KNUST.

### **2.2 & 2.6 KNUST faculty and postgraduate students collaborate with stakeholders to conduct demand-driven research in CSAEM and HDS. .**

This output is directly linked to the research group formation, as they will be required to conduct demand driven research under the two thematic areas. The four research groups (which are described under 2.2 & 2.6) will be competitively selected using well-developed criteria that ensure multi-disciplinarity, gender balance and strong team spirit. The selected RGs will be required to consult with relevant stakeholders to jointly identify and conceptualize research problems that will be taken up by the academia. Research capacity building will revolve around an agriculture/climate change, environment and health research axis. BSUIII will adopt a catchment approach that provides scope for methodology training relevant to natural resource management and public health research that use multi-disciplinary approaches. Therefore, the research groups will also include participants from social science discipline to ensure a holistic overview of the selected research topics. Findings from the research will be disseminated to the relevant stakeholders for uptake.

### **2.3 KNUST staff and students make use of innovation processes and explore entrepreneurial opportunities as part of their learning and research processes.**

Under this output, WP2 will be required to provide the necessary training on innovations and entrepreneurship to the research groups in WP1 and WP3 to ensure that the entire research process is underpinned by innovation and possible elements of commercialization. The other is to ensure that faculty members have the capacity to guide or supervise students' research into innovative projects that can be taken up into the KNUST incubator or directly by industry partners. The target will be to train selected number of lecturers from each College and empower them to identify and guide students to be innovative and entrepreneurial minded in carrying out their research.

### **2.4 Well-equipped learning hub for innovative activities established at the Kumasi Business Incubator for prototyping.**

With support of the World Bank, KNUST has established an incubator center that provides the necessary environment for introducing students to entrepreneurship. The Kumasi Business Incubator (KBS) is however limited to students who have the passion to establish ICT-related businesses. Due to the limited capacity (25 offices) of the Business Incubator, many students are turned away although there is physical space to support incubation of a larger group as well as virtual support for start-ups.

To upscale the innovative ideas of KNUST staff and student, BSUIII will provide equipment support for the upgrading of the Business Incubator to enable it accommodate greater number of prospective job-creators across departments. This will be in the form of a well-equipped Makers' Space, where students and researchers can develop creative ideas towards prototyping and product-development after extensive market research. What is important is that an enabling and guided environment is created for people with creative and innovative ideas towards job creation. Furthermore, the capacity of lecturers across departments will be developed (e.g. in the CSAEM and HDS research groups) to support this center, in the area of business plan reviews, business support training and entrepreneurship coaching.

### **III. Outcome Area 3: University capacity is improved by strengthening research and outreach practices and networks**

The outputs under this outcome area relate to elements under WP1, WP2 and WP3.

#### **3.1. & 3.2 Staff upgrade and Exchange Program for PhDs and Postdocs in CSAEM & HDS groups**

Having high numbers of staff with PhDs is widely recognized as a core element in quality research capacity building. This output however does not involve full scholarships for post-doctoral studies or PhDs, but will offer training and capacity building support to both young faculty members especially those who have had little or no further training after completion of their terminal academic degrees.

The support will include an exchange program with Danish partners for intensive training on research/grant proposal writing and networking for both postdocs and staff enrolled in PhD programmes in the two thematic areas. This is expected to improve staff exposure and enhance capacity in teaching and conduct of research. To encourage female participation, preference will be given to female staff who are undertaking PhD research locally.

#### **3.3 Academic-Industry networks developed to facilitate innovation, outreach and entrepreneurship**

Processes to enhance academia-industry linkages at KNUST were initiated in BSUII. An academia-industry (AI) database was developed and housed in KNUST School of Business. A few pilot research collaborations were commenced and showcased on the AI Database. There is the need to strengthen collaboration with industry through sector by sector stakeholder meetings. Also, surrogate/ external entrepreneurs will be engaged to provide entrepreneurial inputs into research and to convert innovations from the laboratory to a viable product in a market place. Further training and awareness on the use of the database, and capturing of appropriate data on the linkages will be carried out to strengthen research collaboration and outreach.

### **5. Coordination, Learning, Partnership and Management of BSUIII-support**

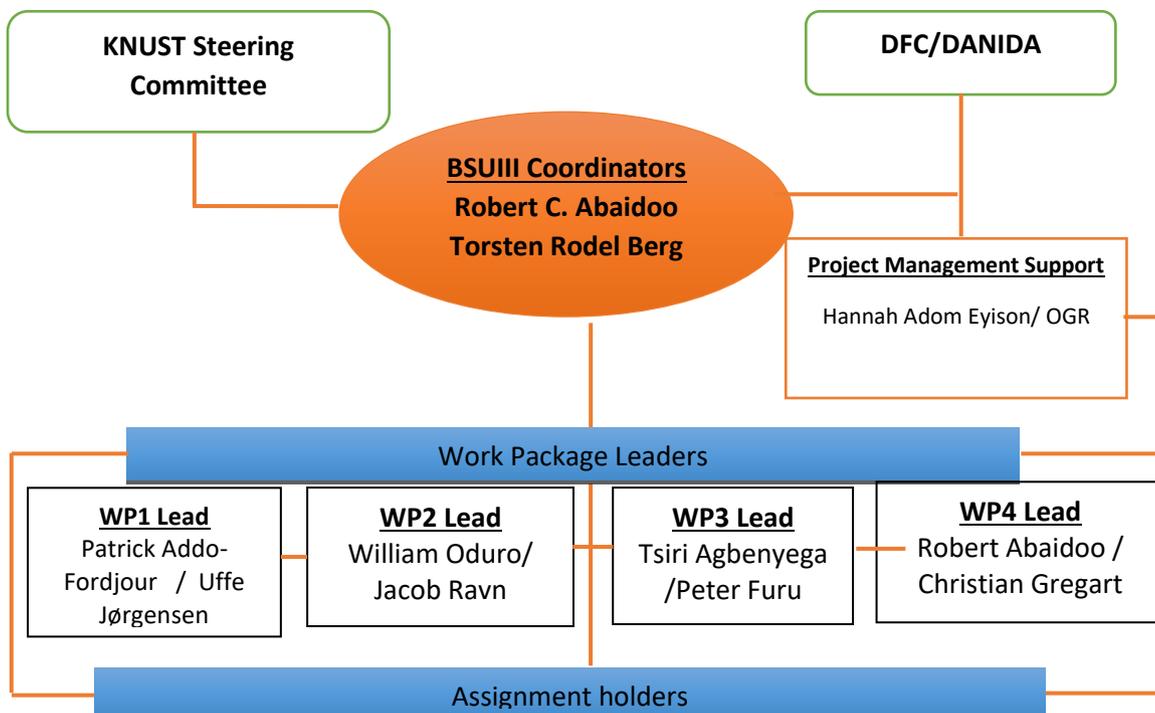
The overall coordination of the South-led partnership with Danish institutions will be anchored at KNUST. It will be aligned to and fully integrated into the existing university management structures as the leadership is designed to involve various College leaders and includes overall project accountability to the Vice Chancellor. KNUST, as the project holder, will have the overall responsibility of coordinating and managing the grant. A Steering Committee will be constituted by the Vice Chancellor to provide a higher level of supervision over the project. KNUST leadership led by a Coordinator, will be responsible for the overall communication with the partners of the Danish Consortium, as well as Danida and DFC, when needed. He will also be responsible for technical coordination of BSUIII activities, including preparation of technical and financial reports with the help of a project administrator.

The planning, implementation, and monitoring of the partnership will be managed by a joint north-south partnership management team led by the KNUST and Danish coordinators, work package leaders and project administrator. The north-south partnership management team will meet over Skype within a maximum of one month, or as needed.

Work Package Leaders and Assignment holders, both north and south, will be selected based on academic backgrounds and experience relevant to the work package themes and activities. This is expected to enhance professionalism in the selection of assignment holders and in implementation of assignments, something which has a bearing on and to achieve efficiency and consistency in project delivery. The work package leaders will draw on specialised and dedicated expertise in their academic and administrative fields, and are expected to outsource activities to fewer and more specialised individuals as output leaders with a view to enhancing continuity, and sustained capacity development processes. This implies that WP leaders at the intra-WP levels communicate and agree on these matters. Efficient implementation, along the lines of these principles, will be ensured through detailed work planning at the inception workshop.

The Danish consortium will be led by the Department of Agroecology, Aarhus University. Aarhus University as the Danish lead institution will also be the legal entity that will enter into the trilateral agreement with KNUST and DFC. The Danish Consortium will be represented by three universities (Aarhus: WP1, Copenhagen: WP3 and Aalborg: WP2) and WP4-a private company (CG consult). All four entities have considerable BSU experience and will offer specialized expertise within the thematic areas. In the case of WP2, the expertise of Aalborg University will be augmented by an operational link to Access2Innovation, an organization specialized in support to innovation processes, bringing together civil society organizations, businesses, public institutions and the academic world in new collaborations, creating new sustainable solutions and development of business models targeting developing countries.

Figure : BSUIII Management Structure



## 6. Risks and Mitigating Measures

1. **Availability of staff members for the timely implementation of project activities:** The risk of staff not being available for BSU III activities at scheduled time will be avoided by scheduling project activities in a manner that will minimize conflict with teaching and other duties of targeted staff.
2. **Institutional support:** The risk of inadequate support by the KNUST for institutionalization of BSU III outputs and outcomes will be mitigated by aligning the project leadership to existing university management structures through the involvement of various College leaders and the BSU III Steering Committee to be constituted by the Vice-Chancellor. In addition sharing of outputs with the relevant authorities will be given highest priority.
3. **Delays in project implementation:** Delays in the inception phase processes as well as joint scheduling of activities by KNUST and Danish partners pose a risk to the timely implementation of activities. Adequate allocation of time for the planning phase and for the execution of activities will be ensured by the project leads. Project management support teams will help in the timely identification of implementation deviations and prompt introduction of corrective measures.

## 7. Budget

As indicated earlier, BSU III has a total budget of 13 million Danish Kroner, which is shared equally between KNUST and Danish Consortium led by Aarhus University. The North budget mainly covers Travels and Salaries of Danish partners while KNUST budget covers salaries, travels, trainings & workshop cost, capital cost as well as publication, dissemination & communication. The total budget also includes 12 percent Overhead for KNUST and 20 percent Overhead cost for Danish Universities (see annex 3 for detailed budget).

## 8. Learning, Monitoring, Reporting and Auditing

Monitoring and evaluation of project activities will be carried out continuously throughout the project period as indicated in the Gantt chart. Learning will be derived from daily implementation and monitoring of project activities at various levels. Lessons learned will be used to modify project implementation processes for enhanced project efficiency, effectiveness, relevance and impact. Progress and financial reports on the project will strictly follow the guidelines and formats provided by the DFC.

## Annexes:

### 1. Logical Frameworks

Impact		KNUST will be recognised as innovation platform for teaching, demand-driven research and entrepreneurship for the accelerated achievement of relevant Sustainable Development Goals (SDGs)	
Impact indicator		# of KNUST research publications ( including conference papers, book chapters & journals) # of inventions/ patents created and owned by KNUST	
Means of verification		KNUST Research report  Vice Chancellor's Annual Report	
Baseline	Year	2017	Total number of publications for 2015/2016 is 1729 with staff publication ratio of 1.86  One invention created by KNUST in 2017
Target	Year	2021	15% increase in total number of publications by KNUST staff (with staff publication ratio of 2)  At least two inventions will be made by KNUST staff/students

<b>Outcome 1:</b>		<b>KNUST staff have access to highly improved research-responsive administrative processes and systems</b>	
Outcome indicator		<ul style="list-style-type: none"> <li>• # of grant proposals submitted through the Office of Grants and Research annually</li> <li>• The success rate of grant proposals submitted</li> <li>• Completion rate/time for postgraduate students</li> <li>• Staff publication ratio for all Colleges (average no. of research publication per staff)</li> </ul>	
Baseline	Year	2017	<ul style="list-style-type: none"> <li>• Thirty-nine (39) research proposals submitted through OGR from 2016-2017</li> <li>• 23% success rate in grant proposals</li> <li>• 56 % postgraduate students completion rate</li> <li>• Staff per capita publication for all Colleges of the university is 1.68 (2014-2015 data)</li> </ul>
Target	Year	2018	5% increase in number of research proposals submitted through OGR 5% increase in grant proposal submission success rate 2% increase in postgraduate completion rate 5% increase in staff per capita publication for Colleges directly involved in BSU3 activities (Colleges of Science (COS), Health Sciences (CoHS), Agriculture and Natural Resources (CANR))
Target	Year	2019	5% increase in number of research proposals submitted through OGR with at least 25% success rate 5% increase(on baseline) in postgraduate completion rate 10% increase in staff publication ratio.
Target	Year	2020	15% increase in number of research proposals submitted through OGR with at least 25% success rate

			5% increase in postgraduate completion rate 15% increase in staff per capita publication
Target	Year	2021	20% increase in number of research proposals submitted through OGR with at least 30% success rate 5% increase in postgraduate completion rate 25% increase in staff per capita publication
<b>Output 1.1/ WP 4.1</b>		<b>Timely and accurate financial monitoring and reporting on externally funded research projects</b>	
<b>Output indicator</b>		# of research projects/ grants with accurate and up-to-date information in ReMIS and GAMS # research administrators and grants accountants with improved knowledge and skills on grants management	
<b>Means of Verification</b>		Office of Grants and Research Reports College Finance Offices/Internal Auditors reports	
<b>Baseline</b>	<b>Year</b>	2017	<ul style="list-style-type: none"> <li>Absence of university-wide grants management system</li> <li>Grants Accounting Management System (GAMS) developed under BSUII but not fully installed and operationalized in all colleges</li> <li>About 40% of externally funded projects are able to provide timely and accurate reports to funders</li> <li>About 20% of Research Administrators (RAs) and 50% of Accounts staff who work on projects have adequate knowledge and skill in grants administration and financial management</li> <li></li> </ul>
<b>Target</b>	<b>Year</b>	2021	<ul style="list-style-type: none"> <li>All Colleges will be using GAMS to prepare timely and accurate project financial reports with improved level of efficiency</li> <li>KNUST will have up-to-date information on all externally funded projects ed in the central system GAMS</li> <li>80% of RAs and 60 perc #ent accounts staff who work directly on projects RAs will have improved knowledge and skills to offer timely and efficient grants management support services to researchers</li> </ul>
<b>Activities</b>		<p><b>1.1.1</b> Joint Consultative meetings to detail activities and timelines</p> <p><b>1.1.2</b> Finalize the development of Grants Accounting Systems (GAMS) ( system modifications and improvement)</p> <p><b>1.1.3</b> Complete the installation/ operationalization of GAMS for all Colleges</p> <p><b>1.1.4</b> Conduct grants/project management training for RAs</p> <p><b>1.1.5</b> Conduct trainings on GAMS and ReMIS for both systems custodians and users; Conduct grants financial management training for RAs, accountants and system administrators</p> <p><b>1.1.6</b> Provide technical training for System developers (to ensure effective management of softwares)</p> <p><b>1.1.7</b> Participate in RA conference in Uganda ( at least twice within the project) South-South exchange</p> <p><b>1.1.8</b> Plan and undertake study visits to Denmark on grants financial management</p> <p><b>1.1.9</b> Review/ develop grants management policies / SOPs/ guidelines</p> <p><b>1.1.10</b> Conduct workshop on Research leadership and Mentorship</p> <p><b>1.1.11</b> Technical training on proposal submission and review processes for Researchers and RAs</p> <p><b>1.1.12</b> Monitor and ensure the institutionalization of project outputs and outcomes/ Project dissemination</p>	
<b>Output 1.2/ WP 4.2</b>		<b>Research Management information systems providing synchronized data on research expertise and activities across the university</b>	

<b>Output indicator</b>		# of staff research activities and grant proposals recorded in ReMIS	
<b>Means of Verification</b>		<ul style="list-style-type: none"> <li>• ReMIS Records</li> <li>• Office of Grants and Research Reports</li> </ul>	
<b>Baseline</b>	<b>Year</b>	2017	<ul style="list-style-type: none"> <li>• ReMIS developed but not fully installed and operationalized in all colleges</li> <li>• Fragmented data on number of grant proposals submitted by staff yearly</li> </ul>
<b>Target</b>	<b>Year</b>	2021	<ul style="list-style-type: none"> <li>• At least 60% of KNUST staff will have easy access to up-to-date and accurate information on research activities (for improved research visibility and enhanced collaboration)</li> </ul>
<b>Means of Verification</b>		OGR records ReMIS database	
<b>Activities</b>		1.2.1 Finalize the development of Research Information Management System (ReMIS) 1.2.2 Provide hands-on training for Researchers and research administrators  1.2.3 Complete installation of ReMIS for all College Research Offices	
<b>Output 1.3/ WP 4.3</b>		<b>KNUST Library is will be able to provide research data management services to staff and students</b>	
<b>Output indicator</b>		# of library staff with improved knowledge on research data management # of research data management softwares packages procured for the university library # of draft policies/guidelines on research data management	
<b>Means of Verification</b>		Library records Project reports; VC's report	
<b>Baseline</b>	<b>Year</b>	2017	<ul style="list-style-type: none"> <li>• Fragmented information on research data management (RDM) practices of KNUST faculty</li> <li>• Majority (80%) of library staff have little or no knowledge on RDM</li> <li>• No existence of policies/ guidelines to regulate RDM practices</li> </ul>
<b>Target</b>	<b>Year</b>	2021	<ul style="list-style-type: none"> <li>• Comprehensive information on staff RDM practices available to inform policy</li> <li>• 50% of library staff provided with training on RDM to serve as TOTs</li> <li>• At least 1 draft policy on RDM submitted to the University for approval</li> </ul>
<b>Means of Verification</b>		Project reports Library records	
<b>Activities</b>		1.3.1 Conduct baseline study on Research Data Management (RDM) practices in KNUST 1.3.2 Procure and install research data analysis softwares (Nvivo, SPSS, Endnote) 1.3.3 Organize stakeholder workshops to create awareness on RDM 1.3.4 Conduct workshop on research poster design for library staff 1.3.5 Prepare and submit draft policies on RDM to University administration 1.3.7 Create awareness and promote library resources and facilities	
<b>Output 1.4/ WP 4.4</b>		<b>Increased usage of Central laboratory facilities and services by</b>	

		<b>researchers</b>	
Output indicator		# of researchers utilizing the lab for analysis annually # of samples submitted to the KNUST Central lab for analysis	
<b>Means of Verification</b>		Central lab records	
Baseline	Year	2017	About 150 staff access the central lab services annually About 20,000 samples are analysed by the lab annually
Target	Year	2021	<ul style="list-style-type: none"> <li>• 10% increase in number of staff accessing the central lab services for research</li> <li>• 10% increase in number of samples analysed by the central laboratory</li> </ul>
<b>Activities</b>		1.4.1 Train laboratory managers on the development of course modules for equipment specific applications 1.4.2 Develop standard course modules for equipment-specific applications 1.4.3 Initiate ISO Certification for KNUST central lab 1.4.4 Develop in-house analytical expertise for targeted industries and researchers needs, i.e.pesticide analysis, herbal drug quality and heavy metal analysis 1.4.5 Develop a sustainable university-wide chemical inventory and lab equipment inventory 1.4.6 Develop nation-wide advertisement campaigns of Central Lab 1.4.7 Knowledge sharing on lab management practices (North-South)	
<b>Output 1.5/ WP 4.5</b>		<b>Doctoral College operational and providing university-wide PhD courses</b>	
Output indicator		# of mandatory PhD courses approved by Academic Board # of PhD students registering for the approved mandatory courses	
<b>Means of Verification</b>		Academic Board Records Graduate School Records	
Baseline	Year	2017	Non-existence of university-wide mandatory courses for PhD students No PhD student enrolled on mandatory Courses
Target	Year	2021	At least 3 mandatory PhD courses (developed under BSUII ) approved by Academic Board of the University All PhD students starting from 2020/2021 academic year enrolled on at least one mandatory PhD course
<b>Activities</b>		1.5.1 Conduct stakeholder meetings to refine draft curricula for at least 3 generic PhD courses 1.5.2 Review and submit draft curriculum to SGS Board for approval 1.5.3 Identify departments for hosting approved courses 1.5.4 Run approved courses	
<b>Output 1.6/ WP 4.6</b>		<b>Functional automated and integrated system used for PhD education processes</b>	
Output indicator		# of PhD thesis registered on the automated platform	
<b>Means of Verification</b>		School of Graduate Studies Records	
Baseline	Year	2017	Partial automation of PhD education (only thesis tracking system developed under BSUII)

Target	Year	2019	A functional integrated system developed for automation of entire PhD education processes
Target	Year	2021	All PhDs enrolled in the 2019/2020 academic year recorded and monitored on the automated platform
Activities		1.6.1 Improve features and functionalities of automated system for tracking PhD process 1.6.2 Conduct sensitization workshop for Graduate School staff 1.6.3 Organize hands-on training workshops for PhD students 1.6.4 Prepare and submit draft policies/guidelines on PhD Automation system to Graduate School Academic Board	

<b>Outcome 2:</b>		<b>KNUST has strong stakeholder collaborations and able to offer tailor-made solutions to societal problems through the conduct of demand-driven research</b>	
Outcome indicator		# of demand-driven (stakeholder collaborative) research projects implemented at Colleges directly involved in BSUIII activities (CANR, CoS, CoHS and CoE) # of mentored innovative or entrepreneurial projects implemented by KNUST staff/ students involved in t	
Means of Verification		<ul style="list-style-type: none"> <li>• Vice Chancellor's report</li> <li>• KNUST Research Report</li> <li>• Project Reports</li> </ul>	
Baseline	Year	2017	About 10% of research projects implemented at the selected colleges have direct stakeholder involvement (demand-driven)  Lack of initiatives to promote or nurture innovative research projects by staff/ students
Target	Year	2021	At least 15% increase in projects with direct stakeholder involvement (at the selected Colleges)  At least 5 innovative/ entrepreneurial research projects will be nurtured through business incubation
<b>Output 2.1/ WP 1.1</b>		<b>Three functional multi-disciplinary research groups established</b>	
Output indicator		# of functional multi-disciplinary research groups formed under CSAEM # of staff academic disciplines involved in each research group # of staff trained on research collaboration or in the multi-disciplinary research	
Means of Verification		Project progress reports	
Baseline	Year	2017	<ul style="list-style-type: none"> <li>• Non-existence of formalized CSAEM multi-disciplinary research group</li> <li>• Few researchers engage in inter-college/ department research collaborations ( staff mostly conduct research with colleagues from similar academic backgrounds)</li> </ul>
Target	Year	2021	<ul style="list-style-type: none"> <li>• Three (3) research groups involving staff/ postgraduate students from at least three (3) different departments (or disciplines) established to conduct research on CSAEM.</li> <li>• At least 30 staff members will undergo intensive training to improve knowledge and interest in research collaboration and</li> </ul>

			team work
<b>Activities</b>		2.1.1	Organize stakeholder workshops for needs assessment and problem identification
		2.1.2	Develop "Call for Proposals" and advertise across the university
		2.1.3	Review proposals and constitute three (3) multidisciplinary research groups
		2.1.4	Organize team building workshops for multidisciplinary research
<b>Output 2.2/ WP 1.2</b>		<b>KNUST faculty and postgraduate students collaborate with stakeholders to conduct demand-driven research in CSAEM</b>	
Output indicator		# of demand-driven research projects conducted under CSAEM by multi-disciplinary RGs	
<b>Means of Verification</b>		Project reports VC's Report	
Baseline	Year	2017	<ul style="list-style-type: none"> <li>No identified demand-driven research conducted by multi-disciplinary research CSAEM</li> </ul>
Target	Year	2021	<ul style="list-style-type: none"> <li>At least three (3) different research topics under CSAEM implemented by three multi-disciplinary research groups</li> <li>Evidence of stakeholder collaboration and inputs clearly shown</li> <li>At least one (2) publication will emanate from each of the 3 studies under CSAEM</li> <li>Each research group will hold at least one dissemination meeting to communicate their research outputs to relevant stakeholders</li> </ul>
<b>Activities</b>		2.2.1	Conduct workshop on innovation and commercialization of research
		2.2.2	Conduct multidisciplinary research studies
		2.2.3	Conduct research communication and uptake training workshop for research groups
		2.2.4	Disseminate research findings with stakeholders ( manuscript writing, conference papers, stakeholder meetings)
		2.2.5	Conduct workshop on proposal development for RGs
<b>Output 2.3/ WP 2.1</b>		<b>KNUST staff and students make use of innovative processes and explore entrepreneurial opportunities as part of their learning and research</b>	
Output indicator		# of staff with improved capacity in innovation and entrepreneurship (per college)	
		# of innovative research projects identified/nurtured by each college	
<b>Means of Verification</b>		KNUST Research reports College research outputs	
Baseline	Year	2017	<ul style="list-style-type: none"> <li>No staff participated in innovation and entrepreneurship capacity building programs</li> <li>No staff/students research project nurtured into innovation or entrepreneurship (beyond journal publication) to market integration (research uptake by industry)</li> </ul>
Target	Year	2021	<ul style="list-style-type: none"> <li>At least 30 staff members (5 per College) have participated in capacity building programs on innovation/ entrepreneurship.</li> <li>Each College will be able to identify and nurture at least two innovative research projects with entrepreneurship prospects</li> <li>At least 5 students/staff prototypes developed in the Business Incubator using the Makers' Space facilities and investor-ready.</li> </ul>
<b>Activities</b>		2.3.1	Conduct Stakeholders meeting to identify industry gaps that need innovative or local solutions as areas of research for WP 1 and WP 3

		<p>2.3.2 Identify staff to be involved in the pilot processes as change agents</p> <p>2.3.3 Design materials and conduct training on team building and research group formation ( for WP1 &amp; WP3 RGs)</p> <p>2.3.4 Conduct training workshop on teaching, supervision and research with focus on innovations and entrepreneurship/ commercialization ( for two groups)</p> <p>2.3.5 Facilitate meetings for supervisors and students to develop business ideas from their research outputs</p> <p>2.3.6 Organize Open Day: Poster exhibition of College project outcomes that have commercial value/ innovations</p>	
<b>Output 2.4/ WP 2.2</b>		<b>Well-equipped learning hub for innovative activities established at the Kumasi Business Incubator for prototyping</b>	
Output indicator		# of new and type of equipment procured for the KNUST Business Incubator # of staff/ student projects being prototyped at the Business incubator	
<b>Means of Verification</b>		<ul style="list-style-type: none"> <li>• Project progress reports</li> <li>• Inspection of KNUST Business incubator</li> </ul>	
Baseline	Year	2017	<ul style="list-style-type: none"> <li>• KSB has no Laser cutters and CNC machines Space for prototyping and commercialization; the incubator is ICT biased and needs to provide opportunities for other industries such as Food Technology, Wood Technology, Mechanical Engineering, Industrial Art, Electronics, etc.</li> </ul>
Target	Year	2021	<ul style="list-style-type: none"> <li>• KBI equipped with one Laser cutter, and one CNC machine</li> <li>•</li> <li>• KBI have prototyped at least additional 5 projects emanating from KNUST Staff/ students research and has integrated incubatees into the market or linked up with industry partners.</li> </ul>
Activities		<p>2.4.1 Conduct N-S consultative meeting on needs assessment of equipment and fittings for KBI</p> <p>2.4.2 Procure equipment, install and commission INNOLAB facility</p> <p>2.4.3 Advertise and call for business ideas and concepts from staff and students for incubation</p> <p>2.4.4 Screening and selection of business ideas for incubation at the INNOLAB ( including RGs)</p> <p>2.4.5 Admit and orient selected tenants into Kumasi Business Incubator (KBI) for prototyping</p> <p>2.4.6 Conduct one year technical training, prototype development and mentoring of tenants of KBI to establish start-ups and integrate into markets ( includes RGs in WP1 &amp; WP3 )</p>	
<b>Output 2.5/ WP 3.1</b>		<b>One functional multi-disciplinary research group established under Health Delivery Systems (HDS)</b>	
Output indicator		# of functional multi-disciplinary research groups formed under HDS # of staff academic disciplines involved in each research group # of staff trained on research collaboration or in the multi-disciplinary research	
<b>Means of Verification</b>		Project progress reports	
Baseline	Year	2017	<ul style="list-style-type: none"> <li>• Non-existence of formalized CSAEM multi-disciplinary research group</li> <li>• No inter-college/ department research collaborations ( staff mostly conduct research with colleagues from similar academic</li> </ul>

			backgrounds)
Target	Year	2021	<ul style="list-style-type: none"> <li>One (1) research group involving staff/ postgraduate students from at least three (3) different departments (or disciplines) established to conduct research under HDS</li> <li>At least 15 staff members have received intensive training to improve knowledge and interest in research collaboration and team work in the area of health delivery systems</li> </ul>
Activities		2.5.1	Plan and conduct "research focus" workshop - (Stakeholder workshop for research problem identification)
		2.5.2	Identify and recruit of research team members (1 multidisciplinary research group)- call for research proposals
		2.5.3	Plan and conduct a research team building workshop
<b>Output 2.6/ WP 3.2</b>	<b>KNUST faculty and postgraduate students collaborate with stakeholders to conduct demand-driven research in HDS</b>		
Output indicator	# of demand-driven research projects conducted by HDS multi-disciplinary RG List of external stakeholders and their inputs # of research dissemination/ communication actions: manuscripts/ publications, policy briefs dissemination meetings, etc		
<b>Means of Verification</b>	Project reports		
Baseline	Year	2017	<ul style="list-style-type: none"> <li>No identified demand-driven HDS research conducted by a multi-disciplinary research group</li> </ul>
Target	Year	2021	<ul style="list-style-type: none"> <li>At least one demand-driven research topic has been addressed by one HDS multi-disciplinary research group</li> <li>At two (2) publication will emanate from the research</li> <li>RG will hold at least one dissemination meeting to communicate their research outputs to relevant stakeholders</li> </ul>
<b>Activities</b>	2.6.1 Develop research protocols and detailed implementation plan 2.6.2 Implement research according to plan (include scientific writing) 2.6.3 Plan and conduct research communication and uptake seminar for internal and external stakeholders 2.6.4 Disseminate research findings with stakeholders ( manuscript writing, conference papers, stakeholder meetings) 2.6.5 Conduct workshop on proposal development		

Outcome 3:	<b>The Capacity of KNUST is improved by strengthening research and outreach practices and networks</b>		
Outcome indicator	Total # of stakeholder collaborations/ active industry partners per College # number of outreach programs by KNUST staff		
Baseline	Year	2017	Non availability of data on number of outreach programs and networks established by staff (both local and external)
Target	Year	2018	5% increase in number of outreach programs and networks established by staff
Target	Year	2019	10% increase in number of outreach programs and networks established by staff
Target	Year	2020	15% increase in number of outreach programs and networks established by staff

Target	Year	2021	20% increase in number of outreach programs and networks established by staff
<b>Output 3.1/ WP 1.3</b>		<b>Staff upgrade and Exchange Program for PhDs and Postdocs in CSAEM</b>	
Output indicator		# of staff that have participated in exchange programme with Denmark universities on in the areas CSAEM # of staff with improved knowledge on networking and research collaboration # of staff provided with material support to complete PhDs locally	
Means of verification		Project reports Vice Chancellor's Annual Report	
Baseline	Year	2017	<ul style="list-style-type: none"> <li>No existing Denmark exchange opportunities for staff conducting PhDs locally in the areas on CSAEM</li> <li>Lack of specific trainings for staff with PhDs (postdoc training)</li> <li>Inadequate research material support for staff conducting PhDs locally</li> </ul>
Target	Year	2021	<ul style="list-style-type: none"> <li>At least 5 KNUST staff undertaking PhD locally in the area of CSAEM, have participated in knowledge sharing exchange programs with selected Denmark universities.</li> <li>At least 30 staff with postdoc trainings demonstrate improved knowledge and skill in teaching and research in CSAEM</li> <li>At least 7 staff undertaking PhDs locally in the area of CSAEM have been provided with research material support to facilitate their successful completion</li> </ul>
<b>Activities</b>		3.1.1 Develop materials and conduct specialized training (networking, research dissemination, grant writing, etc) for staff PhDs 3.1.2 Provide research support to accelerate staff PhDs programme completion 3.1.3 Conduct training workshop for staff with PhDs (postdocs) 3.1.4 Implement staff PhD/postdoc exchange visit in Denmark	
<b>Output 3.2/ WP 2.3</b>		<b>Academia-Industry networks developed to facilitate innovation, outreach and entrepreneurship</b>	
Output indicator		# of industry partners registered in the Academia-Industry database # of formalized stakeholder arrangements # of dissemination activities carried out	
Means of Verification		<ul style="list-style-type: none"> <li>Academia-Industry database</li> <li>KNUST School of Business Reports</li> </ul>	
Baseline	Year	2017	<ul style="list-style-type: none"> <li>636 Partners Registered on the AI platform (22 Researchers, 18 Industries, 4 Agencies and 592 Students)</li> <li>No formal collaborations initiated through the AI platform</li> <li>No outreach programs conducted by the office in 2017</li> </ul>
Target	Year	2021	<ul style="list-style-type: none"> <li>50% increase in number of stakeholders on the AI platform</li> <li>At least 4 collaborations established with industry partners ( 1 Colleges involved)</li> <li>At least 4 outreach programs conducted by the AI office at KSB</li> <li></li> </ul>
<b>Activities</b>		3.2.1 Modify AI Platform into Smart Phone Application to include students. 2.3.1.1 Promote identified projects from RGs (WP1 & WP3) and university wide 3.2.2 Organise collaborative meetings with AI(Administration & Technical teams) and Tek-TV to promote AI Collaborations 3.2.3 Organize prototype exhibition that bring stakeholders together to identify investment opportunities (for incubator tenants) 3.2.4 Evaluate and improve the AI platform on achievement of Academia-	

		Industry collaboration benchmarking with AAU and UCN	
<b>Output 3.3/ WP 3.3</b>		Staff upgrade and Exchange Program for PhDs and Postdocs in HDS	
Output indicator		# of staff that have participated in exchange programme with Denmark universities on in the areas HDS # of staff with improved knowledge on networking and research collaboration # of staff provided with material support to complete PhDs locally in the area of HDS	
Means of Verification		Exchange Staff, Progress Reports/ Training reports	
Baseline	Year	2017	<ul style="list-style-type: none"> <li>No existing Denmark exchange opportunities for staff conducting PhDs locally in the areas on HDS</li> <li>Lack of specific trainings for staff with PhDs (postdoc)</li> <li>Inadequate research material support for staff conducting PhDs locally in the field of HDS</li> </ul>
Target	Year	2021	<ul style="list-style-type: none"> <li>At least 2 KNUST staff undertaking PhD locally in the field of HDS, have participated in knowledge sharing exchange programs with selected Denmark universities.</li> <li>At least 15 staff (with PhDs) demonstrate improved knowledge and skill in teaching and research in the field of HDS</li> <li>At least 3 staff undertaking PhDs locally in the area of HDS have been provided with research material support to facilitate their successful completion</li> </ul>
<b>Activities</b>		3.3.1 Develop materials and conduct specialized training for staff without PhDs 3.3.2 Provide research support to accelerate staff PhD programme completion 3.3.3 Conduct specialized training for staff with PhDs (PostDocs) 3.3.4 Implement staff exchange visits with Denmark Universities	

<b>Risks 1</b>		<b>Availability of staff for timely implementation of project activities</b>	
Risk indicator		# of staff attending project meetings or participating in project activities	
Means of Verification		<ul style="list-style-type: none"> <li>Attendance sheets of meetings</li> </ul>	
Baseline	Year	About 60 percent of staff participate in project activities when schedule does not conflict with their core duties	
<b>Risk 2</b>		<b>Sustained Institutional support</b>	
Risk indicator		# of project outputs being mainstreamed into the university system	
Means of Verification		Project reports / Vice Chancellor's report	
Baseline	Year	2017	KNUST is committed to the implementation of BSU activities although some outputs are yet to be institutionalized
<b>Risk 3</b>		<b>Delays in project implementation/ joint scheduling with North partners</b>	
Baseline	Year	2017	Joint scheduling of activity with North partners often delayed implementation of BSUII activities
Means of Verification		Project progress reports / Gantt Charts	

## 2. Work plans

Work plan for all Works packages is attached as separate excel document.

### 3. Budget

BSUIII OUTPUT-BASED BUDGET					
Output	WP		KNUST	Danish Consortium	Total
No.	No.	OUTPUTS	DKK	DKK	DKK
<b>OUTCOME AREA 1: STRENGTHENING ADMINISTRATIVE FRAMEWORKS FOR UNIVERSITY</b>					
1.1	4.1	Timely and accurate financial monitoring and reporting on externally funded research projects	700,000	1,038,889	1,738,889
1.2	4.2	Research Information Management System operationalized	129,000	55,000	184,000
1.3	4.3	Library providing data management services for researchers	178,500	55,000	233,500
1.4	4.4	Increased use of central lab facilities & services	316,500	120,000	436,500
1.5	4.5	Doctoral College operationalized	103,500	0	103,500
1.6	4.6	Functional automated integrated system used for PhD education processes	101,000	0	101,000
<b>Sub Total Outcome Area 1</b>			<b>1,528,500</b>	<b>1,268,889</b>	<b>2,797,389</b>
<b>OUTCOME AREA 2: STRENGTHENING ORGANIZATION AND SYSTEMS FOR RESEARCHER EDUCATION AND RESEARCH</b>					
2.1	1.1	Three functional multi-disciplinary research groups in CSAEM	226,000	548,750	774,750
2.3	1.2	Stakeholder collaboration for demand-driven research in CSAEM	554,706	986,749	1,541,455
2.3	2.1	Staff and student capacity in innovations and entrepreneurship enhanced	256,000	355,000	611,000
2.4	2.2	Well-equipped learning hub for innovative activities established at the Kumasi Business Incubator	667,000	425,000	1,092,000
2.5	3.1	One functional multi-disciplinary research groups in HDS	171,333	455,000	626,333
2.6	3.2	Stakeholder collaboration for demand-driven research in HDS	369,500	347,963	717,463
<b>Sub Total Outcome Area 2</b>			<b>2,244,539</b>	<b>3,118,462</b>	<b>5,363,001</b>
<b>OUTCOME AREA 3: STRENGTHENING RESEARCH AND OUTREACH PRACTICES AND NETWORKS. PROCESSES</b>					
3.1	1.3	Staff upgrading and exchange programs CSAEM	905,000	302,316	1,207,316
3.2	2.3	Academia-industry linkages enhanced	135,000	37,000	172,000
3.3	3.3	Staff upgrading and exchange programs for HDS	318,250	165,000	483,250
	C	Project Coordination Activities	572,282	475,000	1,047,282
<b>Sub Total Outcome Area 3</b>			<b>1,930,532</b>	<b>979,316</b>	<b>2,909,848</b>
<b>OUTCOME AREA TOTAL</b>			<b>5,703,571</b>	<b>5,366,667</b>	<b>11,070,238</b>
Overhead (12%)			<b>684,429</b>		684,429
DK Overhead (20%)				1,073,333	1,073,333
<b>SUB-TOTAL</b>			<b>6,388,000</b>	<b>6,440,000</b>	<b>12,828,000</b>
Audit			112,000	60,000	172,000
<b>TOTAL PROJECT COST</b>			<b>6,500,000</b>	<b>6,500,000</b>	<b>13,000,000</b>

<b>BSU3 University:</b>	KNUST	<b>Project start:</b>	<b>OCTOBER, 2017</b>
<b>BSU3 Coordinator:</b>	ROBERT CLEMENT ABAIDOO	<b>Project end:</b>	<b>SEPTEMBER, 2021</b>

**Expenses - BSU3 University** (amounts in DKK)

	2017-18	2019	2020	2021	Total
1. <b>Salaries (academic and technical) and Emoluments - Please specify on "Form 4 - Man Months"</b>	867000	384000	384000	177000	1,812,000
2. <b>Educational Grants - PhD degrees for younger academic staff.</b>	0	0	0	0	0
3. <b>Travel cost and per diem.</b>	222600	899100	54600	25600	1,201,900
4. <b>Training and Workshop costs - incl. Project and Research Materials</b>	1073750	616000	147000	0	1,836,750
5. <b>Capital costs - small scale investment and major equipment - please specify below.</b>	382500	80000	0	0	462,500
6. <b>Peer Learning Activities - Publication, Dissemination and Communication.</b>	127196	85391	128365	49469	390,421
<b>SUBTOTAL budgetlines 1 – 6</b>	<b>2,673,046</b>	<b>2,064,491</b>	<b>713,965</b>	<b>252,069</b>	<b>5,703,571</b>
7. <b>Institutional Overhead - maximum 12% BSU3 University.</b>	323,886	244,619	85,676	30,248	684,429
8. <b>DFC Expenses - Study stays in Denmark of researchers from the BSU country.</b>					0
9. <b>Audit costs.</b>	28,000	28000	28000	28000	112,000
<b>SUBTOTAL budgetlines 7 – 9</b>	<b>351,886</b>	<b>272,619</b>	<b>113,676</b>	<b>58,248</b>	
<b>TOTAL budget DKK</b>	<b>3,024,932</b>	<b>2,337,110</b>	<b>827,641</b>	<b>310,317</b>	<b>6,500,000</b>

<b>Danish Lead University:</b>	AARHUS UNIVERSITY
<b>Danish Anchor:</b>	TORSTEN RODEL BERG

## Expenses - Danish partner consortium (amount in DKK)

	2017-18	2019	2020	2021	Total
1. <b>Salaries (academic and technical) and Emoluments - Please specify on "Form 4 - Man Months"</b>	1739500	939500	897500	513500	4,090,000
2. <b>Educational Grants - PhD degrees for younger academic staff.</b>	0	0	0	0	0
3. <b>Travel cost and per diem.</b>	737963	299815	130000	70000	1,237,778
4. <b>Training and Workshop costs - incl. Project and Research Materials (please specify on Form 5 - Budget Notes).</b>	10000	8889	20000		38,889
5. <b>Capital costs - small scale investment and major equipment (please specify on Form 5 - Budget Notes).</b>	0	0	0	0	0
6. <b>Peer Learning Activities - Publication, Dissemination and Communication.</b>	0		0		0
<b>SUBTOTAL budgetlines 1-6</b>	<b>2,487,463</b>	<b>1,248,204</b>	<b>1,047,500</b>	<b>583,500</b>	<b>5,366,667</b>
7. <b>Institutional Overhead - maximum 20% Danish partner.</b>	497,493	249,641	209,500	116,700	1,073,333
8. <b>DFC Expenses - Study stays in Denmark of researchers from the BSU country.</b>					0
9. <b>Audit costs.</b>				60000	60,000
<b>SUBTOTAL budgetlines 7-9</b>	<b>497,493</b>	<b>249,641</b>	<b>209,500</b>	<b>176,700</b>	<b>1,133,333</b>
<b>TOTAL budget DKK</b>	<b>2,984,956</b>	<b>1,497,845</b>	<b>1,257,000</b>	<b>760,200</b>	<b>6,500,000</b>

BSU3 University	KNUST-DANISH UNIVERSITIES
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Total project expenses (amount in DKK).

		2017-2018	2019	2020	2021	Total
1.	Salaries (academic and technical) and Emoluments.	2,606,500	1,323,500	1,281,500	690,500	5,902,000
2.	Educational Grants - PhD degrees for younger academic staff.	0	0	0	0	0
3.	Travel cost and per diem.	960,563	1,198,915	184,600	95,600	2,439,678
4.	Training and Workshop costs - incl. Project and Research Materials	1,083,750	624,889	167,000	0	1,875,639
5.	Capital costs - small scale investment and major equipment.	382,500	80,000	0	0	462,500
6.	Peer Learning Activities - Publication, Dissemination and Communication.	127,196	85,391	128,365	49,469	390,421
	<b>Subtotal budget lines 1-6</b>	<b>5,160,509</b>	<b>3,312,695</b>	<b>1,761,465</b>	<b>835,569</b>	<b>11,070,238</b>
7.	Institutional Overhead - Partner(s) (from Form(s) 1 and 2)	821,379	494,260	295,176	146,948	1,757,762
8.	DFC Expenses - Study stays in Denmark of researchers from the BSU country.	0	0	0	0	0
9.	Audit costs.	28,000	28,000	28,000	88,000	172,000
	<b>Subtotal budget lines 7-9</b>	<b>849,379</b>	<b>522,260</b>	<b>323,176</b>	<b>234,948</b>	<b>1,929,762</b>
	<b>TOTAL budget DKK</b>	<b>6,009,888</b>	<b>3,834,955</b>	<b>2,084,641</b>	<b>1,070,517</b>	<b>13,000,000</b>

#### 4. Theory of Change

