



## BSU II Completion Report

This format is used for reporting on the overall achievements of BSU II. The BSU II Coordinator is responsible for ensuring that the completion report is completed, agreed amongst the partners and submitted at the latest six months after the approved end date of the BSU II project.

When completing the Project Completion Report, the impact, outcome and outputs statements and the indicators **from the Inception Report** should be used as point of departure. Where possible, achievements are compared to the original targets. **Please state impact, outcome, outputs and their indicators exactly as approved in the Inception Report/LogFrame, and report on each of them.** In case of approved changes of outputs, state the new output and the date of approval of the change. If needed, the format tables below may be expanded.

Please note that the final accounts (Appendix 3) must be submitted along with the completion report. The accounts form can be downloaded here <http://dfcentre.com/research/building-stronger-universities-bsu/general-conditions-forms-and-templates/>. The final project accounts of the responsible institution and the Danish consortium anchor must undergo external audit.

**IMPORTANT INFORMATION for projects which includes PhD students:** The final accounts can only be compiled, audited and submitted once all project activities and expenditures, including finalization of the PhD students (if any), have been finalized. This means that **if the project includes PhD students**, only the present narrative completion report should be submitted no later than six months after the ending date of the project. For the projects which includes PhD students, audited annually accounts should be submitted by 01 April each year. For this purpose, DKK 30,000 from the project budget can be allocated annually to external auditing of the accounts.

In case of doubt, please contact DFC by mail at [research@dfcentre.dk](mailto:research@dfcentre.dk).

### Rating system:

a/ Satisfactory: Actual achieved results are largely according to what was described in the programme support document or project document.

b/ Less satisfactory: The achieved results are less than expected. Adjustment to plans and strategies are being addressed by the partner in order to ensure sustainability.

c/ Unsatisfactory: The expected results have not been achieved. Relevance and sustainability of the activities can be questioned. Partner has to consider major adjustments and reorganisation in further implementation of the activities.

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DFC, 23.04.2017

Project basic information	
Project title	BUILDING STRONGER UNIVERSITIES PROJECT PHASE TWO
DFC File no.	
Project coordinator	ROBERT CLEMENT ABAIDOO
E-mail of coordinator	<a href="mailto:abaidoorc@yahoo.com">abaidoorc@yahoo.com</a>
Responsible institution	KNUST
Partner institution(s)	University of Copenhagen (lead), Aalborg University, Aarhus University, University of Southern Denmark and Danish Technical University
Total disbursed amount (DKK)	15,000,000
Total un-disbursed amount (DKK)	

Impact on the Development Objective of BSU II			
<p>On the basis of the <u>impact statement(s) and indicator(s) from the inception report</u>, explain how the BSU partnership has had the intended impact and how it has contributed to the overall development objective of BSU II, i.e. <b><i>Capacity of the university to undertake high-quality research enhanced through support to the research environment and research processes.</i></b></p>			
<p><b>Impact statement 1: <i>Increased capacity of KNUST staff to effectively conduct and disseminate research in the thematic areas</i></b></p>			
Indicator 1	Indicator text: Percentage increase in number of research publications by KNUST staff		
	Baseline: Total number of publication by KNUST for 2014/2015 is 1,251	Target: 3 % increase in number of research publications by KNUST staff by 2017	Result: 4 % increase in number of research publications by KNUST staff

*Narrative text on achievement of the intended impact and how this has contributed to the overall development objective of BSU II (max. 1/2 page):*

In line with KNUST's vision, BSUII has contributed immensely towards strengthening the capacity of faculty members to conduct good quality research. With four Work Packages (WP), namely Climate-Smart Agriculture and Environmental Management (WP1), Entrepreneurship and Job Creation (WP2), Health Delivery Systems (WP3) and University-wide services and facilities that support research (WP4), BSUII has implemented a number of capacity building activities that largely followed a learning-by-doing approach.

In this light, some selected staff members (young faculty) were taken through method-oriented workshops (such as research methodologies, research data management, scientific writing, etc.) and specialist short courses that translated into the implementation of pilot

research projects. The pilot research projects offered members the opportunity to learn some useful skills in developing research proposals, award and implementation of research grants as well as dissemination of research outputs in reputable journals. At least 100 faculty members benefitted directly from the capacity building initiatives implemented under the three thematic work packages. One PhD education was also initiated under the WP3 to be completed in 2018. Additionally, BSUII through its WP4 provided enormous support to four important research support units at the university. These are the library, central laboratory, Office of Grants and Research (OGR) and the School of Graduate Studies (SGS). Support provided to these units included staff training, provision of tools and equipment (hardware and software) and knowledge sharing opportunities with Danish partner universities.

These achievements did not only benefit the persons directly involved in BSUII activities but also contributed to the creation of an enabling environment for undertaking research in the university albeit on a smaller scale. These initiatives, contributed largely to the increase in number of publications by staff although other factors may have contributed even more.

*Explain what have been the main major challenges in the implementation of the overall objective and how these challenges have been dealt with (max. 1/2 page):*

In spite of the enormous achievements, BSUII faced a number of challenges during implementation. The delayed start of the project coupled with the short timeframe for the project did not allow for the implementation of all activities within the approved period. This therefore resulted in the need for a no-cost extension to enable effective completion of activities.

In addition, implementation of activities with a relatively high number of Danish partners was quite challenging. The 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. Nonetheless, dialogue and constant communication among partners were explored to overcome these challenges whenever necessary. For continuity and sustainability, BSUII placed a lot of emphasis on developing and mentoring young faculty. Hence, a strategy was adopted to involve younger faculty as assignment holders to assist the core team leaders.

In terms of project management, a multi-layered management structure was adopted by both North and South to minimize the risk of delays and to ensure effective monitoring of project activities. The Project Coordinators were supported by a project management support team who provided day to day administrative and technical support for effective and efficient management of the project.

**Achievement of outcomes and their effect on the two immediate objectives of BSU II**

On the basis of the outcome statements and indicators from the inception report log-frame, explain how the BSU partnership has had the intended effect and how it has contributed to the two immediate objectives of BSU II, i.e.:

- ***Research policies, strategies, organisation and research processes improved.***
- ***University-wide services and facilities to support research activities strengthened.***

Some outcomes contribute only to one of these immediate objectives. Repeat for all outcomes from the inception report and insert more tables if necessary.

<b>Outcome 1</b>	<b>By 2017, KNUST will be implementing a system that prioritizes and guides CSAEM research, with staff demonstrating capacity to conduct and disseminate quality CSAEM research</b>		
Indicator 1	Indicator text: # of departments prioritizing CSAEM research needs in staff and students research		
	<b>Baseline:</b> Fragmented policies on curriculum revision, monitoring of research progress and quality assurance in CSAEM	<b>Target:</b> 2 Departments with CSAEM research prioritized	<b>Result:</b> 1. Department of Crop and Science (PhD in Soil Science) 2. Department of Theoretical and Applied Biology ( PhD Environmental Science Policy and Management )
Indicator 2	Indicator text: # of staff and students participating in CSAEM research		
	<b>Baseline:</b> No available data	<b>Target:</b> 30 staff and students actively conducting research in CSAEM	<b>Result:</b> 50 staff & postgraduate students (23% females) are actively conducting research in CSAEM
Indicator 3	Indicator text: # of PhD programmes with CSAEM research needs incorporated		
	<b>Baseline:</b> Fragmented policies on curriculum revision, monitoring of research progress and quality assurance in CSAEM	<b>Target:</b> 2 PhD programmes with CSAEM research needs incorporated	<b>Result:</b> 1. PhD in Soil Science revised to include components of CSAEM 2. New PhD programme developed in Environmental

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			Science Policy and Management
Rating	a [ x ]	b [ ]	c [ ]
Contribution to BSU II immediate objective 1: <i>Research policies, strategies, organisation and research processes improved</i>	Development of PhD programme/ curricula has the ability to impact positively on research processes and strategies in the university. Hence, the two improved PhD curricula largely contribute to the achievement of this objective. Again, the learning-by-doing approach adopted in building the research capacity of staff have not only improved the research process but also hold the potential to influence research policies of the university.		
Contribution to BSU II immediate objective 2: <i>University-wide services and facilities to support research activities strengthened</i>	<i>Not applicable</i>		
Assessment of effectiveness and efficiency/comments to rating	Given the resources provided through BSUII, these outcomes would be considered as satisfactory. This because the target indicators have not only been achieved but have also impacted positively on the research environment of the university.		
Sustainability/Capacity building/Out-standing issues	<p><i>Discuss how the partner government will ensure sustainability of the investments made during programme implementation. Distinguish between areas of support to be continued under BSU III and those that will not be continued.</i></p> <p>In relation to the PhD programmes, the university has demonstrated its commitment by approving the two programmes. The host departments have therefore taken full responsibility for the running of the two PhD programmes.</p> <p>Concerning capacity building of staff, it must be admitted that, the BSUII support could not be extended to majority of staff. However, the plan is to use the core members that benefitted from this initiative as agents of change in their respective Departments.</p> <p>Under the BSUIII, efforts will be made to reach out to more staff while ensuring that the BSUII beneficiaries share their learning experiences with new ones.</p>		
Lessons learned	Research practices and processes of KNUST could be immensely improved through a learning-by-doing approach.		

<b>Outcome 2</b>	<b>By 2017, KNUST staff demonstrate skills to establish and maintain academia-industry linkages and a database system to support the</b>
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<b>process in place</b>				
Indicator 1	<p>Indicator text: # of teaching and research programs that focus on entrepreneurship developed and ready for approval by Academic Board</p> <table border="1"> <tr> <td><b>Baseline:</b> No teaching and research programs that focus on entrepreneurship at present</td> <td><b>Target:</b> Two teaching and research programmes focused on entrepreneurship jointly developed by KNUST and Industry</td> <td><b>Result:</b> Two PhD programmes developed with entrepreneurship components 1. PhD in Agribusiness Management 2. PhD in Business and Management</td> </tr> </table>	<b>Baseline:</b> No teaching and research programs that focus on entrepreneurship at present	<b>Target:</b> Two teaching and research programmes focused on entrepreneurship jointly developed by KNUST and Industry	<b>Result:</b> Two PhD programmes developed with entrepreneurship components 1. PhD in Agribusiness Management 2. PhD in Business and Management
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Indicator 2	<p>Indicator text: # of academia-industry linkages providing input to PhD curriculum</p> <table border="1"> <tr> <td><b>Baseline:</b> No tested academia-industry curriculum development models</td> <td><b>Target:</b> Academia-industry partnerships have contributed to the development of two PhD curricula</td> <td><b>Result:</b> At least 10 industry partners provided inputs into the development of the two curricula</td> </tr> </table>	<b>Baseline:</b> No tested academia-industry curriculum development models	<b>Target:</b> Academia-industry partnerships have contributed to the development of two PhD curricula	<b>Result:</b> At least 10 industry partners provided inputs into the development of the two curricula
<b>Baseline:</b> No tested academia-industry curriculum development models	<b>Target:</b> Academia-industry partnerships have contributed to the development of two PhD curricula	<b>Result:</b> At least 10 industry partners provided inputs into the development of the two curricula		
Indicator 3	<p>Indicator text: Operational academia-industry linkage database</p> <table border="1"> <tr> <td><b>Baseline:</b> No effective academia-industry linkage tracking system in place</td> <td><b>Target:</b> Systematic tracking of academia-industry linkage</td> <td><b>Result:</b> One academia-industry fully developed. The AI office at the KNUST School of Business to monitor and ensure systematic tracking of AI linkages</td> </tr> </table>	<b>Baseline:</b> No effective academia-industry linkage tracking system in place	<b>Target:</b> Systematic tracking of academia-industry linkage	<b>Result:</b> One academia-industry fully developed. The AI office at the KNUST School of Business to monitor and ensure systematic tracking of AI linkages
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Rating	a [ x ]    b [ ]    c [ ]			
Contribution to BSU II immediate objective 1: <i>Research policies, strategies, organisation and research processes improved</i>	Academia-Industry database creates a common platform for researchers and external stakeholders (industry, donor, alumni, etc.) to interact. Such academia-industry linkages enhance problem-based research thereby making the university responsive to societal needs.			
Assessment of effectiveness and efficiency/comments to rating	This outcome is rated “satisfactory” since all targets have been achieved.			
Sustainability/Capacity building/Out-standing issues	<p><i>Discuss how the partner government will ensure sustainability of the investments made during programme implementation. Distinguish between areas of support to be continued under BSU III and those that will not be continued</i></p> <p>The two PhD curricula developed have been approved by the university with host departments taking the full responsibility of running the programmes.</p>			

	<p>An Academia-industry linkage office has been created at the KNUST School of Business to host and maintain the database. A staff member has been assigned as the administrator of the database.</p> <p>Further support will be provided through BSU III to ensure that the database is well populated and fully functional.</p>
Lessons learned	<p>Commitment of industry has been low and therefore calls for the need for adopting more innovative approaches including participation in project development and full scale implementation</p>

<b>Outcome 3</b>	<b>By 2017, KNUST staff demonstrate confidence and higher productivity in HDS research</b>		
Indicator 1	Indicator text: # of research concepts and proposals on priority (eg. drug resistance; maternal and child health; water and sanitation) sub-themes developed and submitted to external funding agencies		
	<p><b>Baseline:</b> 2 HDS research proposals in sub-themes areas</p>	<p><b>Target:</b> 4 HDS research proposals developed and submitted for external funding.</p>	<p><b>Result:</b> 6 HDS research proposals developed and submitted to DANIDA FFU</p>
Indicator 2	Indicator text: # of manuscripts in sub-theme areas submitted by KNUST staff involved in HDS research to peer-reviewed journals		
	<p><b>Baseline:</b> 2 manuscripts from KNUST completed</p>	<p><b>Target:</b> 5 HDS research manuscripts on priority sub-themes submitted for journal publication by KNUST staff</p>	<p><b>Result:</b> 5 HDS research manuscripts submitted to reputable journals</p>
Indicator 3	Indicator text: # of staff with PhDs		
	<p><b>Baseline:</b> No staff of School of Public Health provided with sponsorship to pursue PhD studies</p>	<p><b>Target:</b> 1 staff enrolled as PhD student with full scholarship</p>	<p><b>Result:</b> 1 staff enrolled as PhD student provided with full scholarship (currently in 2<sup>nd</sup> year)</p>

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Rating	a <input checked="" type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>
Contribution to BSU II immediate objective 1: <i>Research policies, strategies, organisation and research processes improved</i>	Outputs under this outcome have positively influenced KNUST's research environment by increasing researchers' interest in conducting quality research under the health delivery system as well as publishing research results in reputable journals. The ongoing PhD programme also has great potential to generate research outputs that will be communicated to relevant target groups for possible translation into policies.
Contribution to BSU II immediate objective 2: <i>University-wide services and facilities to support research activities strengthened</i>	<i>Not applicable</i>
Assessment of effectiveness and efficiency/comments to rating	The learning by doing approach adopted enabled researchers to utilize the knowledge acquired to implement relevant research projects that also resulted in the production of manuscripts and research proposals for external funding. Thus, the processes and outcomes proved to be efficient and effective.
Sustainability/Capacity building/Out-standing issues	<p><i>Discuss how the partner government will ensure sustainability of the investments made during programme implementation. Distinguish between areas of support to be continued under BSU III and those that will not be continued.</i></p> <p>Staff who participated in the capacity building workshops are highly motivated and committed to utilize the knowledge gained in the writing of research proposals and scientific manuscripts. Knowledge and skills acquired through the BSUII intervention will continuously be utilized for the benefit of the individuals and the university at large.</p> <p>Although the PhD education could not be completed within the project period (due to short project duration), all necessary arrangements have been put in place for a successful completion in 2018.</p>
Lessons learned	The short duration of BSUII did not allow for the PhD education to be completed within the project period.

<b>Outcome 4.1</b>	<b>By 2017, KNUST provides effective and timely grant management services in designated units and ensures improved transparency in grant management, and demonstrates timely delivery of project financial reports</b>
Indicator 1	Indicator text: # of administrative and finance staff who understand the grant administrative and finance systems and can effectively provide services to other staff



	<p><b>Baseline:</b> Data not available</p>	<p><b>Target:</b> Course participant survey shows researchers have increased confidence in financial aspects of the research process</p>	<p><b>Result:</b> 84% of workshop participants have increased confidence in financial aspects of research of the research process</p>
Indicator 2	<p>Indicator text: # of fully operational grants administrative and financial systems and services in place at designated units</p>		
	<p><b>Baseline:</b> Only a basic grant financial management system in place at the Office of Grants and Research and the Colleges</p>	<p><b>Target:</b> Grants financial management software in place at designated units 4 Research Administration Offices in place</p>	<p><b>Result:</b> University-wide Research Management Information System (ReMIS) and Grants Accounting Management System (GAMS) developed to improve grants management  6 functional College research administration offices in place</p>
Indicator 3	<p>Indicator text: # of researchers accessing grants and financial management services from the designated units</p>		
	<p><b>Baseline:</b> An average of 5 staff members accessed grants/ research support services from OGR</p>	<p><b>Target:</b> 20% increase in number of staff accessing grant administration and financial management services in designated units</p>	<p><b>Result:</b> 50% increase in number of staff accessing grants information from OGR and College Research Offices</p>
Rating	<p>a [ x]    b [ ]    c [ ]</p>		
Contribution to BSU II immediate objective 1: <i>Research policies, strategies, organisation and research processes improved</i>	<p>Not Applicable</p>		

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<p>Contribution to BSU II immediate objective 2: <i>University-wide services and facilities to support research activities strengthened</i></p>	<p>Activities under this outcome focused largely on the Office of Grants and Research (OGR) and affiliate units that provide university wide research support services to staff. activities implemented included training for research administrators and account staff, development of research/grant management softwares as well as the provision of relevant office equipment. These interventions did not only improve the visibility of OGR but also created a high level of confidence and professionalism which translated into increase in the number of staff accessing services from the office. By decentralizing its functions to the College levels, the OGR is even in a better position to provide timely research management support for the betterment of the university.</p>
<p>Assessment of effectiveness and efficiency/comments to rating</p>	<p>Initiatives under this outcome were very effective in terms of implementation and outputs. Activities were well targeted at the responsible persons/units thereby ensuring full realization of intended objectives. The use of local and available resources for the development of research management softwares was very efficient although it sometimes suffered some delays in implementation of activities.</p>
<p>Sustainability/Capacity building/Out-standing issues</p>	<p><i>Discuss how the partner government will ensure sustainability of the investments made during programme implementation. Distinguish between areas of support to be continued under BSU III and those that will not be continued.</i></p> <p>KNUST is remains committed to its vision of promoting high quality research. the university is particularly supportive of all research support units including the OGR. Efforts are currently underway to ensure that the two softwares developed under BSUII are operational in all Colleges of the university. Research and grant administration policies to support these interventions shall be considered under BSUIII to ensure adequate sustainability.</p>
<p>Lessons learned</p>	<p>North-south (Denmark-Ghana) and south –south (Ghana-Nepal and Ghana-Uganda) knowledge sharing experiences on grants management were very useful for all parties</p>

<p><b>Outcome 4.2</b></p>	<p><b>By 2016, users of KNUST Central Library and Central Laboratory experience higher quality and efficiency of facilities and services</b></p>		
<p>Indicator 1</p>	<p>Indicator text: Percentage of library users indicating satisfaction with library services</p>		
	<p><b>Baseline:</b> 46% of Library users indicate satisfaction with library services</p>	<p><b>Target:</b> 60 % of library users indicate satisfaction with library services</p>	<p><b>Result:</b> 79 % of library users indicate satisfaction with library services (2018 survey results)</p>

Indicator 2	Indicator text: # library staff with increased competence in the provision of quality services		
	<b>Baseline:</b> No available data	<b>Target:</b> 40 library staff with increased competence in providing quality services	<b>Result:</b> 47 library staff with increased competence in providing quality services
Indicator 3	Indicator text: Increase in customer satisfaction with laboratory services		
	<b>Baseline:</b> No available data	<b>Target:</b> 50 % of laboratory users indicate satisfaction with laboratory services	<b>Result:</b> 69 % of laboratory users indicate satisfaction with laboratory services (according to 2018 survey results)
Indicator 4	Indicator text: # laboratory staff with increased competence in the provision of quality services		
	<b>Baseline:</b> Lab yet to be opened for use (not available)	<b>Target:</b> 10 laboratory staff with increased competence in providing quality services	<b>Result:</b> 12 laboratory staff with increased competence in providing quality services
Rating	a <input checked="" type="checkbox"/> b <input type="checkbox"/> c <input type="checkbox"/>		
Contribution to BSU II immediate objective 1: <i>Research policies, strategies, organisation and research processes improved</i>	Not Applicable		
Contribution to BSU II immediate objective 2: <i>University-wide services and facilities to support research activities strengthened</i>	Not Applicable		
Assessment of effectiveness and efficiency/comments to rating	Not Applicable		

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Sustainability/Capacity building/Out-standing issues	<p><i>Discuss how the partner government will ensure sustainability of the investments made during programme implementation. Distinguish between areas of support to be continued under BSU III and those that will not be continued.</i></p> <p><b>Library:</b> In terms of capacity building the College library staff needs more training in basic ICT solutions which can be delivered competently by the core team trained under BSUII. These further trainings have been emphasized in BSUIII.</p> <p><b>Central Laboratory (CL):</b> The CL is expected to develop more technical competences to in order to ensure that the available technology is fully operational and sustainable at all times. Training of leaders, managers and super users may help ensuring efficient lab operations and decision-making. These are issues are being considered in BSU III.</p>
Lessons learned	<p><b>Library:</b> Students as well as faculty members are interested in enhancing their skills within electronic resources as seen at workshops conducted in BSU II. There is a need for offering more training to staff and students and the Library should have the capacity to meet the needs and to fuel easy institutionalization of BSUII outputs.</p> <p><b>Central Laboratory :</b> The CL is very well equipped with state of the art equipment mainly for chemical and pharmaceutical research. The toolbox for the CL is poorly defined. It is still not entirely clear which competences the CL should have and offer to the satellite labs at the departments. Most satellite labs also lack clearly defined toolboxes. The lab workers need technical skills with regard to equipment maintenance, method development and high-throughput operations. In essence, the labs, including CL and satellite labs need designated super users for each major technique on which the labs rely. Furthermore, a main obstacle to the use of the CL is the lack of relevant research projects that could facilitate a continuously active research environment. Solution?</p>

<b>Outcome 4.3</b>	<b>By 2016, KNUST has enhanced quality of PhD supervision, QA processes and supervisor-students relations</b>					
Indicator 1	<p>Indicator text: # of Supervisors and PhD students who appreciate improved monitoring and evaluation of the PhD admission, research and graduation processes</p> <table border="1"> <tr> <td> <p><b>Baseline:</b> 2 existing PhD research process policies and guidelines</p> </td> <td> <p><b>Target:</b> 6 existing PhD research process policies and guidelines</p> </td> <td> <p><b>Result:</b> 5 revised and 4 new PhD process guidelines and policies developed</p> </td> </tr> </table>			<p><b>Baseline:</b> 2 existing PhD research process policies and guidelines</p>	<p><b>Target:</b> 6 existing PhD research process policies and guidelines</p>	<p><b>Result:</b> 5 revised and 4 new PhD process guidelines and policies developed</p>
<p><b>Baseline:</b> 2 existing PhD research process policies and guidelines</p>	<p><b>Target:</b> 6 existing PhD research process policies and guidelines</p>	<p><b>Result:</b> 5 revised and 4 new PhD process guidelines and policies developed</p>				

Indicator 2	Indicator text: # of External Examiners satisfied with the PhD research process		
	<b>Baseline:</b>  20 of Internal and External Examiners expressing improvements in the PhD research process	<b>Target:</b>  40 Internal and External Examiners expressing improvements in the PhD research process	<b>Result:</b>  Survey could not be carried out to assess results. Survey instruments have been developed for BSUIII and general University use. This will be stretched to cover the pre-BSUII and BSUIII era.
Indicator 3	Indicator text: Increase in number of students completing programmes within stipulated time frames		
	<b>Baseline:</b> 5 percent annual increase in students enrolling for PhD programmes at KNUST  10 percent of students completing programmes within stipulated time frames	<b>Target:</b> 10 percent annual increase in students enrolling for PhD programmes at KNUST  25 percent increase in the number of students completing programmes within stipulated time frames	<b>Result:</b> 31 percent increase in PhD enrolment from 2014-2016 academic years.  46 % percent increase in the number of students completing programmes within stipulated time frames
Rating	a [x] b [] c []		
Contribution to BSU II immediate objective 1: <i>Research policies, strategies, organisation and research processes improved</i>	BSUII provided support for the development of guidelines and policies for postgraduate education as well as university PhD courses. These initiatives hold the potential to strengthen research processes at KNSUT.		
Contribution to BSU II immediate objective 2: <i>University-wide services and facilities to support research activities strengthened</i>	The KNUST School of Graduate Studies (SGS) provides university wide support for postgraduate education. BSUII initiatives under the graduate school did not only benefit postgraduate students but also strengthened the SGS to deliver its functions more effectively.		
Assessment of	Activities were well targeted at the School of Graduate Studies which		

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effectiveness and efficiency/comments to rating	ensured wide stakeholder consultations and involvement; this approach made outcomes easily acceptable by all.
Sustainability/Capacity building/Out-standing issues	<p><i>Discuss how the partner government will ensure sustainability of the investments made during programme implementation. Distinguish between areas of support to be continued under BSU III and those that will not be continued.</i></p> <p>A thesis tracking system has been developed for the School and currently being tested in several departments. This system is being enhanced into an integrated automated system for the entire postgraduate education process under BSU III.</p>
Lessons learned	<p>KNUST has an institutional policy on graduate training, which has undergone an extensive process of internal review and stakeholder input prior to adoption.</p> <p>KNUST has developed some relevant and well-designed PhD-courses needing only minor adjustments. Positive learning and inspiration by KNUST from relevant material consulted at different Danish and other international universities.</p> <p>Broader consultations with students, lecturers, SGS and all relevant stakeholders is very crucial for the success and full realization the intended benefits of the activities implemented.</p>

**Output achievements against inception report targets (log-frame)**

Report on the outputs and implementation of activities as planned in the inception report, stating the results of the completed activities.

**State outputs exactly as approved in the Inception Report/LogFrame, and report on each of them.** In case of approved changes of outputs, state the new output and the date of approval of the change.

Please number the Output according to the LogFrame, and insert more rows/boxes as needed.

<b>Output #:1.1.1</b>	<b>By 2017, KNUST staff are actively involved in the joint preparation of CSAEM research problem identification, designing pilot studies, proposal development, scientific writing and communication of research results to non-academic stakeholders</b>
<b>Output indicators</b>	<ul style="list-style-type: none"> <li>• # of research concepts notes developed on CSAEM problems</li> <li>• # of proposals jointly developed from the concepts notes submitted to external funding agencies</li> <li>• # of staff that participate in entire training program on research processes (research problem identification, design in pilot studies, proposal development, and scientific writing, communication of research results to non-academic stakeholders)</li> </ul>

<p><b>Baseline 2014/2015</b></p>	<ul style="list-style-type: none"> <li>• 2 KNUST staff with adequate skills and capacity for research development in CSAEM</li> <li>• 2 CSAEM research proposals from KNUST in collaboration with Danish partners developed annually</li> <li>• 2 manuscripts developed and submitted in 2014</li> </ul>
<p><b>Target 2016/2017</b></p>	<ul style="list-style-type: none"> <li>• 20 KNUST staff (with at least 25% women) adequately skilled and actively involved in proposal development in CSAEM concepts</li> <li>• 4 research concept notes in CSAEM research prepared by 2017</li> <li>• 4 KNUST-led CSAEM research proposals developed and submitted by 2017</li> <li>• 4 manuscripts in CSAEM related subjects submitted</li> </ul>
<p><b>Result 2017</b></p>	<ul style="list-style-type: none"> <li>• 50 KNUST staff (23% women) adequately skilled and actively involved in proposal development in CSAEM concepts</li> <li>• 16 research concept notes in CSAEM research prepared and implemented as pilot projects</li> <li>• 4 KNUST-led CSAEM research proposals developed and submitted to DANIDA FFU</li> <li>• 15 manuscripts in CSAEM related subjects submitted to peer reviewed journals?</li> </ul>
<p><b>Narrative:</b></p> <p>Under the WP1, KNUST staff (mainly from the Colleges of Science, Agriculture and Engineering) benefitted from a series of capacity building workshops that were facilitated jointly by North and South partners. A number of staff and postgraduate students received training on research process and participated in specialist short courses on Climate Smart Agriculture (CSA), Optimal and Sustainable use of Bioresources (BIORES) and Ecosystems and Natural Resources Management (ECOSYS). During the specialist short courses, participants formed research teams that worked together to develop research proposals some of which were evaluated and directly funded by the BSUII as pilot projects. A total of sixteen (16) pilots projects were funded and implemented under the CSAEM thematic area.</p> <p>Additionally, over 50 faculty members and postgraduate students received training on data management and statistical analysis to assist them in managing their research data. Twenty-one (21) young academic staff members also improved their knowledge and skills on scientific writing through a 3-day writeshop that was facilitated by experienced resource persons from KNUST and Danish Universities. The team further collaborated with their Danish counterparts to develop manuscripts that met the requirements for submission to reputable journals. Through these training activities, participants enhanced their ability to develop and submit research proposals for external funding. Indeed participants were able to submit three research proposals to the Danish FFU grant. Generally, BSUII ignited a sense of teamwork and knowledge sharing among researchers, and enhanced staff capacity to do research in the area of Climate Smart Agriculture and Environmental Management.</p>	
<p><b>Output #:1.1.2</b></p>	<p><b>By 2017, a PhD Program in Environmental Science, Policy and Management is developed and submitted to Postgraduate Board; the existing PhD Soil Science program revised to reflect current research needs in CSAEM</b></p>
<p><b>Output indicators</b></p>	<ul style="list-style-type: none"> <li>• # of new PhD programs developed</li> </ul>

	<ul style="list-style-type: none"> <li>• # of PhD programs revised to reflect current needs in CSAEM research</li> </ul>
<b>Baseline 2014/2015</b>	<ul style="list-style-type: none"> <li>• No PhD program in Environmental Science, Policy and Management exists at KNUST</li> <li>• The existing PhD Program in Soil Science at KNUST is weak, does not address current research needs CSAEM</li> </ul>
<b>Target 2016/2017</b>	<ul style="list-style-type: none"> <li>• One PhD programme in Environmental Science Policy and Management developed and submitted to Postgraduate Board</li> <li>• 10 students have applied to enrol in PhD in Environmental Science Policy and Management programme to begin 2017/2018 academic year</li> <li>• The PhD in Soil Science revised to include 2 new courses that reflect current needs in CSAEM research</li> </ul>
<b>Result 2017</b>	<ul style="list-style-type: none"> <li>• One PhD programme in Environmental Science Policy and Management developed and submitted to Postgraduate Board for approval</li> <li>• The PhD in Soil Science has been revised to include 2 new courses that reflect current needs in CSAEM research</li> </ul>
<p><b>Narrative:</b></p> <p>The PhD Soil Science programme was revised to include components of Climate Smart Agriculture to address the soil fertility constraints that have been identified as a key factor militating against high agricultural productivity in Africa. The aim of the PhD programme in Soil Science is to provide the West Africa region a programme that emphasizes on development and use of Integrated Soil Fertility Management (ISFM) concepts, processes, technologies and which reequips the new soil scientists with the capacity to better meet the challenges of current land degradation issues and agricultural productivity. The course covers a total duration of four years by the college of Agriculture and Natural Resources on a programme titled PhD Soil Science. MSc/MPhil degree in Soil Science or related programme are the entry requirement.</p> <p>In addition, BSUII supported the development of a new PhD curriculum in Environmental Science Policy and Management. The four-year programme is designed to prepare students to identify and develop effective and implementable solutions to environmental challenges. The aim is to equip the students with the relevant knowledge and understanding of the scientific principles underlying environmental changes and the requisite social, economic, legal and policy capacities to manage them. Enrolment of students unto the programme could not be done within the projected period due to some delays in the review and approval processes. This is expected to be done for 2018/2019 academic year.</p>	
<b>Output #:2.1.1</b>	<b>By 2017, 15 KNUST staff (with at least 25% women) have improved their competences in proposal development on issues in growth and employment.</b>
<b>Output indicators</b>	<ul style="list-style-type: none"> <li>• # of staff with improved skills and competencies in research proposal development with industry partners</li> <li>• # of concept notes developed</li> <li>• # of pilot studies carried out</li> <li>• # of manuscripts submitted for publication</li> </ul>



	<ul style="list-style-type: none"> <li># proposals for external funding submitted</li> </ul>
<b>Baseline 2014/2015</b>	<ul style="list-style-type: none"> <li>No formal training workshops on proposal development with industry partners organized at KNUST</li> <li>No concept note jointly developed by KNUST and industry</li> <li>No pilot studies jointly carried out by KNUST and Industry</li> <li>No proposals jointly developed by KNUST and Industry partners for external funding</li> </ul>
<b>Target 2016/2017</b>	<ul style="list-style-type: none"> <li>Two workshops on proposal development organized to train KNUST and Industry staff</li> <li>20 KNUST and Industry staff (with 25% women) have skills in proposal development</li> <li>3 concept notes developed</li> <li>1 pilot study jointly carried out</li> <li>2 manuscripts developed for peer review publication</li> <li>1 proposal jointly developed by KNUST and Industry partners for external funding</li> </ul>
<b>Result 2017</b>	<ul style="list-style-type: none"> <li>Two workshops on proposal development organized to train KNUST and Industry staff</li> <li>41 KNUST staff and postgraduate students (with 20% women) as well as industry partners have had their capacity built in joint proposal development</li> <li>7 concept notes were developed jointly by KNUST researchers and industry partners</li> <li>5 pilot study projects jointly carried out with industry</li> <li>7 manuscripts developed with one successful publication in reputable journal</li> <li>1 proposal jointly developed and submitted for external funding by KNUST and Industry partners</li> </ul>
<b>Narrative:</b>	
<p>BSUII through its WP2 activities enhanced the research capacity of KNUST staff through a number of capacity building workshops carefully designed and implemented jointly by North and South partners. Such workshops included stakeholder workshop for needs assessment, research process, specialist short courses on Business Innovations and Entrepreneurship (BIE) and Agricultural Value Chains (AVC), data management and scientific writing. These workshops improved the capacity of at least 30 staff who thereby translated the knowledge gained into the development of research proposals, pilot projects and scientific manuscripts. Seven pilot projects were designed and implemented under the WP2. Some of these pilot projects have directly addressed specific stakeholder needs particularly in the areas of fish farming, honey and bee making, food processing as well as improving efficiency of cook stoves.</p>	
<b>Output #:2.1.2</b>	<b>By 2017, PhD curriculum developed and approved in 2 faculties for enhanced entrepreneurship teaching and research.</b>
<b>Output indicators</b>	<ul style="list-style-type: none"> <li># of PhD curricula developed and ready for accreditation</li> <li># of students applying to enrol in the PhD programs</li> <li># of industry staff appointed as Adjunct Professors</li> </ul>

<b>Baseline 2014/2015</b>	<ul style="list-style-type: none"> <li>• Industry based stakeholder inputs into PhD curriculum development is less than 10 percent</li> </ul>
<b>Target 2016/2017</b>	<ul style="list-style-type: none"> <li>• KNUST has PhD program in the Business School and College of Agriculture and Natural Resources with at least 30% industry based inputs</li> <li>• 10 students have applied to enrol in the PhD programs</li> </ul>
<b>Result 2017</b>	<ul style="list-style-type: none"> <li>• PhD in Business and Management developed and being run at the School of Business. PhD in Agribusiness Management approved and being run under the College of Agriculture and Natural Resources. 26% of persons who participated in the development and/or review of both curricula are industry partners.</li> <li>• 40 students have applied to enrol in the PhD programs</li> </ul>

**Narrative:**

Following initial stakeholders' consultations, it became apparent that the university needed PhD curricula with specific focus on entrepreneurship. BSUII-WP2 therefore worked with the Department of Agricultural Economics, Agribusiness and Extension (CANR) and the School of Business to develop a PhD curriculum with active involvement of industry players. To address the specific stakeholder needs, the team conducted a number of stakeholder workshops to solicit for views and suggestions. The curriculum was therefore modelled to suit exactly what stakeholders require.

The PhD Agribusiness Management is designed to equip students with analytical business skills that fulfil the unique demands of the agribusiness industry. Following approval by Academic Board, the programme was advertised to the general public and commenced from September 2016. Five students are currently enrolled on the programme. The PhD programme in Business and Management is designed to train high calibre staff for private and Technical Universities across the country. Following approval by academic board, the program was advertised for the first batch of PhD students to start from October, 2016. Forty (40) students have been enrolled on the programme and are at different levels of completion.

<b>Output #:2.1.3</b>	<b>Academia-Industry linkage established at KNUST</b>
<b>Output indicators</b>	<ul style="list-style-type: none"> <li>• # of Academia-Industry database developed and pretested</li> <li>• # of Industry representatives serving on Academia-Industry Linkage Advisory Board</li> </ul>
<b>Baseline 2014/2015</b>	<ul style="list-style-type: none"> <li>• No active industry representation on Advisory Board</li> <li>• No Academia-Industry database</li> <li>• No staff with skills in Academia-Industry database administration</li> </ul>
<b>Target 2016/2017</b>	<ul style="list-style-type: none"> <li>• 1 Academia-Industry database developed and pretested</li> <li>• 2 Industry representatives serve on Advisory Board</li> <li>• 1 staff has completed hands-on training and in place as database administrator</li> <li>• 10 staff skilled in using the database</li> </ul>

<b>Result 2017</b>	<ul style="list-style-type: none"> <li>• 1 Academia-Industry database has been developed and currently in use by academia-industry partners</li> <li>• 2 Industry representatives serve on Advisory Board (1 alumni president member and one industry rep serving on the board)</li> <li>• 1 staff of the School of Business has been trained and assigned as the administrator of the AI database</li> <li>• 60 staff members have been trained in the use of the database</li> </ul>
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**Narrative:**

With the support of BSUII, KNUST has developed an Academia-Industry (AI) Database aimed at advancing KNUST’s strategic choice and intent to become highly responsive toward broader societal needs and the recognition of the need to directly engage with external stakeholders through university industry linkages. KNUST believes that innovative approaches, linking the university to a broader range of stakeholders enable it to be more effective in its three-fold mission of teaching, research and societal engagement. The AI platform provides avenues for interaction and collaboration among KNUST researchers, industry partners, students, alumni and donor agencies.

The platform was officially launched at a stakeholders’ conference which was well attended by academia, industry partners and other institutions. Four members of the AI database team also had the opportunity to visit the Aalborg University to learn about its success in academia-industry collaborations. The knowledge acquired is being utilised to improve upon the KNUST AI platform. To ensure institutionalization and facilitation of AI initiatives, an office space has been created at the School of Business (KSB) with an Administrator in charge of the office. The platform can be accessed on the KNUST website via <https://pu.knust.edu.gh/kaid/default/index/login>.

<b>Output #:3.1.1</b>	<b>1 more staff at CHS is upgrading to PhD level and conducting high quality research and generating new knowledge for teaching at undergraduate level</b>
<b>Output indicators</b>	<ul style="list-style-type: none"> <li>• # of staff registered for PhD study from CHS</li> <li>• # of Progress academic reports submitted</li> </ul>
<b>Baseline 2014/2015</b>	<ul style="list-style-type: none"> <li>• 1 staff registered for PhD study from CHS supported by BSUII</li> </ul>
<b>Target 2016/2017</b>	<ul style="list-style-type: none"> <li>• 1 staff registered for PhD study from CHS</li> <li>• 2 biannual PhD academic reports submitted to CHS by the student</li> </ul>
<b>Result 2017</b>	<ul style="list-style-type: none"> <li>• 1 staff registered for PhD study from the School of Public Health (CHS)</li> <li>• 2 biannual PhD academic reports has been submitted to CHS by the PhD student</li> </ul>

**Narrative:**

BSUII provided full scholarship to one staff member of the School of Public Health to undertake PhD in the area of Hand Hygiene and Sanitation. The PhD candidate, Emmanuel Appiah-Brempong had the opportunity to travel to Denmark for a six-month study in selected Denmark institutions. The PhD thesis is being supervised by Prof. Muriel Harris and Dr. Samuel Newton of KNUST and Prof. Gabriel Gulis of the University of Southern Denmark. Emmanuel Appiah-Brempong is expected to complete his PhD program by November 2018.

<b>Output #:3.1.2</b>	<b>By 2017, KNUST staff are actively involved in the joint preparation of HDS research problem identification, designing pilot studies, proposal development, scientific writing and communication of research results to non-academic stakeholders</b>
<b>Output indicators</b>	<ul style="list-style-type: none"> <li>• # of research concepts notes on HDS</li> <li>• # of proposals jointly developed from the concepts notes submitted to external funding agencies</li> <li>• # of staff that participate in entire training program on research processes (research problem identification, design in pilot studies, proposal development , and scientific writing, communication of research results to non-academic stakeholders)</li> </ul>
<b>Baseline 2014/2015</b>	<ul style="list-style-type: none"> <li>• 5 KNUST staff have completed training in the entire research process</li> <li>• 4 research concept notes prepared</li> <li>• 3 HDS research proposals from KNUST submitted for external funding</li> </ul>
<b>Target 2016/2017</b>	<ul style="list-style-type: none"> <li>• 15 KNUST staff adequately skilled and actively involved in HDS proposal development</li> <li>• 5 research concept notes developed on drug resistance; maternal and child health; and water and sanitation interventions</li> <li>• 2 additional KNUST HDS research proposals in e.g., drug resistance; maternal and child health; water and sanitation) interventions developed and submitted for external funding</li> </ul>
<b>Result 2017</b>	<ul style="list-style-type: none"> <li>• 40 staff and postgraduate students have received training on research process and are actively involved in HDS research</li> <li>• 5 research concept notes developed on antibiotic and drug resistance; maternal and child health; and water and sanitation</li> <li>• 6 HDS research proposals developed and submitted to FFU with one being considered for the phase two.</li> </ul>
<p><b>Narrative:</b></p> <p>Through the Work Package on Health Delivery Systems (HDS), KNUST staff and postgraduate students (mainly from the College of Health Sciences) improved their knowledge and skills by participating in a series of workshops jointly facilitated by experienced resource persons from KNUST and Danish partner universities. As in WP1 and WP2, a learning by doing approach was adopted to strengthen faculty members’ ability to conduct quality research. A core team of about 30 researchers has been taken through courses on such areas as research methodology, data management and scientific writing, specialist short courses on antibiotic and drug resistance, maternal and child health as well as water and sanitation.</p> <p>Following these courses, several research proposals were developed by staff out of which five were funded as pilot projects under the BSUII. More significantly, members of the five pilot projects improved their ability to write research proposals for external funding and indeed submitted five proposals to the FFU. One application became successful at the concept note assessment stage and is currently under review as a full proposal. The group also produced at least five manuscripts from their pilot projects which are at various stages of submission to reputable journals for publication.</p>	

<b>Output #:4.1.1</b>	<b>Highly transparent, upgraded grant management system installed and in operation at OGR and CoHS and new systems in place in 2 additional Colleges (CANR and CoE)</b>
<b>Output indicators</b>	<ul style="list-style-type: none"> <li>• # of software packages for grant administration and financial management accessible to the designated Units (OGR and three Colleges)</li> <li>• # of staff accessing grant administration and financial management services</li> <li>• # of staff satisfied with the grant administration and financial management services provided by the Units</li> <li>• # of staff able to independently use grant management software packages</li> </ul>
<b>Baseline 2014/2015</b>	<ul style="list-style-type: none"> <li>• No standard Grant administration and financial management software packages in use</li> <li>• One sufficiently trained staff in grant administration and financial management</li> <li>• No staff confidently access grant administration and financial management services from established offices</li> </ul>
<b>Target 2016/2017</b>	<ul style="list-style-type: none"> <li>• 1 Central and 3 College offices equipped with software and operational</li> <li>• 14 admin, 14 accountants, 40 researchers able to perform grant management properly</li> <li>• Over 100 researchers access grant administration and financial management services from the Units annually</li> </ul>
<b>Result 2017</b>	<ul style="list-style-type: none"> <li>• 1 Central (OGR) and 6 College offices fully equipped with logistics to provide research administration support</li> <li>• 14 research administrators, 24 accountants and 56 researchers have improved knowledge and skills in grant management activities.</li> <li>• Over 40 staff members access grant administration and financial management services monthly from OGR and the College Research Offices</li> </ul>
<p><b>Narrative:</b></p> <p>The establishment of College Research Offices was one of the activities planned under the Grant Component of BSU II Work Package 4 to improve grants management at KNUST. This was in tandem with the University's plan of establishing the central Office of Grants and Research (OGR) and similar offices in the Colleges for the purposes of coordination, monitoring and supporting research and grant related activities at KNUST. The Office of Grants and Research worked together with Provosts of the various Colleges to identify office space for the College Research Offices (CROs). Building on an existing CRO at the College of Engineering, five additional CROs have been established through the BSUII project. All the six College CROs have</p>	

been provided with items including desktop computers, UPS, laptops, printers, projectors, different kinds of office stationery as an initial support to make the offices functional. The CROs are to provide research administration and project management support services to research and project activities in the colleges. The Research Administrators are to work with researchers, accountants and other staff in the Colleges to develop proposals and manage the resultant grants, collate information on research and grant activities, and provide other research related support services at the Colleges.

A key focus of the grants management component was to equip staff with the requisite skills and knowledge on research administration. Being a relatively new area in the university, few staff had adequate knowledge on research administration and the effective management of grants. In view of this, BSUII in collaboration with the Office of Grants and Research (OGR) conducted a number of capacity building workshops for researchers, project administrators and accounting staff. At least 10 research administrators, 20 accounting staff and 50 researchers have improved their knowledge and skill in research/ grants management. Topics considered during these workshops included introduction to project management, grants management cycle, best practices in grants management, administrative and financial requirements and considerations for the pre-award, award, post award and close-out stages of an externally funded research project. External and internal resource persons who have adequate knowledge and experience in grants management were engaged during these workshops.

As part of knowledge sharing activities, BSUII provided the opportunity for South-North and South-South exchange programs. A five-member team from KNUST embarked on a study visit staff to Aalborg University, Denmark (AAU) to learn about the systems and structures that support grants/ research administration at AAU, interact with grants management staff for knowledge sharing. KNUST also hosted the Kathmandu University of Nepal (KU) as part of a South-South knowledge sharing collaboration. The team explored knowledge sharing opportunities in the areas of grants administration and project management (pre-award, award and post award), financial management and resource allocation, human resource management, library functions and support systems, and the general environment for conducting research at KNUST. Through this initiative, two KNUST staff were also invited to visit Kathmandu University to exchange ideas on similar topics. KNUST also hosted a five-member team from the Gulu University of Uganda as part of the South-South collaboration programme under WP4.

<b>Output #:4.2.1</b>	<b>By 2017, increased numbers of Central Library users have easy access to research publications and high impact journals</b>
<b>Output indicators</b>	<ul style="list-style-type: none"> <li>• # of online databases with high impact journals and research publications accessible to library users</li> <li>• # of available access points within the Research Commons</li> </ul>
<b>Baseline 2014/2015</b>	<ul style="list-style-type: none"> <li>• 15 online databases with high impact journals and research publications accessible to library users</li> <li>• 25 available access points within the Research Commons</li> </ul>
<b>Target 2016/2017</b>	<ul style="list-style-type: none"> <li>• 50% increase in number of online databases with high impact journals and research publications accessible to library users</li> <li>• 100 available access points within the Research Commons</li> </ul>
<b>Result 2017</b>	<ul style="list-style-type: none"> <li>• 50 online databases with research publications across all disciplines accessible to library users</li> <li>• 100 available access points at the Research Commons providing access</li> </ul>

to academic databases, quiet and discussion zones, training facilities as well as audio and video conference facilities to enhance international research collaboration

**Narrative:**

One of the most important achievements of BSUII under the library is the refurbishment of the research commons at the KNUST Central Library. The Research Commons (RC) was reopened in May 2016 following the support provided by BSUII for refurbishment. The RC provides a designate space for faculty members and postgraduate students to meet and access relevant academic materials and online resources. BSUII support included the provision of hard ware and software resources, academic databases, video conferencing set, retooling of discussion zones as well as other online resources for use by researchers.

The Research Commons also provides training for staff and students in the following areas; access to e-resources, information search strategy, plagiarism detection, referencing and citation, presentation skills, critical thinking, reading proficiency, academic writing and preparing for exams. The number of persons accessing the Research Commons had increased by 100 percent by the end of 2016. Activities under this output involving support from Danish resource persons include needs assessment, workshops and training-of-trainers e.g. on search strategies and processes e-librarianship at KNUST and a training visit to the University of Southern Denmark (SDU) by four KNUST staff.

**Output #:4.2.2**

**By 2017, KNUST Central Laboratory has SOPs and guidelines operationalized and available for staff and student users**

**Output indicators**

- # of SOPs and protocols in place
- # of laboratory staff skilled in use of laboratory equipment
- # of users trained in use of laboratory equipment

**Baseline 2014/2015**

- 4 SOPs and protocols in place,
- 1 laboratory staff skilled in use of laboratory equipment
- No users trained in use of laboratory equipment

**Target 2016/2017**

- 4 additional SOPs and protocols
- 20 more staff skilled in use of laboratory equipment
- 40 users skilled in use of laboratory equipment

**Result 2017**

- 19 SOPs and protocols have been developed and are currently in place at the Central Laboratory
- 30 staff have been trained and are skilled in use of laboratory equipment
- 40 users skilled in use of laboratory equipment

**Narrative:**

Although the KNUST Central Lab is well equipped with state-of-the-art facilities, only few research staff had the knowledge and skill to fully utilize the available facilities for their research works. Under BSUII, a number of training workshops were conducted with the for faculty lab

managers and technicians with the support of Danish partners as way of ensuring efficiency and effectiveness in use of the lab. The training areas included use and maintenance of Nuclear Magnetic Resonance (NMR) spectrometer, High Performance Liquid Chromatography (HPLC), Atomic Absorption Spectroscopy (AAS) as well as laboratory management practices.

As part of improving the KNUST Central Laboratory activities, BSUII provided support for the development of Standard Operating Procedures (SOPs) which were non-existent at the lab since the facility was newly established. SOPs ensure that results are reproducible and meet set quality standards. It includes safety guidelines for all operations that occur at the laboratory as well as maintenance protocols for all equipment. SOPs developed for the KNUST Central Laboratory include general laboratory safety guidelines, instrument specific protocols as well as routine maintenance protocols.

To enhance efficiency and effectiveness at the Central Lab BSUII provided funds for the purchase of two important equipment for the Central Lab. These are a ductless fume hood and a multi-functional Canon printer. The fume hood is meant to support sample preparation and handling of hazardous chemicals in the laboratory while the multi-purpose printer provides quality printing of research outputs. In addition, BSUII provided support for the development of a website for the KNUST Central Lab to provide visibility and facilitate easy access to the services provided. The Central Lab website can be accessed at <https://kcl.knust.edu.gh/>.

BSUII also provided opportunity for two lab managers to visit University of Copenhagen, Denmark for training and knowledge sharing on lab management. Among other things, the team received training on basic maintenance and troubleshooting of liquid chromatography-mass spectrometry (LC-MS) and gas chromatography-mass spectrometry (GC-MS) as well as laboratory management practices. The team shared the knowledge gained with other colleagues by conducting similar workshops at KNUST.

<b>Output #:4.3.1</b>	<b>Improved skills in PhD research supervision and new PhD research and QA approach in use</b>
<b>Output indicators</b>	<ul style="list-style-type: none"> <li>• # of electronic systems in place for tracking PhD supervision and research progress</li> <li>• Proportion (%) of PhD students understand their responsibilities in the PhD process</li> <li>• Proportion (%) of PhD supervisors mentored and do appreciate their responsibilities of the PhD process</li> <li>• # of new PhD process guidelines and policies developed (e.g. admission, required courses, thesis preparation, examinations, publication/communication of research results)</li> <li>• # of guidelines revised</li> <li>• # of PhD assessment tools developed</li> </ul>
<b>Baseline 2014/2015</b>	<ul style="list-style-type: none"> <li>• No electronic systems in place for tracking PhD supervision and research progress</li> <li>• 2 per cent of PhD students understand their responsibilities in the PhD process</li> <li>• 5 per cent of PhD supervisors mentored and do appreciate their responsibilities of the PhD process</li> <li>• 2 PhD process guidelines and policies (admission, required courses,</li> </ul>



	<p>thesis preparation, examinations, publication/communication of research results)</p> <ul style="list-style-type: none"> <li>• Currently 2 types of published PhD guidelines on admission process publication of students research data</li> </ul>
<p><b>Target 2016/2017</b></p>	<ul style="list-style-type: none"> <li>• One functional electronic system in place for tracking PhD supervision and research progress</li> <li>• 50 per cent of PhD students understand their responsibilities in the PhD process</li> <li>• 80 per cent of PhD supervisors mentored and do appreciate their responsibilities of the PhD process</li> <li>• 5 revised PhD process guidelines and policies (admission, required courses, thesis preparation, examinations, publication/communication of research results)</li> <li>• 4 new PhD guidelines developed</li> <li>• 1 supervision assessment tool developed</li> </ul>
<p><b>Result 2017</b></p>	<ul style="list-style-type: none"> <li>• One functional electronic system in place for tracking postgraduate thesis process</li> <li>• 50 per cent of PhD students understand their responsibilities in the PhD process</li> <li>• 80 per cent of PhD supervisors mentored and do appreciate their responsibilities of the PhD process</li> <li>• 5 revised PhD process guidelines and policies (admission, required courses, thesis preparation, examinations, publication/communication of research results)</li> <li>• 4 new PhD guidelines developed</li> <li>• 1 supervision assessment tool developed</li> </ul>
<p><b>Narrative:</b></p> <p>Under BSUII, a number of initiatives were implemented to enhance postgraduate education. These include the review and formulation guidelines and policies for PhD education, development of supervision assessment tools, training of supervisors and development of a thesis tracking system. Other significant initiatives include development of curricula for mandatory PhD courses. Specifically, the task of developing and introducing tools for student self-assessment, supervisor self-assessment, student assessment of supervisor, supervisor assessment of student was supported by a team of resource persons from University of Copenhagen visiting KNUST.</p> <p>The following documents have been improved or developed with the support of BSUII project:</p> <ul style="list-style-type: none"> <li>• Guide for the Preparation and Evaluation of Higher Degree Research Thesis;</li> <li>• Policy on the Duration of Graduate Programmes;</li> <li>• Graduate School’s Policy on Publication;</li> <li>• Masters’ Programme Upgrade and Conversion Guide; and</li> <li>• Research Support Fee Guide.</li> <li>• Plagiarism Guide</li> <li>• Supervision Guide</li> </ul>	

- Comprehensive Examination Guide and
- Graduate Students' Handbook

With the exception of the three (namely Guide for the Preparation and Evaluation of Higher Degree Research Thesis, Supervision Guide and the Graduate School's Policy on Publication), all these guidelines have been approved by the Academic Board of KNUST.

<b>Output #:4.3.2</b>	<b>University-wide PhD courses</b>
<b>Output indicators</b>	<ul style="list-style-type: none"> <li>• # of new PhD courses developed and ready for implementation</li> <li>• # of new PhD courses successfully conducted and evaluated</li> </ul>
<b>Baseline 2014/2015</b>	<ul style="list-style-type: none"> <li>• No complete university-wide overview of PhD-courses available</li> <li>• No university-wide formalized training and training materials on PBL available</li> <li>• Sporadic training on quantitative and qualitative methods</li> <li>• No formalized training on academic writing for PhD students</li> </ul>
<b>Target 2016/2017</b>	<ul style="list-style-type: none"> <li>• Complete list of PhD-courses available and used as guidance for choosing mandatory courses</li> <li>• One formal training course on PBL approaches operational and ready for implementation by KNUST faculty as a university-wide, generic course</li> <li>• One formal PhD-course on quantitative and qualitative research methods operational and implemented by KNUST faculty</li> <li>• One formal PhD-course on academic writing operational and implemented by KNUST faculty</li> </ul>
<b>Result 2017</b>	<ul style="list-style-type: none"> <li>• Complete list of 6 new PhD courses have been completed</li> <li>• One formal training course on PBL approaches operational and ready for implementation by KNUST faculty as a university-wide, generic course</li> <li>• One formal PhD-course on quantitative and qualitative research methods operational and implemented by KNUST faculty</li> <li>• One formal PhD-course on academic writing operational and implemented by KNUST faculty</li> <li>•</li> </ul>

**Narrative:**

With support from BSUII, a committee of experts as constituted to develop a list of mandatory courses that will be taken by all PhD students of KNUST as a way of ensuring quality and uniformity in the PhD education process. The team came up with six courses namely; Quantitative Research Methodology, Qualitative Research Methodology, Scientific/Academic

Writing, Problem-based Learning, Responsible Conduct of Research, and Networking and Collaborative Research. The draft curricula for all the courses have been developed and pretested with selected PhD students and faculty members. Inputs and comments were used to modify the curricula to reflect current needs. The draft curricula have been presented to the Graduate School Board for review and approval. The approval process could not be completed under BSUII but follow up activities will be carried out under BSUIII to ensure their implementation and the full realization of the stated objectives.

**Project administration**

**Substantive changes in the project (content and/or persons) – if any**

Specify and explain the changes that have been identified and agreed to.	<p>The KNUST-DA management structure made up of two Coordinators from KNUST and the Danish Consortium and Work Package (WP) Leaders existed throughout the project period. However, the KNUST WP1 Leader (Prof. Kwasi Obiri-Danso) was appointed as Vice Chancellor of KNUST and hence, was subsequently replaced by Dr. Patrick Addo-Fordjour who was part of the WP1 leadership from the beginning of the project. Remaining WP1 activities were successfully implemented without any challenges.</p> <p>BSUII also witnessed a change in project manager towards the end of the project as Ms Nadia Tagoe embarked on a study leave in March 2017. Hannah Adom Eyison (Mrs.) took up her role/ responsibilities until the end of the project.</p>
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Date of approval from DFC (if required according to the General Conditions).	
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BSU II Completion Report

The project coordinator, the head of responsible institution, and the Danish consortium anchor herewith confirm that the information given in the completion report is correct:


**Project Coordinator:**

**Date:** 30 March 2018: **Printed name:** ROBERT CLEMENT ABAIDOO, (PhD), **Signature:** 

**Head of responsible institution:**

**Date:** 30 March 2018: **Printed name:** KWASI OBIRI-DANSO, (PhD) **Signature:** 

**Danish Consortium anchor:**

**Date:** 30 March 2018: **Printed name:** PETER FURU **Signature:** 

The project coordinator, the head of responsible institution, and the Danish consortium anchor herewith confirm that the information given in the completion report is correct:

**Project Coordinator:**

**Date: 30 March 2018: Printed name: ROBERT CLEMENT ABAIDOO, (PhD). Signature:**

**Head of responsible institution:**

**Date: 30 March 2018: Printed name: KWASI OBIRI-DANSO, (PhD) Signature:**

**Danish Consortium anchor:**

**Date: 30 March 2018: Printed name: PETER FURU Signature:**