



**Building Stronger Universities Programme, Phase IV (BSU4)**

**STATE UNIVERSITY OF ZANZIBAR  
CONCEPT NOTE**

June , 2022

## 1. University Profile

Zanzibar is an archipelago with two main islands, Unguja and Pemba, and 50 small islets, situated off the coast of East Africa. It is a semi-autonomous region of the United Republic of Tanzania with full authority to administer and manage its internal affairs including the provision and financing of education. According to the 2012 population and housing census, Zanzibar had a population of 1,303,569 with an annual growth rate of 3%. Over the recent years, tourism has emerged as the main source of foreign exchange, contributing about 80% of foreign earnings, and 25% of Zanzibar's GDP.

The State University of Zanzibar (SUZA) is a public-owned higher learning institution in Zanzibar established by Act No. 8 of 1999. SUZA was officially inaugurated in 2001 and enrolled its charter class of 55 students for its first school, the School of Education, Arts and Sciences (SEAS). A decade later, four schools were introduced, namely, School of Natural and Social Sciences, School of Kiswahili and Foreign Languages, School of Continuing and Professional Education, and School of Education.

In 2013, a School of Health and Medical Sciences was introduced at SUZA. Between 2016 and 2018, the Government of Zanzibar approved a merger between SUZA and five other public tertiary institutions, namely Zanzibar College of Health Sciences, Institute of Financial Administration, Zanzibar Institute of Tourism Development, Kizimbani Agricultural Training Institution, and Zanzibar College of Journalism.

Currently, SUZA holds nine schools and one institute located across nine campuses, offering 65 academic programs in various specialties from diploma to PhD level. During the past five years, the number of students has increased more than two-folds, from 2,775 in 2017 to 6,154 in 2022. The number of permanent staff is currently 704 of which 316 are faculty members. The remaining 388 staff includes research administrators, laboratory and ICT technicians, librarians, administrators, and other supporting staff.

According to the national legal framework for higher education, the Tanzania Commission for Universities (TCU) is the regulatory, advisory, and supportive body for all universities in Tanzania. All universities are required to follow the standards and requirements prescribed by the TCU, which defines three key roles of a university; teaching, research and outreach services which are equally emphasized by the SUZA establishment Act. In Tanzania, all educational programs are developed by the respective institutions, approved and regulated by the TCU.

A decade of BSU partnership between SUZA, the University of Copenhagen and Aarhus University has been instrumental in enabling SUZA to conform with the important TCU standards including the established graduate policy, strengthened laboratory and library services, and improved SUZA staff capacity in teaching, research, publication, outreach, and online teaching and learning, all of which are essential for SUZA to meet the accreditation requirements by the TCU. Under BSU4, SUZA intends to advance its

capacity even further to offer quality education and research in conformity with TCU standards.

The research and outreach undertakings at SUZA are coordinated by the Directorate of Graduate Studies, Research and Consultancy (DGSRC) in collaboration with the university research centers and academic departments. Research activities at SUZA are carried out in close collaboration and partnership with relevant local, regional, and international institutions and are increasingly funded through external sources.

## 2. Justification of selected thematic focus area(s)

Throughout BSU I, II and III, SUZA has maintained a focus on environmental health and environmental science, more specifically on environmental public health (EPH) and marine and ecosystem services (MACES) in relation to the tourism industry of Zanzibar. Research and educational activities within these thematic areas have primarily focused on waste management and mosquito control in relation to hotel operations as well marine monitoring for coral reefs, seagrasses, water quality and pollution. The thematic foci of EPH and MACES remain highly relevant in the post-COVID era where the tourism industry is expected to regain its central position in the Zanzibar economy. Thus, these two foci are maintained in SUZA's proposed Building Stronger Universities programme (BSU4) concept note.

The BSU program has ensured supportive systems and improved research capacity at SUZA for designing, implementing, and reporting baseline studies within the two focus areas. Through the proposed BSU4 program, SUZA aims to elevate its research capacity to include intervention studies involving co-production and other participatory methodologies. Attaining this aim will enable SUZA to promote evidence-based practices and sustainable policies that can support transformational change within the tourism industry and affected communities and ecosystems as well as the society at large.

### Environmental Public Health (EPH)

According to the WHO, climate change poses the biggest health threat to humanity through direct and indirect effects on environmental, social, and public health determinants.<sup>1</sup> These effects include favorable conditions for certain vector-borne and hygiene-related diseases with epidemic potential. As part of BSU III baseline studies, SUZA has identified an acute risk of vector-borne epidemics in Zanzibar due to high infestation levels of *Aedes aegypti*; the main vector of dengue, chikungunya and Zika<sup>2</sup>.

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<sup>1</sup>WHO. Climate change and health. <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health> (cited 28-05-2022)

<sup>2</sup> Saleh F, Kitau J, Konradsen F, Alifrangis M, Lin C-H, Juma S, Mchenga SS, Saadaty T, Schiøler KL. Habitat characteristic for immature stages of *Aedes aegypti* in Zanzibar City. Tanzania J Am Mosq Contr Ass. 2018;34(3):190–200.

<sup>2</sup> Kampango A, Furu P, Sarath DL, Haji KA, Konradsen F, Schiøler KL, Alifrangis M, Saleh F, Weldon CW: Risk factors for occurrence and abundance of *Aedes aegypti* and *Aedes bromeliae* at hotel compounds in Zanzibar. *Parasites & Vectors* 2021, 14(1):544. <https://doi.org/10.1186/s13071-021-05005-9> PMID: 34686195

Importantly, these studies have demonstrated that *Aedes* mosquitoes thrive in domestic water storage containers and discarded waste that can be directly linked to scarcity of water supplies and poor solid waste management<sup>3</sup>.

In Zanzibar, a large part of the population is dependent on small domestic water wells or trucked water services prompting water storage practices with risk of pathogen contamination. Water scarcity due to climate change and saltwater intrusion is exacerbated by the general resource pressure exerted by the influx of visitors to Zanzibar. Other BSU studies have highlighted how the tourism industry in Zanzibar contributes significantly to the generation of solid waste<sup>4</sup>. Large quantities of all waste are disposed of through open dumping in the environment leading to substantial sanitation challenges and increased risk of hygiene-related diseases.

Under BSU4, EPH research will address the health and environmental consequences of inadequate water supply and waste management with a particular focus on mosquito control interventions and infectious disease prevention. Moreover, we aim to assess the level and effect of water consumption by tourist hotels on water availability and quality in the surrounding communities to inform government and other policy makers on ways to ensure equitable access to safe water supply among communities. Our ultimate goal is to inform the government's policy and efforts to ensure equitable access to water supply among communities, thus saving time for women and girls, who are disproportionately affected by water scarcity as the families' primary caretakers, to effectively engage in income generating activities. It will also create a space for girls to participate in educational programs at schools and higher learning, which has a direct link to economic growth and reduction of poverty.

## **Marine Ecosystem Health**

Zanzibar socio-economic development is fundamentally a blue economy, where tourism, a leading economic sector, is intrinsically ocean based. Marine ecosystems such as seagrasses, coral reefs, and mangroves are very important for the ecological function, culture, and economy of Zanzibar. They, for instance, account for almost 30% of the GDP, 77% of annual investments, and foreign exchange and employment<sup>5</sup>.

Specifically, MACES research will expand the assessments of marine ecosystems including seagrasses and seaweed farming. Seaweed farming is an income generating activity in which about 93% and 69% of all seaweed farmers in Unguja and Pemba,

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<sup>3</sup> Saleh F, Kitau J, Konradsen F, Kampango A, Abassi R, Schiøler KL. Epidemic risk of arboviral diseases: Determining the habitats, spatial-temporal distribution, and abundance of immature *Aedes aegypti* in the urban and rural areas of Zanzibar, Tanzania. *PLoS Negl Trop Dis.* 2020;14(12):e0008949.

<sup>4</sup> Abdulkadir, Ally, B: Solid Waste Management Practices in selected in Tourist Hotel, Zanzibar

<sup>5</sup> Lange, Glenn-Marie, and Narriman Jiddawi. 2009. "Economic value of marine ecosystem services in Zanzibar: Implications for marine conservation and sustainable development." *Ocean & Coastal Management* 52 (10):521-532. doi: <https://doi.org/10.1016/j.ocecoaman.2009.08.005>.

respectively are women<sup>6</sup>. Thus, research on this area will contribute to empowerment and reduction of poverty among women. In addition, ecosystems such as seagrasses and coral reefs provide nurseries for fishing mitigating climate change through blue carbon sequestration.

Over the past years of the BSU III partnership, SUZA has conducted research in the MACES including monitoring benthic ecosystems, pelagic parameters, marine hazardous waste, and coral reefs. These studies have provided required information on marine pressures and baseline assessment<sup>7</sup>. The monitoring studies and protocols introduced in BSU III will contribute to the development of national frameworks for regular monitoring of marine ecosystem health and services under the proposed BSU4. Moreover, to ensure successful translation of research findings into sustainable practices, we will prioritize engagement and involvement of all relevant stakeholders throughout the research process using a co-creational approach.

### **Research agenda and national strategies**

The proposed focus areas and research agenda of the SUZA led BSU4 align with the existing national plans and frameworks including Zanzibar Development Vision 2050, Zanzibar Blue Economy Policy 2020, and Zanzibar Research Agenda 2015-2020. These frameworks stress the need for sustainable access to safe drinking water and sustainable sanitation services. They also emphasize strong institutional frameworks for sustainable waste management in collaboration with local communities and institutions as well as research on the environment including marine resources and health.

Notably, the BSU4 program will contribute to the eradication of poverty in general (SDG1) and specifically to the efforts of the Ministry of Health to strengthen infectious diseases surveillance and control aligned with SDG3 (good health). In addition, it will contribute to SDG6 (access to water and sanitation), SDG11 (sustainable cities and communities), with an emphasis on waste management, and SDG13 (climate action), targeting to build resilience and adaptive capacity to climate-related hazards,

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<sup>6</sup> Flower E. Msuya & Anicia Q. Hurtado (2017) The role of women in seaweed aquaculture in the Western Indian Ocean and South-East Asia, *European Journal of Phycology*, 52:4, 482-494, DOI: 10.1080/09670262.2017.1357084

<sup>7</sup>Staeher PA, Sheikh M, Rashid R, et al. Managing human pressures to restore ecosystem health of zanzibar coastal waters. *J Aquac Mar Biol*. 2018;7(2):59- DOI: [10.15406/jamb.2018.07.00185](https://doi.org/10.15406/jamb.2018.07.00185)

<sup>7</sup>Hamad, I.Y.; Staeher, P.A.U.; Rasmussen, M.B.; Sheikh, M. Drone-Based Characterization of Seagrass Habitats in the Tropical Waters of Zanzibar. *Remote Sens*. 2022, 14, 680. <https://doi.org/10.3390/rs14030680>

contributing to the Ministry of Blue Economy and Fisheries ongoing initiatives of using oceanic resources sustainably, in alignment with SDG14 (healthy oceans).

### 3. Research capacity development needs

The BSU supported PhD studies within EPHand MACES have contributed much to the capacity of SUZA to fulfill the TCU's requirements for establishing new research-based master's programs, while at the same time providing the foundation for establishing sustainable research and educational infrastructure as for example the insectarium and associated molecular laboratory based at the School of Medical and Health Sciences.

To ensure research impact at a societal level SUZA must, however, maintain high levels of research capacity across its faculties. As a young institution, the research capacity at SUZA remains relatively limited in terms of general human resources as well as research facilities. Following the merger of several tertiary educational institutions, SUZA has experienced an exponential increase in its number of schools, departments, academic staff, and research areas. Consequently, the research capacity gap has widened in terms of the need for advancing newly employed staff members presenting limited experience.

To eliminate this gap, SUZA has employed a wide variety of approaches and interventions to build capacity at individual and institutional levels. A total of nine postgraduate programs have been introduced as have four centers namely, the Tropical Research Center for Oceanography Environment and Natural Resources (TROCEN), Global Center for Kiswahili Studies and Advancement (GCKSA) and Center for Digital Learning (CDL).

Collaborations between SUZA and other partner institutions have been invaluable in building research and academic capacity. In parallel, continuous efforts have been made to engage with donors, researchers, and higher education institutions both regionally and internationally to fund capacity research activities through collaboration and partnerships.

Based on the current situation, the SUZA research capacity needs include:

*Research management skills:* Grant application, management of larger research projects, co-production and advanced research methodologies, publications, and dissemination of research findings through different approaches. This capacity development should be combined with research grants to support intervention research environments within project themes.

*Research management system:* Develop new research regulatory instruments, management of data, maintaining and upgrading of research infrastructures.

*Strengthening postgraduate education and research:* Students' research/thesis management systems (online resource to supplement face to face coaching, and

strengthening young researchers, project management and information skills e.g. Better Thesis East Africa Version), develop supervision capacity such as joint PhD supervision and academic writing for postgraduate researchers. To continue with the enhancement of departmental capacity, BSU4 will involve PhD studies.

*Strengthening capacity on online, blended learning and educational research:* To abide by the new TCU guidelines for online and blended courses for Universities in Tanzania and the need for expanding online courses at SUZA, the BSU4 aims to expand access of the accredited online and blended learning courses, OER, MOOCs, and educational research.

#### **4. Previous or ongoing research capacity strengthening projects (e.g. BSU or similar)**

The SUZA-Danish partnership under BSU has been in place for more than a decade. The motive behind such a partnership has been enhancing the capacity of SUZA to be strong enough in teaching, conducting research and engaging with other stakeholders in the process of bringing wider developmental impact to the society. BSU projects have laid down the basic foundations to achieve such goals by supporting the development of university-wide frameworks for research and education as for example supporting research processes, laboratory facilities, curriculum development, graduate studies, library services, financial management and policies. SUZA has institutionalized these outputs and mainstreamed regular functionalities of the University.

The partnership between SUZA and the Danish partners involved two long-standing collaborating institutions from Denmark i.e. University of Copenhagen (UCPH); the leading university for the North, and Aarhus University; the leading university in the thematic area of MACES. This partnership has contributed to the enhancement of the capacity at SUZA to effectively conduct research of direct relevance to the needs of Zanzibar society thus contributing to the overall achievement of Zanzibar development plans. Within the thematic focus areas of EPH and MACES, SUZA has for example been able to inform on the imminent risk of dengue and other *Aedes* transmitted diseases, report on the impaired conditions of the marine ecosystems, and document current practices of solid waste management by hotels, all of which point towards highly specific needs for policy actions.

As part of the BSU efforts, the research capacity at SUZA has improved significantly in the last ten years through networking and collaboration: North-South and South-South collaboration and networking among researchers and other staff from BSU partner universities and other partners from public institutions through training, joint events, mentorship, joint research, and publications. The networking and collaboration aspect is one of the most important lessons learned during the SUZA-BSU projects.

Beyond BSU, SUZA has implemented several other Danida funded projects within the thematic areas of BSU. This includes i) Environmental Sustainability of Hotels in Zanzibar (EnSuZa) (code: 17-04-KU) – a joint project between SUZA, UCPH, Aalborg

Universities and CBS, ii) Predicting the next epidemic: DHIS2-based risk modeling (code: 19-02-KU) - a joint project between SUZA, UCPH, NIMR, Tanga, KCMUCo and University of Dar es Salaam, focusing on epidemic risk forecasting and dissemination through the existing District Health Information Software 2 system as an early warning system for vector-borne disease epidemics in Tanzania, iii) Decentralized Sequencing for Infectious Disease Surveillance in Tanzania aiming to establish an integrated surveillance system for detection and monitoring of climate-sensitive pathogens in Tanzania (code: 20-12-TAN)- a research collaboration between KCMUCo, SUZA, UCPH, and DTU and iv) Building Resilience to Climate-sensitive Mosquito-borne Viral Diseases, focusing on epidemic prevention through integrated mosquito control and sentinel surveillance in Zanzibar hospitals (code: 21-05-KU) - a joint project between SUZA, UCPH, KCMUCo and the Danish Royal Academy of Architecture. Finally, BSU research findings have been instrumental in attracting BSU3 extra COVID-19 funds through the SCCOPET project focusing on strengthening the capacity of COVID-19 disease surveillance, diagnostic, vaccination programs and promoting the mental health of frontline health care workers/professionals.

Other ongoing research capacity strengthening projects include collaboration between SUZA and Liverpool School of Tropical Medicine on the development of quality improvement of integrated HIV, TB and malaria services during antenatal and postnatal care.

Furthermore, SUZA has managed to attract partnerships with Norwegian institutions within the framework of BSU III conducting two collaborative research projects i.e. *CENSU*: Climatic change, Energy (exploration of petroleum products) and Sustainability and *SAMAKI*: Fisheries management and nutrition, livelihood, gender participation and right and governance of fisheries resources. The Norway and Zanzibar (NOZA) project focuses on strengthening south-north collaboration through students and staff mobility and exchange specializing in education.

## **5. Research capacity strengthening priorities**

Under BSU4, SUZA aims to build on the progress made during the previous BSU projects, with the overall objective of enhancing its research capacity, engaging with relevant partners in the public and private sectors, and strengthening research education in line with the current Strategic Plan of the University.

The main focus of the BSU4 partnership is on the Environmental Public Health (EPH) and Marine Ecosystems and Services (MACES) with the aim of expanding the amount and quality of research, research education provision and impact of the outreach by SUZA. While the previous BSU projects involved basic research, BSU4 will largely embrace intervention research, where the end goal is to promote science-based practices in tackling challenges in the areas of waste, water and sanitation, mosquito-transmitted diseases, degradation of vital marine ecosystems and services and climate change. These

prioritized areas directly affect the well-being of the local population and have multiplier feedback on the achievement of the Zanzibar Development Vision 2050, which is centered on the blue economy.

The targets in EPH research are devoted to building on the existing data gathered from BSU baseline studies. This project will largely involve participatory action research and co-created intervention studies targeting (i) integration/mainstreaming of sustainable waste management and context-specific environmentally friendly mosquito control topics, and practices in the school curricula (ii) school-based outreach programs for influencing behavior change among pupils. (iii) community-based interventions and outreach geared toward community sensitization and participation in mosquito control (iv) community sensitization and mobilization on waste prevention and minimization strategies (reduce, reuse and recycling) as part of a circular economy model (v) analysis of the institutional frameworks governing water, waste, sanitation, and environmental management, in general, will be central to this project.

Moreover, the project will also involve strengthening infectious diseases diagnostic capacity through procurement of essential equipment and materials and further training of laboratory personnel at SUZA and the Ministry of Health, which is vital for surveillance/early detection and response to imminent outbreaks of climate-sensitive pathogens and other infections. This will be implemented in synergy with other Danida funded projects namely 'Decentralized Sequencing for Infectious Disease Surveillance in Tanzania', 'Predicting the next epidemic: DHIS2-based risk modeling' and 'Strengthening the Capacity of COVID-19 disease surveillance, diagnostic, vaccination programs (SCCOPET)' which have significant components in the development of molecular laboratory established by BSU III project at SUZA.

For MACES the key deliverables will include (i) improved research capacity on the application of innovative methods and techniques in monitoring, evaluation and management of vital marine ecosystems and services (seagrasses, coral reefs, fisheries, seaweed farming); (ii) research to enhance and establish the framework for assessing the status of marine ecosystems and services including application in marine protected areas; (iii) improved tools for sound marine spatial planning decision making.

In addition, the project will enhance the online systems to support research, teaching and learning at SUZA, improvement of graduate studies systems and teaching, and research groups at SUZA including supporting SUZA efforts to enhance research communication within and outside SUZA. We will apply an iterative collaboration approach with relevant partners in the public and private sectors including health, tourism, marine conservation, and the general public to elevate the research impact by SUZA. This will contribute to a better public health and sustainable management of the marine resources, thereby fostering sustainable development and climate-change resilient society within the Zanzibar blue economy framework.

## **6. Institutional and management arrangements**

The BSU4 management is based on the existing SUZA institutional management frameworks. The project falls under the departments of Natural Sciences, Allied Health Sciences, Center for Tropical Research, Oceanography, Environment and Natural Resources (TROCEN), and Center for Digital Learning (CDL). The DGSRC and other departments will be involved at different stages.

The partnership will be headed by designated overall anchors at SUZA assisted by a coordinator/administrator responsible for the day-to-day communication and management. This will be done collaboratively with the northern and southern counterparts. A Project Management Team (PMT) will be formulated to oversee project implementation, monitoring project activities, reporting and financial management to ensure the project objectives are achieved. To secure timely delivery of agreed outputs, the partnership will rely on committed teamwork between SUZA, Danish partners in collaboration with identified twinning institutions in the South. In accordance with DFC's general conditions for BSU4, SUZA is the lead South institution responsible for the overall management of the partnership and communication with the DFC.

The limited number of internal University staff involved in the previous BSU activities led to a hectic schedule in the implementation of project activities. In the BSU4 partnership, SUZA is expecting to increase staffing within SUZA and collaborative partners and teams within the key research areas.

Within the twinning arrangements, we will partner with Kilimanjaro Christian Medical University College (KCMUCo) on the molecular lab, mosquito studies and University of Dar es Salaam (Department of Aquatic Science) on marine ecosystems monitoring. We will enter MoUs with Gulu University for online teaching, and Hargeisa University for aspects of university administrative support, collaboration in water and sanitation, mosquito studies, waste management, and climate change. This will be strategically institutionalized to foster the partnership beyond the BSU4.

The partnership will involve collaborative activities such as co-supervision of students, co-facilitation of training programs, joint research, and dissemination. The partnership will also promoting increased use, improved quality and experimentation with new modalities and platforms for online and blended learning and sharing of open educational resources.

In order to increase the engagement of university-level management, An Advisor committee will be formulated . This committee will be led by Deputy Vice Chancellor Academics and Research and members will include heads of relevant departments, DGSRC director, and any other person proposed by the University management.

To promote gender equity, the project will prioritize the involvement of women in the research team's formulation, implementation of project activities and overall management of the partnership.