



THE AFRICAN CENTER FOR SUSTAINABLE CITIES STUDIES (ACS)

Call for applications for PhD scholarships

The African Center for Sustainable Cities Studies (ACS) is a research and training center established at Ardhi University (ARU) under the VLIR-UOS Institutional University Cooperation (IUC) programme in collaboration with Hasselt University (UHasselt) as a lead partner in Belgium and other Flemish Universities, including Gent University, Antwerp University, Free University of Brussels, Busworld Academy and University of Applied Sciences and Arts, and other Tanzanian Institutions including Mzumbe University, University of Dar es Salaam, the National Institute of Transport and Nelson Mandela African Institution of Science and Technology (NM-AIST). The vision of the ACS is to contribute towards attaining a world with inclusive, safe, resilient and sustainable cities and communities in accordance with SDG 11 and its mission is to advance research and education for sustainable cities development and to contribute in generating solutions to societal and environmental problems related to urban development. The ACS in collaboration with partner universities in Belgium announces several PhD positions that will be run under sandwich modal where students will spend three to six months in Belgium and six to nine months in Tanzania (Ardhi University) depending on the programme. Research sites will be based in Tanzania. Tanzanians with requisite qualifications are invited to apply for the positions. The duration of PhD studies is 4 years. ACS operates under principles of the Agenda 2030 (Leaving No One Behind). Therefore candidates from disadvantaged groups are encouraged to apply.

The General eligibility criteria are;

- i. ARU employees or those with a potential of been employed by Ardhi University. Therefore, the applicants shall have a GPA of at least 3.8 in undergraduate and a GPA of 4.0 or B+ in master's degrees.
- ii. A Master's degree in relevant discipline from a recognized institution of higher learning and a demonstrated knowledge and experience in conducting research and communicating research outputs



- iii. Strong written and oral communication skills in both English and Kiswahili languages

In addition:

- i. Applicants who are not ARU employees must be ready to be employed by ARU after completion of their studies should employment positions be available
- ii. All applicants should be ready to sign an agreement with ARU before commencement of scholarship
- iii. Age limit: Not older than 45 years

The center invites applications to fill PhD positions in seven (7) thematic areas as detailed below:

Thematic Area 1: Land Use Planning

Number of PhD positions: 4

PhD position 1: Participatory planning and land use conflict management in the rural settlements around Dar Es Salaam

About the position:

The rapid urbanisation of Dar Es Salaam is triggering an urbanisation process in the bordering rural districts. As a consequence, rural settlements are increasingly witnessing 'urban' phenomena such as land speculation, (tourism) gentrification, spatial segregation, etc. These phenomena in turn generate land use conflicts: e.g. among citizens caused by the double allocation of (public) land, among neighbors over boundary disputes, between investors and authorities over development projects, between pastoralists and farmers over land resources. To mediate these conflicts, authorities are drawing up comprehensive land-use plans and detailed community and redevelopment plans. However, all these conflict mediation instruments remain expert based and as such exclude a large part of the population from the planning process. Further, land use conflicts persist despite the mediation efforts, and this calls for a need to strengthen the existing mediation instruments. The



aim of the overall research project is to explore how we can use digital technologies to increase the involvement of a diversity of actors in planning processes and increase the chances to mitigate land use conflicts.

The rural areas around Dar Es Salaam have a limited capacity to work with digital technology. For this reason, the PhD candidate will experiment with low-tech participatory artefacts such as maps, scale models or physical measuring devices. The PhD candidate will work in the district of Bagamoyo.

Flemish promotor: prof. dr. Oswald Devisch, Hasselt University, Faculty of Architecture and Arts

Eligibility:

- a masters' degree in spatial planning
- knowledgeable with GIS (or prepared to learn to work with GIS)
- interest in low-tech participatory artefacts
- interest in participatory conflict mediation

PhD position 2: Participatory planning and land use conflict management in planned urban settlements in Dar Es Salaam

About the position:

The demographic pressure on Dar Es Salaam triggers a continuous process of transformation. As a consequence, planned urban settlements are witnessing: a development pressure on their public space, an uncontrollable traffic and parking situation, a sprawl of illegal extensions, etc. These phenomena in turn generate land use conflicts: e.g. among citizens caused by the double allocation of (public) land; between citizens and authorities triggered by fraudulent titling processes; between institutional actors triggered by diverging redevelopment ambitions. To mediate these conflicts, authorities are drawing up redevelopment plans. The problem is that these plans remain expert based and as such exclude a large part of the population from the planning process. Further, land use conflicts persist despite the mediation efforts, and this calls for a need to strengthen the existing mediation instruments. The aim of the overall research project is to



explore how we can use (digital) technologies to increase the involvement of a diversity of actors in planning processes and increase the chances to mitigate land use conflicts.

The actors living and working in planned urban settlements in Dar Es Salaam can rely on GIS-plans and typically have the capacity to do so. For this reason, the PhD candidate will experiment with participatory planning processes that blend GIS and social media. The PhD candidate will work in the municipality of Ubungo.

Flemish promotor: prof. dr. Oswald Devisch, Hasselt University, Faculty of Architecture and Arts

Eligibility:

- a masters' degree in spatial planning
- work experience within a planning administration
- knowledgeable with GIS (or prepared to learn to work with GIS)
- interest in participatory digital technologies
- interest in participatory conflict mediation

PhD position 3: Participatory planning and land use conflict management in non-planned urban settlements in Dar Es Salaam

About the position:

The rapid demographic growth of Dar Es Salaam has led to a vast amount of non-planned urban settlements. The lack of basic public services has triggered a diversity of settlement upgrading programs. These programs in turn generate a series of land use conflicts: e.g. among neighbors over boundary disputes; between citizens and authorities over expropriation procedures; between institutions and citizens over organized criminal land practices. To mediate these conflicts, authorities are drawing up urban renewal plans. The problem is that these plans remain expert based and as such exclude a large part of the population from the planning process. Further, land use conflicts persist despite the mediation efforts, which calls for a need to strengthen the existing mediation instruments. The aim of the overall research project is to explore how we can use digital technologies to increase the involvement of a diversity of actors in planning processes and increase the chances to mitigate land use conflicts.



The actors living and working in non-planned urban settlements in Dar Es Salaam typically have a lower digital literacy and cannot rely on GIS-plans to start mediating their land use conflicts. For this reason, the PhD candidate will experiment with citizen science based participatory mapping methods. The PhD candidate will work in the municipality of Ubungo.

Flemish promotor: prof. dr. Liesbeth Huybrechts, Hasselt University, Faculty of Architecture and Arts

Eligibility:

- a masters' degree in spatial planning, natural resource management, land surveying, land management or in any related field or in any related field
- work experience in citizen participation
- knowledgeable with GIS (or prepared to learn to work with GIS)
- interest in participatory digital technologies
- interest in participatory conflict mediation

PhD position 4: Participatory planning and land use conflict management in demarcated conflict areas in Dar Es Salaam

About the position:

The Ministry of Lands, Housing and Human Settlements Development has demarcated a number of municipalities in Dar Es Salaam that suffer from a high number of long-lasting land use conflicts. These conflicts are triggered by processes such as land speculation (by foreign investors) and the privatisation of public land. To mediate these conflicts, the Ministry has introduced a conflict mediation unit. The problem is that this unit, and the mediation instruments that this unit uses, remain expert based and as such exclude a large part of the population from the planning process. Further, land use conflicts persist despite the mediation efforts, which calls for a need to strengthen the existing mediation instruments. The aim of the overall research project is to explore how we can use digital technologies to increase the involvement of a diversity of actors in planning processes and increase the chances to mitigate land use conflicts.

The actors living and working in these demarcated conflict areas are very diverse, involving both highly literate and networked experts and



professionals (e.g. developers, investors, lawyers, brokers) and marginalised and illiterate communities. For this reason, the PhD candidate will experiment with participatory planning processes that blend GIS and social media in order to trace the radical interdependency of these actors. The ministry demarcated three conflict areas in Dar Es Salaam: Boko, Tegeta and Mbezi Beach municipality. The PhD candidate will work on one of these three.

Flemish promotor: prof. dr. Liesbeth Huybrechts, Hasselt University, Faculty of Architecture and Arts

Eligibility:

- a masters' degree in spatial planning, land surveying, land management or in any related field
- knowledgeable in property law
- knowledgeable with GIS (or prepared to learn to work with GIS)
- interest in the politics of planning
- interest in participatory digital technology
- interest in participatory conflict mediation

Thematic Area 2: Decent Housing

Number of PhD positions: 4

Position 1: Rainwater Harvesting and Conservation Strategies

Brief description of the PhD position: The study will explore alternative ways for improving water access through appropriate rain water harvesting techniques, conservation strategies and water quality aspects to address the current household water access challenges in peri urban areas where there is no piped network.

The candidate for this position will be admitted at KU Leuven in Belgium and will work under the project to accomplish the stipulated outputs. The candidate will be supervised by both KU Leuven and Ardhi University Academic Staff.

Eligibility:

The potential candidate must meet the minimum requirements for admission by KU Leuven. The candidate should have a background in water resources



management (at MSc level) or related discipline with knowledge on water management. Skills on modelling, GIS applications are desirable.

ARU promotor: dr. Jacob Kihila, Institute of Human Settlements Studies, (ARU)

Flemish promotor: prof. dr. Patrick Willems (Hydraulics and Geotechnics, KU Leuven) & prof. dr. Bart Van der Bruggen (Department of Chemical Engineering, KU Leuven)

Indicative start date: September 2023

Position 2: Wastewater and fecal sludge treatment for resource recovery

Brief description of the PhD position: The study will explore technologies for wastewater and fecal sludge treatment for optimal resource (biogas, fertilizer and treated effluent) recovery, involving various wastewater, fecal sludge and solid waste mixes. The position aims at contributing to the project impact of ensuring sustainable resource utilization among stakeholders.

The candidate for this position will be admitted at Ghent University in Belgium, and will work under the project to accomplish the stipulated outputs. The candidate will be supervised by both Ghent University and Ardhi University Academic Staff.

Eligibility:

The potential candidate must meet the minimum requirements for admission by Ghent University. The candidate must have a background in Environmental Engineering or Wastewater Engineering (at MSc level) or related discipline with knowledge and interest in wastewater and fecal sludge management. Skills on design of wastewater and/or fecal sludge treatment are desirable.

ARU promotor: dr. Jacob Kihila, Institute of Human Settlements Studies, (ARU)

Flemish promotor: prof. dr. Jo De Vrieze (Department of Biotechnology, Ghent University) & prof. dr. Lise Appels (Chemical and Biochemical Reactor Engineering and Safety, KU Leuven)

Indicative start date: September 2022

Position 3: Electrification through renewable energy

Brief description of the PhD position: The study will investigate technologies and strategies for production, distribution and use of renewable energies



(biogas, briquettes) derived from wastewater, fecal sludge and organic waste. The position aims at devising ways to improve application and scale-up of the technologies to the communities.

The candidate for this position will be admitted at Hasselt University in Belgium and will work under the project to accomplish the stipulated outputs. The candidate will be supervised by both Hasselt University and Ardhi University Academic Staff.

Eligibility:

The potential candidate must meet the minimum requirements for admission by Hasselt University. The candidate must have a background in Renewable Energy or Environmental Science or Engineering (at MSc level) or related discipline.

ARU promotor: dr. Chacha Nyangi, Department of Environmental Science, (ARU)

Flemish promotor: prof. dr. Wim Deferme (Faculty of Engineering Technology, Hasselt University)

Indicative start date: September 2022

Position 4: Alternative sustainable building materials

Brief description of the PhD position: The study will investigate technologies for use of sanitation by-products or other types of waste as building materials, seeking to test suitability of various mixes, devising strategies for enhancing quality of generated materials, value addition, strategies for promotion and scale up of alternative building materials. The position aims at devising ways to provide low cost affordable, yet, appropriate building materials for poor communities.

The candidate for this position will be admitted at Hasselt University in Belgium and will work under the project to accomplish the stipulated outputs. The candidate will be supervised by both Hasselt University and Ardhi University Academic Staff.

Eligibility:

The potential candidate must meet the minimum requirements for admission by Hasselt University. The candidate must have a background in Civil



Engineering, Sustainable materials, Architecture, Building Economics, Environmental Engineering (at MSc level) or related discipline.

ARU promotor: dr. Shadrack Sabai, Department of Environmental Engineering and dr. Isabela Mtani, Department of Interior Design, (ARU)

Flemish promotor: prof. dr. Elke Knapen (Faculty of Architecture and Arts, Hasselt University)

Indicative start date: September 2023

Thematic Area 3: Socio-economic development

PhD 1: Spatio-temporal analysis of food (in)security in rapidly expanding urban systems

Brief description of the PhD position:

The PhD-research will focus on the spatio-temporal evolution of the controlling factors of food security in rapidly expanding urban systems. Traditionally food insecurity is considered as a poverty-related problem in households lacking financial means to buy food. However, recent studies showed that in the context of SSA-cities there are several other factors that control food insecurity such as the physical accessibility to food vending places, the (in)possibility to grow own food and the social networks (friends and relatives, ethnic community, faith-based organisations) that can act as safety nets. All of these factors are under pressure in rapidly expanding cities and are often overlooked by urban planners. The research wants to contribute to a better urban food security by mapping in detail the relative importance of the different controlling factors, the way they evolved over time and how they could further evolve under different urban expansion scenarios. For this research, the PhD-researchers would collect original data through targeted field-campaigns in contrasting urban neighborhoods and complement this with a spatial modelling approach in which urban food security for different socio-economic groups is evaluated over time.

ARU promotor: Dr. Makarius Mdemu, Ardhi University, Institute of Human Settlement Studies



Flemish promotor: Prof. Anton Van Rompaey, Catholic University Leuven, Department of Earth and Environmental Sciences (Unit Geography and Tourism)

Eligibility:

We are looking for a PhD-candidate with a background in geo-sciences, social sciences or spatial planning with a strong interest in sustainable development. The candidate should be fluent in spoken and written English, and have the necessary skills (1) to set-up field-campaigns for socio-economic data-collection, (2) to analyze spatio-temporal datasets, (3) to design own maps (basic cartography is essential, more advanced GIS-skills are a plus), and (4) integrate spatial analytical tools with social-economic and environmental factors.

Number of PhD positions: 1

PhD 2: Assessment of business models to enhance agri-food entrepreneurship in Dar es Salaam.

Brief description of the PhD position:

A first task can focus on a review of existing business models in (peri-) urban farming settings and different typologies of urban farming enterprises and discuss the possibilities and limitations of the transferability to growing cities in developing countries. Next, a mixed-method approach (interviews, focus groups and a survey) can be used to map existing business models and to select promising routes for further business model development. A third task can study relevant case studies to explore the agri-food entrepreneurship while in a fourth task consumers can be involved to determine the willingness to pay for new business models designs (using choice experiments).

Flemish promoters:

Prof. Steven Van Passel, Antwerp university, departement Engineering Management

Prof. Filip De Beule, Catholic University Leuven, Faculty of Economics and Business

Eligibility:



The PhD candidate should have a masters' in economics (or equivalent) with a strong interest in food and management. She/he should have expertise in both quantitative as qualitative research methods. One of the following criteria should be met: (i) master degree abroad (e.g. Europe); and/or (ii) publication in Web of Science journal and/or (iii) a good English language test (e.g. IELTS score of 6.5 or higher)

Number of PhD positions: 1

PhD 3: Assessing 'food democracy' in African metropolises: the case of Dar Es Salam

(will start in September 2023!)

Brief description of the PhD position:

This PhD research aims at contributing to an enabling governance environment, that can enhance the level of food democracy in (selected areas) in Dar Es Salaam. Food democracy refers to the equal and effective participation of all members of an agro-food system in shaping that system, as well as to knowledge about the relevant alternative ways of designing and operating the system.

The proposed research shall be anchored on a system thinking, and consideration of critical aspects such as stakeholder involvement, equity and inclusiveness. A first task will map and describe the different food policy mechanisms in Dar Es Salaam and connect these with the existing literature on urban food policies in rapidly urbanizing cities in developing countries' contexts. In a next step, the researcher will focus on two or three selected areas, and explore in depth the existing food governance, with particular attention for networks, decision making and power relations. A third part will explore future policy scenario's and their impact on food democracy in the selected areas.

ARU promotor: Dr. Luitfred Kissoly, Department of Economics and Social Studies

Flemish promotor: Prof. Joost Dessein, Ghent University, Department of Agricultural Economics

Eligibility:



The PhD candidate should have a master in sociology, political sciences, governance, development studies, economics, public administration (or equivalent) with a strong interest in food and policy making. She/he should have expertise in qualitative research methods. Expertise in quantitative methods is an asset. One of the following criteria should be met: (i) master degree abroad (e.g. Europe); and/or (ii) publication in Web of Science journal and/or (iii) a good English language test (e.g. IELTS score of 6.5 or higher)

Number of PhD positions: 1 (only from September 2023 onwards)

Thematic Area 4: Urban Transport

Brief description of the PhD position:

The PhD topic will be on **improving the traffic safety of motorcycle users** due escalating motorcycle accidents in recent years because of the increased use of motorcycles as taxis. Previous studies show that a big proportion of motorcycle fatalities were due to motorcycle driver behavior. The student will first **identify the driver behavior of motorcycle users** in detail, as well as the mistakes which will lead to accidents (e.g. via questionnaire development, and analysis of available crash data). Next, different **interventions and behavior techniques** (e.g. gamification) will be developed to change the behavior of drivers towards a safer driving behaviour, which will be implemented in a pilot study and of which the impact will be analyzed.

ARU promotor: Dr. Wilfred Gordian Kazaura, Department of Urban and Regional Planning.

Flemish promotor: Prof. dr. An Neven, Transportation Research Institute (IMOB), Hasselt University.

Eligibility:

Graduate students with a background, affiliation, or special interest in transportation sciences or traffic safety. Relevant Master's degrees are Urban and Regional Planning, Civil Engineering, Transportation Sciences, or similar disciplines.

Number of PhD positions: 1



Thematic Area 5: Cultural Heritage

Brief description of the PhD positions:

The Project is aiming at developing new knowledge and approaches in cultural heritage practices and management towards sustainable cities. It will develop strategies for sustainable design and construction, and methods for conservation and adaptation of architectural heritage and its embedded knowledge, focusing on safeguarding the cultural, environmental, material and immaterial heritage and identity.

The candidates for these positions will be admitted at Hasselt University in Belgium and will work under the project to accomplish the stipulated outputs. The data collection study area of the project is expected to be in Tanzania. The candidate will be supervised by both Hasselt University and Ardhi University Academic Staff (In the research group under Prof. Koenraad VAN CLEEMPOEL at Hasselt University).

Eligibility:

The potential candidate must meet the minimum requirements for admission by Hasselt University. The candidate must have a background in Architecture at Bachelor level, and Master in Architecture or Urban Design or any related discipline at Masters Level.

Number of PhD positions: Three in total: 2 in the first intake (starting in September 2022) and 1 in the following intake (starting in September 2023).

PhD position 1: Establishing instruments for safeguarding the built heritage in Dar Es Salaam

Major research question: How to create an inclusive inventory system for heritage sites in Dar Es Salaam

The project aims to start from a critical analysis of existing 'heritage inventories', to then move on to providing a new, inclusive inventory based on international scholarship and taking into account the historical tissue of Dar with its various layers.

ARU promotor: Dr. Simon Mpyanga & Dr. Ombeni Swai



Flemish promotor: prof. dr. Koenraad Van Cleempoel, Faculty of Architecture and Arts, Hasselt University.

PhD position 2: Safeguarding Cultural Heritage through Memory and Craftsmanship

Major research question: How to sustain conduits of liquid heritage for inclusive economic emancipation on vulnerable heritage fabric.

Narratives surrounding weaving using traditional materials among women in Bagamoyo.

Skills and practices in the production of traditional artifacts.

ARU promotor: Dr. Godfrey Ayubu, Dr. Simon Mpyanga & Dr. Shubira Kalugila

Flemish promotor: prof. dr. Koenraad Van Cleempoel, Faculty of Architecture and Arts, Hasselt University

PhD 3: Exploring potentialities of heritage in Dar via research by design.

Major research question: How can adaptive reuse contribute to providing a new future to heritage sites, taking into account social, architectural, economical and legal values.

Based on the inventory system of PhD 1, this project explores new programs for historical sites.

ARU promotor: Dr. Daniel Mbisso, Dr. Rehema Monko & Dr. Sara Phoya

Flemish promotor: prof. dr. Koenraad Van Cleempoel, Faculty of Architecture and Arts, Hasselt University

Thematic Area 6: ICT and Smart Cities



Brief description of the PhD positions: This research refers to applied research related to Smart, Sustainable and Inclusive Cities (SSIC) based on emerging technologies such as big data, AI and Internet of Things (IoT). Essential building blocks for SSICs are data infrastructures that facilitate the transfer, sharing and use of relevant data including algorithms and IoT Sensor data as well as data analytics. In order to fully implement these data infrastructure in a smart and sustainable way, strong data governance strategies based on (market) regulations, collaboration, and human capacity are indispensable. One PhD focuses more on the technological aspects of data infrastructures (see e.g. platforms/dashboard, databases, standards, metadata, prototypes), meanwhile the other PhD on the non-technological/governance aspects of SSIC data infrastructures (open data, co-creation, e-inclusion policies, governance modelling). Research outputs will be achieved through strong collaboration with key stakeholders of SSICs.

ARU promotor: Prof. dr. Rigobert Buberwa, ARU – Department of Computer Systems and Mathematics

Flemish promotor: Prof. dr. ir. Joep Cromptvoets, KU Leuven, Faculty Social Sciences, Public Governance Institute (with support of colleagues from University Ghent, University Hasselt and University Antwerp)

Eligibility:

Specific qualifications: Masters in the fields of Engineering, Data Science, Information systems, Computer science, Informatics, Business, Law, Public Administration, and Political Sciences. Applicants are required to demonstrate proficiency in the English language and must submit an English proficiency test.

Desired qualifications: Strong expertise in smart cities, data infrastructure/governance, e-participation/co-creation, emerging technologies, and stakeholder needs studies is an asset.

Number of PhD positions: 2

Application Procedures and Deadline:

Copies of application documents including i.) Postgraduate application form, ii.) a two-page concept note; and iii.) all relevant supporting documents (e.g. copies of certificates, CV, etc.), both hard and soft copies, should be submitted to Ardhi University using the following address:

Director, Postgraduate Studies Research and Publication



Ardhi University,

P.O Box 35176,

Dar es Salaam.

Email: dprp@aru.ac.tz

All applications should be submitted not later **than 14th July, 2022.**