

UNIVERSITY RESEARCH CHAIRS PROGRAMME: PROSPECTUS

This prospectus gives an elaborate description of the University Research Chairs Programme being implemented by NACOSTI. It provides the background and context in which this new initiative is emerging, the objectives and expectations of the programme, the benefits of participation and the eligibility and qualifications of the applicants. It is to be read together with (and is designed as a further guidance to) the re-advert for the “expressions of interest” for the position of Research Chair published in the local dailies and other electronic and print media. If you need any further clarification, do not hesitate to contact NACOSTI on email researchchair@ncst.go.ke with a copy to secretary@ncst.go.ke. The email should have the subject/heading “Further enquiry:University Research Chairs” clearly specified.

1.0 ABOUT THE UNIVERSITY RESEARCH CHAIRS PROGRAMME

Kenya’s long-term development plan dubbed Vision 2030 envisages a nation that is globally competitive and prosperous with high quality of life for all citizens by the year 2030. The Vision is underpinned on science, technology and innovation (STI) and recognizes the role of research, science, and innovations in a modern economy where new knowledge plays a central role in boosting wealth creation, social welfare and international competitiveness.

Knowledge – its generation, sharing and application – has become a key national asset in the knowledge-based economy. As such, knowledge-generating organizations have been on the spotlight and constantly in the radar of policymakers and development practitioners. There is an ever-increasing demand on the universities to play a more active role in national development—over and above their traditional teaching and research roles. This demand has been christened the “third mission” of universities. To achieve this mission, their interaction with industry, communities and policy-makers has become ever more crucial and efforts are now being made to make the universities occupy a more central place in the national innovation system

The National Commission for Science, Technology and Innovation (NACOSTI) has obtained a CA\$ 1 million grant from Canada’s International Development Research Centre (IDRC) to implement a Research Chairs Programme in universities in Kenya. The overarching goal of this pioneering initiative is to contribute towards Kenya’s social and economic development by strengthening the role of universities in the country’s national innovation system. By establishing these Chairs, NACOSTI hopes to enhance research capacity in local universities; create more effective collaborative linkages between the universities and the productive sectors (particularly industry) as well as a wide range of social actors such as non-governmental organizations, community groups, local government and indigenous knowledge producers. Through this programme, NACOSTI also hopes to enhance post-graduate training in the selected strategic areas,

thereby enhancing the human and technical capacity to engage in high level research and innovation.

The programme will be piloted in the health and agriculture sectors (first phase) but will be progressively expanded to cover at least seven priority sectors over the next ten years. These two sectors have been chosen due to their strategic importance to Kenya's development agenda. Agriculture is chosen primarily because of the need to address the widespread food insecurity in the country. Particularly, agricultural biotechnology has been targeted because of its potential as a source of increased efficiency and significant innovation towards ensuring access to sufficient, safe and nutritious food. Better health outcomes are closely related to wealth generation, increase in productivity, lower spending on health could free resources for development expenditure.

2.0 PROGRAMME GOAL AND OBJECTIVES

This programme aims to contribute to Kenya's social and economic development by enhancing research capacity in local universities and thereby strengthening the role of universities in the national innovation system. The specific objectives are to:

- i. To enhance the capacity of universities to generate and apply knowledge by attracting and retaining top-notch researchers in Kenyan public universities;
- ii. To improve the training of highly qualified personnel at post-graduate level in the strategic areas (particularly agriculture and health in the pilot phase);
- iii. To promote and institutionalize collaborative linkages between universities, industry and other actors;

These objectives are based on the following underlying principles/concerns:

First, Kenya has continued to lose its best brains through brain drain. Those leaving the country for 'greener pastures abroad' have cited better remuneration, better research facilities; a conducive research environment and better research funding as their main reasons for relocating to other countries. Objective 1 of this programme is premised on the fact that national capacity for research and innovation is dependent on the availability of top notch researchers and a research environment that allows them to thrive. By providing better remuneration, modern research equipment and research funding, the Programme hopes to create a conducive environment that will reduce pressures on the researchers to leave for better opportunities outside the universities and outside the country.

Second, enhancing the numbers and quality of higher-level trainees, particularly at the post-graduate levels, is an important mechanism for creating the critical mass of scientists/ researchers needed to spur innovation and socio-economic development in the country. Objective 2 envisages that the Research Chairs (RCs) will devote a

substantial amount of their time to supervising postgraduate students within their respective research domains. It is also expected that the RCs will have demonstrated the capacity to attract extra research funding that will support postgraduate students under their supervision and mentorship.

Third, there exists poor uptake and application of research and other R&D/ innovation products from the universities. This has largely been attributed to the mismatch between the research priorities of the universities and the demands of the industry and other partners. Objective 3 envisages a scenario where research agendas/ priorities will be set as a negotiation between the universities and the intended beneficiaries the research, particularly industry. Demonstrated inter-organizational and inter-sectoral linkages and collaborations will be a key requirement in awarding RCs and deciding on research financing.

3.0 WHY THE UNIVERSITY RESEARCH CHAIRS AND WHY NOW?

The funding models employed by NACOSTI have evolved from using a competitive small grants schemes geared towards supporting individual researchers in the early phases of the STI grant system with modest amounts of up to Kshs. 3 million over one year to encouraging (and funding) consortia of multi-disciplinary and multi-institutional teams with larger grants of up to Kshs. 15 million over three years. Throughout this evolution, NCST&I has learnt valuable lessons and is constantly in search of a more effective model for funding STI research in Kenya. The move to establish University Research Chairs Programme (URCP) is motivated by a host of factors including:

- i. The need to go beyond multi-disciplinarity¹ and embrace and entrench trans-disciplinarity² in the Kenyan research system
- ii. The search for a more sustainable model where universities, industry and government will co-fund research activities. It is envisaged for example that there will be matching funds/university contributions to the Research Chairs
- iii. International best practice guided by lessons from countries that have implemented (different versions) of the Chairs Programme including Canada, USA, South Africa, European Union, Australia, etc.

Reviews of the experiences of countries that have tried various versions of the Chairs Programme³ have reported positive effects on (a) creating and mobilizing knowledge

¹ Multi-disciplinarity refers to a group of scholars from different disciplines working together on the same problem, but from their respective disciplinary backgrounds (Gransson and Brundenius, 2011: pp. 35)

² Trans-disciplinarity is based on a distinct framework intended to guide problem solving efforts. The final result is an integrated systemic effort and not traceable to any single discipline (Gransson and Brundenius, 2011: pp. 35)

³ See for example, the Canadian Research Chairs Programme; the Federal demonstration Partnerships. The Basic Assistance Grant – the Federal Research Chair available at http://thefdp.org/BA_FedChair_Draft.pdf; The European Commission Research Directorate general Human Resources Mobility. “Marie Curie Chairs Handbook”. Brussels, Belgium, 2003. available at <http://europa.eu.int/mariecurie-actions>; Australian Research Council, “Federation Fellowships: Funding rules” 2004 available at http://www.arc.gov.au/apply_grants/discovery_federation.htm

with the aim of achieving research excellence, (b) attracting and retaining top researchers (c) enhancing the role of universities as centres of research excellence, (d) contributing to training highly qualified personnel, (e) Promoting inter-organizational and inter-sectoral collaborations (f) enhancing research strategic planning at the universities (participating universities are required to develop research strategic plans), and (g) leveraging additional research funding from industry and other actors.

The University Research Chairs Programme is therefore an integral part of the Government plan to drive research and development excellence, to create world-class centres of research and to enhance country's competitiveness in the global knowledge-based economy.

4.0 HOW WILL THIS BE DIFFERENT FROM PREVIOUS FUNDING SCHEMES?

The key difference in the university Research Chairs programme is its deliberate emphasis on the need to move from research to innovation. It recognizes that whereas the universities have been generating technologies and other research outputs, these have not reached the market and intended beneficiaries. Instead, more resources have been devoted to generating new technologies targeted at single problems. The programme intends to break the barriers to the uptake and application of research for economic and social development. The programme will position the universities at the centre of the innovation system – as the fulcrum of knowledge generation. Beyond knowledge generation, universities are required to champion the process of translating outputs of their research (e.g. new technologies, new varieties, prototypes, new business models) into products and services in the market place (innovation).

This new role requires that universities interact with other actors who are not their traditional partners (such as business consultants, marketers, IP lawyers etc) as well as promote multi-disciplinary approaches i.e. teams of experts from diverse disciplines (e.g. social scientists, bio-physical scientists, legal experts, value chain analysts, innovation managers etc) working together on identified research problems. This new expectation also behoves the universities to embrace participatory and consultative approaches to knowledge generation and transfer. Recognizing the role of other actors and experts as well as the important role of feedback in realizing success at the marketplace necessitates that universities change their *modus operandi* and embrace systemic approaches that not only value other actors in the process, but more importantly, the importance of other knowledge systems.

5.0 WHO QUALIFIES AS A RESEARCH CHAIR AND WHAT ARE THEIR ROLES?

The Research Chairs will be tenable for five years and renewable once subject to performance. The Chair holder shall be an outstanding and innovative researcher whose

accomplishments have made a major impact in their fields. In addition, the Research Chair should meet the following criteria:

- Be based at a public university
- Be at least an Associate Professor in their discipline
- Demonstrate ability to lead multi-disciplinary teams
- Demonstrate a track record of successfully supervising post-graduate students at Masters and PhD levels
- Demonstrate academic excellence as shown in the profile of publications in the last 5 years and where applicable, new inventions/patents
- Demonstrate ability to fund-raise and mobilize resources for research as shown by the number of funded proposals in the last 5 years
- Demonstrate the ability to work with non-traditional collaborators, particularly the private sector
- Be willing to dedicate at least 70% of their time to conducting research, supervising masters and doctoral students as well as mentoring upcoming researchers

6.0 WHY SHOULD I APPLY TO BE A RESEARCH CHAIR? WHAT ARE THE BENEFITS?

- I. The Chair holder shall receive an assured research funding over the period of up to **Kshs. 15 million annually** for research expenses, equipment purchase and upgrade, international travel, publications and literature acquisition amongst other eligible expenses (based on their approved research proposal). NACOSTI (and its partners) will facilitate the RCs by providing the required funding.
- II. The Chair holder shall receive an attractive salary package. The host university will be expected to continue supporting the salary of the RC who will also receive an additional **top-up of upto 50%** of their basic salary. Additionally, the host university shall be required to provide the necessary support staff to the Chair.
- III. Industries will be requested to provide universities with additional (financial and other forms of) support for research and other services as may be required (including sharing of equipment); help in broadening the experience of students and faculty (through placements, secondments and internships); help in identifying significant, interesting and relevant researchable problems (priority setting); and increase employment opportunities for graduating students.
- IV. In return, industry will gain access to expertise within the universities; aid in the renewal and expansion of technology; improve access to students as potential employees; expand precompetitive research; and leverage internal research capabilities

7.0 WHAT ARE THE STRATEGIC PRIORITY SECTORS FOR THE PROGRAMME?

The Science, Technology and Innovation (ST&I) Policy has identified (i) agriculture and Rural development; (ii) health and life Sciences; (iii) energy; environment and natural resource management; (iv) information communication technology (ICT); (v) space science technology; as some of the priority areas that can spearhead Kenya's transformation to a middle income economy. These national priorities form the basis of selecting University Research Chairs. While appreciating that that eventually, RCs will need to be established in all the priority sectors/ fields, NACOSTI wishes to pilot the programme in two strategic areas namely: **agricultural biotechnology innovation system and health systems.**

7(a) The Agricultural biotechnology innovation system

Agriculture remains the backbone of the Kenyan economy. Yet, the continued poor performance of the agricultural sector undermines Kenya's prospects of attaining its goals under the Vision 2030 and the MDGs. The low agricultural productivity is associated with a wide range of factors, including infrastructure, research and development (R&D) and over-reliance on conventional technologies. Conventional agricultural technologies have led to some improvements in food security but on their own are insufficient to spur the agrarian revolution expected solve the immense food production challenges. Additional benefits can be achieved by the application of modern biotechnology methods. Biotechnology innovation can be regarded as the generation, access to and utilization of biological knowledge, technologies, information and a range of other inputs to achieve socially progressive and economically productive ends. It covers the performance of science, technology, finance, R&D organizations, law/regulations, firms/ industries and applicable in specific sectors like agriculture, industry, environment, health etc.

In order to move beyond developing new technologies to widely adopted innovations, biotechnology has to be nested into wider systems involving other relevant actors, interactions, regulations and rules in each context. The envisaged research chair in agricultural biotechnology innovation is expected to address a host of issues including but not limited to: (i) generation, up-scaling, technology transfer and commercialization; (ii) policy and regulatory processes including biosafety and regulation of biotech innovations (iii) information and awareness; public perception, conflicting information/signals from political players; stakeholder collaborations and (iv) market availability and access including demand for biotechnology products, incentives to commercialize, market access barriers etc

7 (b) The Health System

Kenya's disease burden remains one of the highest despite remarkable efforts being made in some areas and the country is unlikely to meet most of the health-related MDG

targets. Despite the current efforts, Kenya's investment in health R&D is not sufficient to generate innovations or products to tackle the disease burden. According to the Consortium for National Health Research (CNHR), "Kenya does have a relatively well-established research portfolio but this is not translated into better health for the majority; there seems to be a disconnect between the research being undertaken and national efforts to reduce morbidity and mortality. Direct Government allocation for health research—currently less than 2% of the Ministry of Health budget—is insufficient."⁴ The CNHR goes on to state: "Kenya lacks well-articulated research priorities on health-related issues, and relies on the National Health Sector Plan II—2005-2010 and Vision 2030 for guidance. Although these are useful documents, they do not emphasize the need for more health-systems research, nor a broader, inter-sectoral approach to science, technology and health."⁵

By definition, health system refers broadly to all public and private sectors and institutions which directly influence and support the health. These sectors and institutions are embedded within the wider physical, socio-economic, political and cultural context. Health system research is therefore concerned with improving the people's health by enhancing the efficiency and effectiveness of the health system as an integral part of the overall process of socio-economic development. Because many issues in health are interrelated and interconnected with issues in other sectors such as agriculture, education, water, sanitation etc; health systems research must recognize these inter-relationships and appreciate that the skills required will be drawn from a variety of other disciplines such as public health/medicine, health economics, behavioural sciences etc. In other words, health systems research by its very nature must be multi-disciplinary to achieve its objectives.

Health system research is concerned with improving the people's health by enhancing the efficiency and effectiveness of the health system as an integral part of the overall process of socio-economic development. The health systems research as conceived under the university research chairs programme will address research questions that have repercussions on the performance of the health system as a whole. The research chair under health systems is expected to address a wide range of questions, from health financing, governance, and policy to problems with structuring, planning, management, human resources, service delivery, referral, and quality of care in the public and private sector.

⁴ CNHR (2010), *CNHR Strategic Plan 2010-2014* p.9-10. Consortium for National Health Research, Nairobi.

⁵ CNHR (2010), *CNHR Strategic Plan 2010-2014*, p.10. Consortium for National Health Research, Nairobi.

8.0 WHAT ARE THE EXPECTED OUTCOMES FROM THE PROGRAMME?

There are a number of expected outcomes envisaged in this programme including: (i) that research capacities at participating universities will be enhanced; research and innovation infrastructures are improved; top-notch researchers are attracted and retained in the local universities; (ii) that a critical mass of experts in agbiotech and health systems are trained and retained; mentorship programmes enhanced and the inter-generational gap between older and younger scientists/researchers bridged; more young scientists/researchers attracted to agbiotech and health systems. (iii) Collaborative links with universities are strengthened and industries begin to support research programmes at the universities; increased staff exchange, placements and internships between industry and universities.