A proposal to sustainably expand doctoral production and retain more doctoral graduates in Africa in university service.

**Introduction and context**
A substantial challenge for higher education in sub-Saharan Africa is the recruitment and retention of faculty with terminal degrees. This circumstance has become more acute with the expansion in the number of universities; increased demand for higher education by young and increasingly better educated populations; and the articulation of national development goals heavily dependent upon expert knowledge. The abilities both to offer advanced levels of education and to conduct research are compromised by shortages of holders of terminal degrees.

A model is proposed in this paper for:
- Production of more PhDs and other terminal degrees in key disciplines in sub-Saharan nations.
- Assurance of quality in the program of production.
- Fiscal economy as compared to other models.

**The Limitations of Current Models**
A conventional means by which to address these shortages has been based in university sponsorship of promising scholars, teachers, and administrators who do not hold terminal degrees. The candidate may be granted a leave to study in Africa, and often in the US, Canada, Europe, Asia, or elsewhere. This model is usually associated with high quality. However, this model has several disadvantages. First, it is expensive, and therefore has limitations as a
strategy for substantial ramp-up. Second, the strategy involves identifying critical personnel, and then taking them “off line” from their universities for a period of years. Third, non-return or only short-return residency by degree completers is a factor of some import in some nations. Fourth, the strategy has limited and quite indirect ability to develop internal capacity for the expanded education of other scholars. Fifth, the model lacks strategic attention to critical discipline support. Sixth, the model disadvantages women and others whose traditional social roles may not allow them to be absent for long periods. Finally, with regard to the centrality of American and European universities in this strategy, it continues to represent a North-South partnership when the fullest maturity of universities in sub-Saharan Africa will call for greater emphasis on South-South partnerships and solutions.

Another approach has been more conventional, with students attending African universities, locally or otherwise, either by institutional sponsorship or self-funding. Issues noted with this model include low graduation numbers and low retention through studies of admitted candidates, difficulties with dissertation direction related to overextension of available faculty, and insufficiency of laboratory and other resources necessary to support study and research at the high levels demanded by doctoral study. Quality assurance and integrity has been an issue for some universities in some nations.

An Alternative Model
Proposed here is a model that can be designed on a national or regional/consortium basis, for example, the East African Community. This alternative would start with the identification of sub-Saharan African universities of focus and excellence in a few, high priority disciplines and fields where research doctorate holders are most needed. Examples might include agricultural and environmental studies, conventional life and laboratory sciences, engineering, computer science and information technologies, peace and conflict resolution studies, public health, various business fields, and teacher education.

Each university center, identified by application and competition, would then construct and offer a cohort-based non-resident PhD degree program in the field of specialization, drawing enrollment from across the participating country or region. Admission requirements should wherever possible include sound grounding through the master’s level or equivalent in the discipline’s body of knowledge. The program would be a blended model of American course-based study and British tutorial approaches, with a limited common core of coursework that would vary discipline to discipline. Study common to all or most disciplines might include research methods and design, grant writing and the solicitation of funding support, and university student pedagogy and mentorship. Given that cohort-selected students would be likely candidates for advancement within institutions, curricular attention might be given to academic and institutional administrative best practice.
Students would be admitted through evidence of essential field competence and recommendations of their sponsoring institutions. Such cohort meetings as might be advisable would be offered in short-term, intensive residencies, perhaps at the beginning and end of academic terms, with the balance of work completed by independent study and mentorship, with some distance technology facilitation. If desired, more intensive residency work could be conducted during summer terms. The students would move expeditiously to the dissertation stage, all the while remaining in service at their institutions.

A key element for success may be the general partnership of one or more large research universities from the US or Europe, to assist with curricular design and delivery, and to offer support and faculty involvement particularly during the dissertation stage. These universities could also offer short-term residencies to participants for professional development, the creation of professional and personal partnerships, and the initiation of research teams for long-term research agendas.

However, decisions on the involvement, and levels of involvement, of Western universities would be made by the African institutions and universities offering the degrees. To the degree that African universities can execute this initiative independently at desired levels of quality and capacity, and with long-term benefits, this sort of partnership may not be necessary or desirable. Each center will have unique circumstances and goals that influence this element of design.

If 10 PhD-cohort centers were established, each admitting twenty candidates, and assuming a 75% retention and completion rate, perhaps 150 new PhDs would be generated, all in high-demand fields and all associated with established African universities for further career pursuit and development. The cycle might take as little as three years, but the benefits of attendance and degree pursuit would begin almost immediately upon initiation. Three cycles of center launchings would produce a cumulative 450 PhDs in 10-12 years.

This level of retention and completion, on a pace of three to four years or so per student, may appear to be optimistic. These are not arbitrary estimates, but based on experience and research on the effectiveness of the cohort model, particularly in cases where students are not self-funded.

**The Partnership Element**

This model suggests the possible strengthening and support of doctoral programs in Africa through partnerships with North American, European, and other universities with demonstrated strength in disciplines of interest. These partners may be selected by African universities based on working relationships or the desire to build such partnership. An alternative might be the matching, on a bilateral or trilateral basis, of African universities with complementary strengths. There are many possible permutations.
The specifics of the partnerships would be determined by program decisions and could perhaps include competitive application for sponsorship. These elements might include, but are not limited to, teaching, dissertation supervision, joint dissertation supervision, and the hosting of "sandwich" elements in which students would undertake short-term visits to partner universities for mentorship or lab access.

By design, the formal project would eventually end, and the formal involvement of any Western university would likely be terminated, as internal capacities at numerous universities expanded through the influx of substantial numbers of new terminal degree holders. This strengthening of institutional capacities across the country or region would expand abilities to offer graduate programming through the PhD; enhance research projects and funding; and supplement University administrative and leadership capacity.

**Costs**

The project would require a substantial investment from a third-party funder or funders. These investors may be international foundations, African foundations and development investors, national governments within Africa, or foreign national governments with interests in the development of higher education and academic partnerships in Africa.

Costs would include design and consortium construction, the involvement of partnering Western or other African universities, special expenses that might accrue to the African centers (such as new faculty hiring), and possibly the underwriting of student tuition, travel, and other expenses.

While the model calls for substantial design by African universities—a bottom-up approach encouraging innovation and recognizing disciplinary differences—there are functions that should be centralized and that will have costs associated with them. These include the institutional selection and disciplinary selection processes, perhaps some involvement in admission decisions, quality monitoring and control, fiscal accountability, and dissemination of experience to benefit other projects. It is necessary, however, to cap such expenses at a reasonable, low level compared to actual program investments.

The other two major costs would be direct financial support of the hosting programs and their partners and the financial support of selected student scholars. The project might be underwritten for one cycle of admissions and completions, or several. New disciplinary demands, the involvement of new host institutions, and refinements of implementation in the approach would be the advantages of multiple-cycle sponsorship. But these decisions involve costs as well.
Because of the variability of model elements and in relation to sponsoring university or student investment, perhaps one way to consider costs is on a per-student basis. Consider that sending a doctoral student abroad for three years or more could, depending on hosting university investments, cost US$100,000 or more. Add to this the costs of a person’s replacement during this time at the home campus, and the low rates of return to service experienced by many universities, and the costs grow.

In contrast, let us say that we were to invest US$25,000 per student. The above-mentioned 450 students might then require US$15,000,000 over the decade or so of the project’s duration. A doubling to $30,000,000 would provide even deeper support of $50,000, still less than some comparable models with lesser outcomes.

One suggestion to minimize cost is that funding be attached to student retention through completion. Failure to do so would result in a reallocation of remaining funds to other students and university efforts. Doctoral education costs are not the same for all disciplines. Some fields and circumstances may require more lab equipment, machinery, etc. This can be accommodated within the funding model, or additional funds can be leveraged from other sources.

The Sponsors of this Concept Paper

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