A STRATEGIC PLAN FOR MIT
ENGAGEMENT IN AFRICA

For submission to
RICHARD LESTER
Associate Provost for International Activities
Massachusetts Institute for Technology

by the
MIT AFRICA ADVISORY COMMITTEE

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PREFACE

This Strategic Plan for MIT Engagement in Africa represents the outcome of almost two years of dedicated effort by the MIT-Africa Advisory Committee. It is a serious statement of purpose and resolve to expand the already significant relationship between MIT and African collaborators.

Rather than a closed, singular Report, we view this document as a milestone from which a progression of strategies and ideas streams and grows, along the path to providing unique value for African countries and for MIT. Thus, while the assessment and larger goals remain, specific suggestions may have evolved within the vibrant MIT-Africa initiative.

We invite you to join us on this journey and will welcome your thoughts and comments. Please email us at: mit-africa@mit.edu

Sincerely,

Hazel Sive Ph.D.
Faculty Director, MIT-Africa
April 3, 2018
1. EXECUTIVE SUMMARY

1.1 A Vision for MIT-Africa Engagement
MIT’s Campaign for a Better World—Discovery Science, Health of the Planet, Human Health, Innovation and Entrepreneurship, and Teaching, Learning and Living—resonates with enormous opportunity for collaboration with partners throughout Africa on issues of vital importance to the continent and the world. With this report the MIT Africa Advisory Committee (AAC) proposes a strategic expansion of the Institute’s already significant engagement with African partners on African priorities. We believe this vision will lead to exciting and productive outcomes as MIT pursues its mission of inclusive leadership in service to humanity in the 21st Century.

1.2 Goals and Authorship of the Report
The AAC—comprising faculty, staff, and students already engaged with African partners, programs and projects—was commissioned by Associate Provost for International Activities Richard Lester specifically to construct a strategic plan for enhancing that engagement Institute-wide. Based in an assessment of MIT’s current African connections and activities, and those of key peer universities, our report culminates in a set of concrete recommendations to build on the Institute’s unique attributes and broad existing base of partnerships with African universities, institutions, corporations, governments and communities.

1.3 Rationale for Expanding MIT Presence in Africa
Across the globe, MIT is tackling critical challenges relating to the environment, climate change, energy, population growth, food, health, education, industry and urbanization. Africa stands out as a continent flush with opportunities for productive research collaborations and transformative educational experiences for MIT and African students alike.

Indeed, Africa is a continent of youth. With the population under age 25 at 60% and growing, it boasts an enormous resource of youthful innovation and vitality to nurture and tap. Given an already strong and respected presence in Africa, intelligently bolstered with strategic new partnerships, MIT is poised to do great things on and with the continent. The rich promise of joint efforts that will contribute to the economic, social and intellectual trajectory of African nations—even as they enrich MIT’s essential mission of research, education and service to humanity—cannot be denied.
1.4 Existing Engagements
MIT engagements in Africa already span half the countries on the continent and the three prevailing paradigms that cross all five schools of the Institute: research, education, and innovation. But while significant, these engagements are mostly faculty-driven and remain both limited and scattered. The MIT-AFRICA Initiative (http://mistii.mit.edu/mit-africa-initiative) was established in 2013 as the first public face of MIT-wide engagement in Africa to provide an entry portal for prospective partners, and as a strategic planning unit. However, MIT has to date made virtually no institutional investment in this Initiative to nurture, promote or organize the activities of the Initiative. We therefore call upon MIT to make a five-year capital investment in launching a high-profile, coordinated, Institute-wide program to support and encourage Africa-focused research, education and innovation. This report describes several key activities that would be established through this seed investment within the context of a targeted campaign to attract sustained external funding.

1.5 Peer Assessment
As context for our deliberations and recommendations, an in-depth landscape analysis of our peer universities was conducted. Some have created committees to guide their African activities, though the degree of commitment at the institutional level is variable. Several have satellite campuses or other facilities in Africa, while many send students to study or intern in African, and some recruit African students to their campuses.

Our assessment is that peer investment in African campuses and other infrastructure is expensive and both geographically and conceptually limiting. Many peers offer stronger funding than MIT for student opportunities in Africa. Elevating African engagement to an Institute-level priority backed by substantive investment in faculty research will be the most significant way MIT can distinguish itself from its peers.

1.6 Summary of Major Recommendations
The Africa Advisory Committee sees a rich opportunity for MIT to engage constructively with Africa in ways promising unique value to both the continent and the Institute. At this point, the critical missing ingredient is Institute-level commitment and organization, which is necessary to attract the new external funding partnerships that will fuel the efforts of our faculty, students and staff. In all, we offer seven concrete recommendations based on our assessment of MIT priorities and strengths, partnership opportunities, intellectual and practical considerations, faculty interest, and ongoing MIT-Africa engagements. The AAC presents these recommendations with great enthusiasm.
1.6.a The MIT Center for Africa Engagement
We strongly recommend that MIT launch an Institute-level Center for African Engagement (CAE) to be located on the Cambridge campus. The CAE will signal MIT commitment to Africa and will be unique among our peers. The Center will take the lead in implementing the other recommendations of this report by promoting, facilitating and materially supporting research, education, innovation, and policy efforts relevant to both Africa and MIT. It is anticipated that new juxtapositions between existing MIT initiatives and the CAE will attract focused research partnerships on Africa. The Center will organize prominent Symposia and Workshops to be held at MIT and in African locations that promote strategic discussion and collaboration.

Moving forward, CAE will be the nexus for forging new partnerships, cultivating new sponsorships, serving African and African diaspora alumni, creating an Africa-minded community at the Institute, and managing the collective enterprise of MIT’s growing and enduring commitment to Africa.

We suggest that MIT also consider launching CAE satellite offices in Africa, perhaps most effectively as portable, “roving” offices that would circulate amongst key locations every few months. We might even appoint a “CAE Roving Ambassador” who would travel the continent to cultivate powerful relationships with universities, institutions, industries and governments in both urban and rural areas. Any of these options would put a face to MIT in Africa and further demonstrate MIT’s serious commitment to forging African partnerships.

1.6.b Promoting Research
We propose that MIT establish the MIT-Africa Seed Fund to launch and nurture new research collaborations with the goal of securing ongoing external funding. The Seed Fund would be administered by CAE and could initially promote two-way travel opportunities to create new research and education connections—brining MIT to Africa and Africa to MIT. In parallel with this, existing African research partnerships should be supported and developed, including in conjunction with existing MIT initiatives. Africa-centered research will naturally drive the flow of MIT and African trainees between Cambridge and the continent, and faculty should be apprised of research opportunities through CAE and connected with colleagues through workshops and symposia.

1.6.c Student Internships and Travel Funds
We recommend that funding for MIT student internships in and travel to African countries should increase. All students wanting to work in Africa should be supported,
either by the Institute or by dedicated donor funds. Internship awards should meet the summer earnings requirement for financial aid. A dedicated Africa Program Manager, likely working within CAE to support the robust travel programs of MISTI, D-Lab, PKG-PSC, and other programs should be supported by central funds. These continent-wide internship and travel programs demand careful training and tracking of our students across disparate cultures and regulatory environments.

1.6.d Education Initiative
We propose that MIT launch a Higher Education Initiative. This initiative will have key relevance and presence in Africa, while also engaging other global regions. A primary goal will be to provide MIT faculty with funding to collaborate with global colleagues on joint educational experiments. A second goal will be to increase substantive opportunities for global colleagues to visit MIT and explore our approach to higher education that emphasizes rigorous academics motivated by the excitement of discovery, the drive to solve real problems, and a culture of entrepreneurial innovation. A third goal will be to support the growing commitment to higher education across Africa, including partnerships with extant professional academic and practitioner networks—something MIT has pursued so successfully in other parts of the world. Finally, we strongly support the expansion of the MIT PK-12 Action Group to engage more deeply with African partners.

1.6.e Innovation Connections
We propose that MIT should proactively increase its innovation connections with African partners, both in urban and rural contexts, particularly in light of the enormous interest across the continent in addressing youth unemployment. One way to accomplish this will be to partner with existing innovation hubs in Africa, both the burgeoning array of private sector tech start-up innovation centers and more established NGO and university efforts. In cooperation with the Education Initiative, we can also provide greater exposure across Africa to MIT’s unique culture of innovation and entrepreneurship by focusing our efforts on regions that faculty research efforts and other active engagement programs have identified as of high mutual interest. Finally, we can and should actively seek to connect with professional organizations throughout Africa.

1.6.f MIT Curriculum Relevant to Africa
We recommend a broad expansion of prominent undergraduate courses relevant to Africa. A new Minor could complement the existing SHASS concentration and Minor in African and African Diaspora Studies and the existing Minor in Applied International
Studies, while the Minor in Entrepreneurship and Innovation could allow an Africa-relevant focus. Classes that include travel to or fieldwork in Africa also provide valuable opportunities. Graduate studies and degrees should be appraised for relevance to Africa.

1.6.g African Trainees at MIT
We recommend that the number of African trainees at MIT should be increased through targeted research programs, robust partner-driven recruitment, and the creation of an MIT-Africa Fellowship Fund. Given the emphasis African nations are placing on training young leaders and the value to MIT of building an ever more multicultural campus, we consider bringing more African trainees to MIT as the vanguard of our Africa engagement effort. By trainee we mean undergraduate and graduate students, post-docs, and even visiting scholars, faculty and professionals. We favor concrete efforts to promote admission of African students to MIT, for example using the new online MicroMasters concept as a means of attracting and preparing top students to successfully matriculate at MIT.

1.7 Implementation
The Africa Advisory Committee is fully committed to realizing the recommendations of this report. We believe that the time has never been better to expand our engagement with Africa to the immense benefit of MIT, the continent and the world. Therefore, with the approval and guidance of MIT’s executive administration, we offer to prepare a detailed implementation plan for launching the MIT Center for African Engagement and to bring forward other recommendations as the critical foundation upon which a bright future of MIT engagement with Africa will be built.

2. RATIONALE FOR EXPANDING MIT PRESENCE IN AFRICA

2.1 Global Priorities for MIT and Connection to Africa
Across the globe, MIT is actively engaged in common crucial challenges that relate to the environment, climate change, energy, population growth, food, health, education and urbanization. Indeed, the MIT Mission Statement reads: “The mission of MIT is to advance knowledge and educate students in science, technology, and other areas of scholarship that will best serve the nation and the world in the twenty-first century.” Furthermore, MIT asserts that “global engagement is a fundamental part of MIT’s commitment to solving problems and improving lives.” Within this charge, Africa stands out as providing unprecedented opportunities for productive, important collaboration between MIT investigators and African partners. The continent is poised to represent an unparalleled opportunity for the global mission of MIT.
2.2 Africa is a Continent of Youth

Africa is a continent of youth, with 60% of its population currently under the age of 25 and that percentage projected to rise over the coming decades. This youthful demographic indicates a continent full of energy, ideas, potential and talent. Despite a “youth bulge” and the increasing value attached to higher education, however, rates of expansion within African universities are not nearly sufficient.

This young population requires vibrant job markets throughout Africa, yet youth unemployment can reach as high as 50 percent even among well-educated populations. African governments are now increasingly looking to harness the entrepreneurial and innovative spirit, already present and flourishing across the continent, as a solution for job creation.

Africa’s economic outlook is bright, even within the midst of a strained global economy. A 2014 study shows that five of the world’s top ten countries in terms of percentage GDP growth are in Africa. Direct foreign investment is up, inflation has slowed, and remittances are at record levels. However, as with other developing regions, climate change poses a great threat to future economic growth and long-term prosperity. Given this major hurdle, African countries are in a unique position to learn from previous experience and leap-frog to more green-clean energy as climate change increasingly becomes a factor in both short- and long-term economic planning, leading to long-term sustained growth.

In concert with African economic growth and population growth has come a rapid rate of urbanization, second only to Asia, there have been rapid rates of urbanization. Studies indicate that by 2050, the percentage of Africa’s urban population will be 55% even as its gross populations doubles from one billion to two billion.

Research on the continent is also at an exciting crossroad. A 2015 World Bank report found that Africa has greatly increased both the quantity and quality of its research output. Furthermore, the report found that this growth has been driven by advances in Health Science research (approximately 4 percent annual growth), which now accounts for up to 45% of all African research.

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2.3 Vision for MIT-Africa Engagement

In its Campaign for a Better World, MIT defines as priorities: Discovery Research, Health of the Planet, Human Health, Innovation and Entrepreneurship, and Teaching, Learning and Living. With regard to the continent of Africa, comprising fifty-five countries and multiple regions, these priorities map onto huge opportunities for MIT. From a current broad and significant MIT engagement across Africa, we envision an enhanced and expanded focus on Africa by MIT and a vastly increased set of interactions between MIT and African partners.

MIT does not engage with Africa because we think Africa “needs our help” and there is no sense of charity in our consideration. Indeed, Africa abounds with highly intelligent, educated and qualified people who fully understand the challenges of their own countries. Rather, we see possibilities for strong connections with colleagues and organizations in Africa, where the priorities of our African colleagues align with priorities that MIT has embraced across the broad areas of research, education and innovation.

This Report recommends significantly expanded engagement and investment in projects related to Africa, both in Cambridge and on the African continent. This vision will lead to exciting and assuredly productive outcomes.

2.4 Goals and Authorship of the Report

This Report has the goal of exploring why and how MIT should engage more deeply with Africa, starting with current MIT-Africa connections, and with consideration of African engagement by peer universities. A strategic set of recommendations is made, building on the unique attributes of MIT and a wide and significant base of present partnerships between MIT faculty, students and staff with African academic institutions, corporations, governments and communities.

The Report is the outcome of deliberations by the Africa Advisory Committee (AAC) comprising distinguished faculty, staff and students engaged in programs and projects associated with Africa. Part of the AAC charge is strategic planning and it was therefore the appropriate group to construct a Strategic Plan for MIT Engagement in Africa, as requested by Associate Provost for International Activities, Richard Lester.

3. EXISTING MIT-AFRICA ENGAGEMENT

3.1 A Widespread Engagement Across the Continent

Present MIT engagements with Africa are impressive. They span half the countries on the continent and center on three prevailing paradigms that cross MIT schools: research, education and innovation. Multiple faculty and a growing number of students are involved in these engagements. The remainder of this section discusses MIT Engagement in Africa within the following categories: The MIT-AFRICA Initiative; Additional MIT Initiatives; Research Programs with African Partners; Innovation; Education: On Campus and On the Continent; Opportunities for MIT Students; and African Trainees.

Figure 1. MIT engagement in Africa 2016
Countries in which MIT faculty or programs are presently engaged are shown with a flag.

3.2 The MIT-AFRICA Initiative

The MIT-AFRICA Initiative (http://mist.mit.edu/mit-africa-initiative) is the first organized public face for MIT engagement in Africa and was set up in 2013 by Prof. Hazel Sive, with Program Manager Julia Reynolds-Cuellar and enthusiastic participation from faculty, staff and students. The Initiative serves as an umbrella that communicates and coordinates engagement in Africa among the MIT community, and is a point of entry for new partnerships. It is a model that is flexible, unifying and conducive to new collaborations. In this section, we communicate the success of the MIT-AFRICA Initiative but emphasize that despite its importance, the Initiative has received essentially no Institute support.

The MIT-AFRICA Initiative is housed at the MIT International Science and Technology Initiative (MISTI) as several Africa-focused programs are already part of MISTI, including student internships through the MIT-South Africa and MIT-Africa Internship programs, and MIT-Global Startup Labs. The collegial pedagogy programs Empowering the Teachers and MIT-Educator are
also based at MISTI. However, the Initiative encompasses relevant, campus-wide programs and projects. The support of Prof. Chappell Lawson, Director of MISTI, in allowing this broad Initiative to flourish at MISTI and providing some support is highly acknowledged. MIT-AFRICA has gained prominence and has become an official voice of MIT. The Coordinator and Manager are asked to meet with essentially all African delegations coming to MIT. Members have represented the Institute at Africa-focused conferences. Further, the Initiative has developed robust training for students traveling to Africa who are tracked under the MISTI system. Almost all students traveling to Africa come through this training, even outside MISTI programs.

The Africa Advisory Committee (AAC) was set up as a strategic planning group for MIT-AFRICA. Membership is drawn from faculty or staff members with active programs in Africa, African faculty, and students.

The MIT-AFRICA Fund and the MIT-South Africa Fund were established through the Office of Giving to welcome African alumni and friends. Alumni events have been organized in Nigeria and South Africa, indicating to alumni that they are an important part of the Institute. Significant connections and initial donors have been identified. These events have been supported by funds raised through MIT-AFRICA-associated programs.

Thus, the MIT-AFRICA Initiative has been highly successful, but as noted, it has received essentially no Institute support. An exception is funding for student internships and travel in Africa, where IROP support has been important, although insufficient. An additional exception is generous sponsorship by Assoc. Provost Philip Khoury of the MIT Africa Interest Group, which has created a community of MIT faculty, staff, students and alumni engaged with Africa-relevant programs. Our assessment is that the MIT-AFRICA Initiative has demonstrated its importance during a test phase, and now MIT should provide resources to demonstrate its commitment to expanded MIT-Africa engagement.

The 2015-2016 MIT-AFRICA Initiative Report can be found in Appendix 2.

### 3.3 Additional MIT Initiatives Relevant to Africa

Additional initiatives that cross MIT schools and have relevance for African engagement include the following: MIT Open CourseWare (OCW), the MITx digital learning venture, MIT Innovation Initiative, MIT Environmental Solutions Initiative (ESI), MIT Integrated Learning Initiative (MITili), MIT Energy Initiative (MITei), Jameel Poverty Action Lab (J-PAL), Jameel Water and Food Security Lab (J-WAFS), Université Mohammed VI Polytechnique—MIT Research Program (UMRP), and the new Jameel World Education Lab (J-WEL).
These initiatives have capacity to support projects between MIT and African partners, to attract African partners, and to guide areas of focus for African engagement. Despite their potential, present Africa engagement by these programs is limited. Exceptions are the electrification planning and rural healthcare work undertaken through the Tata Center for Technology and Design in Rwanda and Kenya; J-PAL, which has an office hosted at the University of Cape Town, manages projects and policy work in a number of different African economies, and has both funding and staff on the ground; and UMRP, which manages a robust set of collaborative research projects between MIT and Morocco. These initiatives are listed in Appendix 3.

3.4 Research Programs with African Partners

Faculty members both at MIT and in Africa have advanced research with significant impact in a multitude of fields. Key areas include: Energy; Land-use; climate change; South-South Cooperation in Urban Development; Contemporary African Politics; Grassroots Innovation and Entrepreneurship; Economic Growth and Development; Economic Trade Policies of Arab World; Environmental Engineering & Water Resource Planning; Literacy, and Models for Higher Education and Technology Evaluation. The department of Earth & Planetary Sciences (EAPS) supports a prominent Rwanda Conservatory, while UMRP is housed within the Department of Civil & Environmental Engineering (CEE). Thus, research topics and interests cut across MIT schools.

While funding is offered for early stage research collaboration through the MISTI Global Seed Funds, it is small and highly competitive. There is no MIT-AFRICA Seed Fund, although such funds exist for other countries and regions. Early stage research across the energy spectrum could be supported though MITei, and funding through ESI could be used to initiate faculty research activities in Africa.

The largest Africa-focused research program to date is the 5-year, $20 million USAID award secured by D-Lab to launch two programs: the International Development Innovation Network (IDIN) and the Comprehensive Initiative on Technology Evaluation (CITE). This work includes partnerships with Kwame Nkrumah University of Science and Technology in Ghana, Nelson Mandela African Institute for Science and Technology in Tanzania, the University of Zambia, and the University of Botswana. Since inception, this program has sponsored over 200 research projects through partners working in African countries by investing over $5 million in student travel, research support, and institutional capacity building. This award would not have been possible without significant institutional support for MIT’s Office of Sponsored Research. This program has invigorated collaborative research between MIT and partners in African countries.

All the programs listed above are included in Appendix 3.
3.5 Education: On Campus and on the Continent

MIT currently offers multiple education-focused programs, both for MIT students and partners in Africa, on the MIT campus and on the continent.

3.5.a MIT curricula relevant to Africa

MIT offers multiple Africa-relevant and Africa-focused courses. For example, SHASS offers a minor in African and African Diaspora Studies, which includes study of socio-economic and political systems as they reflect the African continent and/or areas of the African Diaspora, and the histories, languages, and literatures of Africans and peoples of African descent elsewhere. Enrollment for the minor has been low, although some field subjects such as D-Lab Development and the new HST S46 Evolution of an Epidemic are oversubscribed. For the past 14 years, D-Lab has offered a wide range of multidisciplinary courses focused on the design and delivery of technologies relevant to many African countries. As a result, a full 60% of the nearly 700 students that have travelled to the field through D-Lab classes have done their fieldwork in Africa.

These field subjects provide productive paradigms by which to introduce students to Africa as a prelude for possible future collaborations. Having thus been introduced, students may return as interns. Additional subjects relevant to Africa include those focused on urbanization, development, politics, and innovation. Africa-focused course offerings and additional information on the minor are listed in Appendix 4.

3.5.b MIT programs relevant to African trainees and educators

The majority of educational programs and fellowships on campus are designed for mid-career professionals. Examples include MIT-Empowering the Teachers (MIT-ETT), MIT-Educator, MIT Professional Education workshops, MIT Sloan Fellows Program, MIT Legatum Fellowship Program, SEPT and SPURS/Humphrey Fellowship, and the D-Lab IDIN/Scale-Ups Fellowship. While this list presents a healthy portfolio of on-campus education programs, MIT still hosts a small number of participants, with an average of 25 African visitors on campus annually.

MIT-Empowering the Teachers and MIT-Educator, the only programs focused solely on Africa, welcome the majority of these visitors. D-Lab’s IDIN program offers a Designer-in-Residence program that brings innovators from Africa to MIT for short periods to work with student teams and local researchers. Finally, there are Executive Education programs run by MIT Sloan and J-PAL. The phosphate company OCP works with the MIT Sloan Action Learning programs to advance its sustainability strategy. J-PAL conducts
regular Exec Ed trainings on the ground in Cape Town and also partners with Innovations for Poverty Action to conduct training elsewhere in Africa, usually Ghana or Kenya.

Additional information about these programs can be found in Appendix 4.

3.5.c MIT educational and policy connections in Africa
MIT does not build “satellite campuses,” but multiple connections with African universities and learning communities do already exist, including the following: Université Mohammed VI Polytechnique (UM6P), The Abdul Latif Jameel Poverty Action Lab (J-PAL) Africa, Fab Labs, D-Lab’s K-12 Outreach program and International Development Innovation Network (IDIN), and the MIT-WITS Alliance. Members of both the MIT community and local partners lead these joint collaborations. Additional information can be found in Appendix 4.

3.6 Innovation Connections with African Partners
The MIT culture of innovation and entrepreneurship is of broad interest to many African partners eager to reduce rates of youth unemployment and to move toward knowledge-based economies. Programs at MIT that focus on innovation and entrepreneurship include the MIT Innovation Initiative, The Martin Trust Center, Regional Entrepreneurship Acceleration Program (REAP), Legatum Center, D-Lab’s Scale Ups Program and Venture Mentoring Services (VMS).

The majority of these centers focus on supporting startups coming out of MIT through the Martin Trust Centers, Legatum, D-Lab and VMS, and those from abroad through REAP. While these programs have the capacity to support both MIT and participants abroad, the connections are still quite minimal, with an average of six supported African startups each year, and Morocco and Lagos State as the only African REAP partners.

Through IDIN, D-Lab has supported a network of 11 local innovation hubs that connect innovators to resources and training for developing social impact technologies. These independent centers are located in Tanzania, Uganda, Zambia, Botswana, Kenya, Ghana, Senegal, Cameroon, and Rwanda.

Existing innovation connections in Africa can be found in Appendix 3.
3.7 African Internships and Related Opportunities for MIT students

Multiple opportunities exist for MIT students to engage in internships in Africa. These include research and innovation internships at corporations and universities, as well as opportunities to educate or work in education at pK-12 or college levels. MIT students take internship opportunities seriously, work hard and productively, and represent the Institute admirably.

Most students travel to Africa through MISTI (MIT-South Africa, MIT-AFRICA Internships, MIT Global Startup Labs), D-Lab, and the MIT-University of Pretoria Exchange organized by GECD. In 2015, these programs sent 80 students to Africa, with the three MISTI programs accounting for 63% of these.

Funding mechanisms to support student internships in Africa include IROP, Public Service Center (PKG-PSC), D-Lab, and Legatum Center Seed Grant Program, though these programs are not focused exclusively on Africa and are highly competitive. Since the founding of the PSC in 1988, 39 projects in 17 African countries have been supported through their fellowship program. In 2015-16, 17% of IROP funding recipients were conducting research on the continent. Through D-Lab’s IDIN program, 123 students have been funded to work on projects in Africa. The IMES-Ragon Institute awards (with generous support of Professor Arup Chokraborty and Professor Bruce Walker) are designed for MIT students performing HIV research in South Africa. Corporations or businesses in Africa can sponsor MIT students, but labor laws and their preference for domestic trainees limit these opportunities.

In general, it is challenging to fund MIT students interning in Africa. Over and over we are told that our peers fund their student interns. The number of MIT students working in Africa over IAP and summer would sharply increase with greater support. Also essential to improving student opportunities in Africa is dedicated staffing to support them.

Existing student opportunities can be found in Appendix 3.

3.8 Student Organizations

MIT students have organized groups to create supportive communities, to highlight African culture on campus, and in some cases to organize efforts in home countries.

Groups include the African Business Club (ABC), African Students Association (ASA), Urban Africa, MIT Ethiopian and Eritrean Student Association, MIT Egyptian Student Association and Kenyans@MIT. The ABC runs the annual MIT Sloan Africa Innovate Conference, which has hosted eminent keynote speakers and attendees since its launch six years ago. The ASA organizes
community programs and supports attendance of students to Africa-relevant conferences. Members of the MIT Ethiopian and Eritrean Student Association have taught algorithm and programming classes in Addis Ababa. Student organizations are listed in Appendix 3.

3.9 African Trainees at MIT
For the last five years, MIT has averaged 45 African undergraduate students and 61 graduate students on campus each year, making up approximately 3% of the total student body population. While the representation among these groups is growing, growth is restricted by funding constraints, and lack of access to scholarships and fellowships, as well as a challenging admission protocol that may ask African student applicants to travel outside of their home country for an alumni interview.

Over the past five years, there has been an average of 35 visiting African scholars per year, for a total of 140 or approximately 1% of the MIT visiting scholar population. Visiting scholars are supported by educational programs at MIT or hosted directly by MIT faculty members (please see Section 3.5, Education: on campus and on the continent). The largest percentage of visiting African scholars consists of the MIT-Empowering the Teachers Fellows, for a total of 54 Fellows from Nigeria and Uganda over the past five years.

3.10 Building on existing MIT-AFRICA Engagement
The breadth, depth, and value of current MIT engagements with Africa notwithstanding, the AAC feels strongly that they represent but a fraction of our full potential for productive collaboration with partners on the continent and our potential to leverage that collaboration by attracting sponsors. Realizing this wealth of internal and external potential will require the Institute to formalize its commitment to Africa through strategic organization and support to nurture what we already have, while also planting the seeds for greater engagement.

To date, many Africa-related activities at MIT are driven by the interests and energies of faculty working individually and in small groups. This resource of “bottom up” engagement is absolutely invaluable and essential, and should be supported whenever possible. However, the potential value-added with a modest amount of strategic coordination and support cannot be overstated.

In Section 4 below, we survey the African engagements of several of our peer universities to understand what is thriving, what is not, and how the growth potential at MIT is unique. In Section 5, we propose a set of specific actions designed to make our own African collaborations flourish.
4. PEER COMPARISON

Taking a close look at the current engagements in Africa of our peer universities across the U.S. was a critical step in the committee’s strategic planning to coordinate and optimize MIT’s own future engagement on the continent. To capture the nature, variety and scale of these activities, we conducted a comprehensive landscape analysis using a combination of internet research and discussions with the directors of several prominent programs. Our goal was to better understand what is happening and what is not, and what is working and what is not.

The following peer universities were assessed: Brown University, Carnegie Mellon University, Columbia University/Barnard College, Cornell University, Dartmouth College, Duke University, Georgetown University, Harvard University, Johns Hopkins University, New York University, Northwestern, Princeton University, Stanford University, University of Pennsylvania, and Yale University. A complete tabulation of the data obtained appear in Appendix 5.

We discovered that there is a lot going on, in some cases with quite a bit of history behind it. In this section, we summarize the key “take-home messages” from our peer group analysis as relevant to MIT’s future engagement with Africa.

4.1 Engagement Activities on Campus

Many of our peer universities offer substantial and long-standing Africa-oriented educational and cultural programs on their own campuses. Such programs include the following:

- Degree and certificate programs for both undergraduate and graduate students in African and African American Studies
- Advanced degree programs with African concentrations in areas such as business and public health
- Research centers and faculty labs working on and in Africa
- Recurring programs of public events such as invited lectures, seminars, symposia, conferences and festivals focused on African topics
- A variety of student-led groups organized both around African topics and specifically for African students
- And formal fellowship opportunities for African students and professionals to attend or visit US universities
Relevant details learned about specific programs are included in Appendix 5, but our key observations include:

- Formal degree and certificate programs are more numerous for undergraduate than for graduate students.
- With few exceptions, these degree and certificate programs are Humanities-oriented and focus on African history, culture, language, literature, arts, politics, etc.
- Enrollment in these degree and certificate programs has been decreasing and continues to wane.
- Africa-focused research centers, recurring public event programs, and student groups all tend to focus on business and technological innovation, public health, cultural awareness, politics and social action, etc.
- Africa-centric faculty research at the lab level is, as at MIT, too pervasive and wide-ranging to generalize.
- Funded opportunities for students from Africa to attend or visit our peer universities exist, but are not extensive.
- Visiting and certificate program opportunities for African professionals at our peer universities are slightly more common and are focused on entrepreneurship and business innovation.

4.2 Engagement Activities in Africa

Many of our peer universities also engage in research, education and outreach activities in Africa, both on their own, with African partners and occasionally in cooperation with each other. These activities include:

- Full-fledged satellite campuses in Africa
- Research and education centers hosted by or co-led with African universities
- US-based research projects with significant field and/or lab components based in Africa, whether led by individual faculty or larger centers
- Sponsored travel, and internship, study-abroad and even terminal degree opportunities in Africa for US-based students
Relevant details learned about specific activities are included in Appendix 5, but our key observations include:

- Several peer universities — notably Carnegie Mellon, NYU, Princeton and Stanford — have satellite campuses in Africa. These endeavors appear to have required high initial investment and tend to be administratively encumbered and locally focused.
- Many peers have established research and education partnerships with African centers that offer student travel, internship, and study-abroad opportunities, particularly in language, culture, and environmental conservation and resource management.
- Several peers have evolved business and technology innovation & entrepreneurship activities and partnerships in Africa, as have private-sector companies like IBM. These activities appear generally robust if somewhat limited.
- A few peer universities have flagship joint-venture research initiatives with African partners in the areas of agriculture (Columbia), infant & maternal health (Johns Hopkins) and rural economic development (Columbia).
- Programs for US-based students to earn degrees from African universities are relatively limited.

4.3 Review and Relevance of Key Findings
We present below five key observations regarding the engagement of our peers in Africa and our interpretation of their relevance to MIT’s own strategic plan for engaging with the continent.

4.3.a African Studies
Perhaps most notable in our conversations with peer universities is their report of a consistent trend of declining student enrollment and participation in their African Studies institutes, centers and departments over recent decades. This decline has led to consolidation of programs and even some closures. For example, UPenn recently closed its Africa Center and folded its African Studies Department into its Africana Studies Center, and BU closed its African Presidential Center4. We interpret a major cause of this trend to be the fact that these peer programs have tended to be purely humanities-focused and therefore miss the full scope of topics and challenges relevant to Africa that might better attract students today.

http://dailyfreepress.com/2015/05/16/african-presidential-center-director-looks-into-reasons-behind-closing/
By comparison, MIT currently offers a relatively modest selection of African and African Diaspora subjects that are scattered across the departments of SHASS. This broader perspective appears to have buffered them from declining student interest. This suggests an opportunity to expand Africa-relevant course offerings across all five schools and increase student participation.

4.3.b Satellite Campuses
Also relevant is our observation that our peer universities that have established satellite campuses in Africa—including Carnegie Mellon (Kigali, Rwanda), Harvard (Tunis, Tunisia) and Stanford (Accra, Ghana)—have had to make substantial start-up investments while often encountering slow development due to political and administrative complexities. Not surprisingly, these fixed campus assets also appear to limit conceptual and geographical engagement in the broader continental context.

MIT pursues a global strategy that eschews building satellite campuses in favor of developing close collaborations with specific universities, sometimes helping to design and launch them (e.g. Singapore University of Technology & Design (SUTD) and the Masdar Institute in Abu Dhabi). MIT may continue this approach in Africa, as currently underway through UMRP with the new Université Mohammed IV Polytechnique (UM6P) in Ben Guerir in Morocco.

However, we must take care not simply to impose our pre-conceived templates for university design on Africa in colonial fashion. To do so would not serve the continent or the Institute well. The fact is that hundreds of new and existing universities are rapidly evolving in Africa today. Any true partnership of success with Africa will demand that we first understand and value what Africans think—what they want, don’t want and are already doing well. For example, it is imperative that we engage as respectful partners with groundbreaking new universities such as Ashesi in Ghana and the multi-campus African Leadership University in Rwanda and Mauritius. This will be the road to mutual benefit and lasting impact.

4.3.c Student Opportunities
The majority of our peers offer fully funded experiences across Africa for their students, often through an endowment. By contrast, study abroad and internship funding at MIT is limited, decreasing visibility of the Institute on the continent and limiting exposure of our students to opportunities for collaboration present in Africa.
Through MISTI, PKG-PSC, IROP and D-Lab, a comparatively small number of MIT students now pursue serious internships and research projects in Africa. The Institute must look to increase funding for these and other substantive student opportunities, including exchange programs that bring students from Africa to MIT. These activities will enrich our students both abroad and at home, raise MIT’s profile across Africa, and help weave a fabric of grassroots cooperation and friendship with key institutional partners around the continent.

4.3.d African Partners
The vital importance of forging strategic foundational relationships with committed and representative partner organizations and groups throughout Africa cannot be overstated. Our collaborations and partnerships should connect local, regional and continental perspectives of African partners with the interests and expertise of MIT colleagues and units. These activities are likely to resonate with MIT’s overarching global mission.

To discover and grow these partnerships will require a strategic approach that is both faithful to MIT’s guiding principles and embraces the local roadmap for achieving them. Our mission is to cooperate deeply with key African partners in understanding the continent and identifying collaborative opportunities for our mutual learning and benefit.

4.3.e Strategic Planning
The existence of the MIT-Africa Advisory Committee and this report—A Strategic Plan for MIT Engagement in Africa—illuminates the defining opportunity for MIT on the continent. We are not alone in our interest or planning, perhaps even a bit behind our peers. For example, incoming Yale President Peter Salovey announced their Africa Initiative in 2013. As noted in section 3, the MIT-Africa Initiative has had no central backing. Our productive yet relatively modest existing profile in Africa means that we should choose carefully and strategically to build a coherent continent-wide engagement. Adopting a comprehensive and adaptable Institute-wide strategy that grows mutually beneficial collaborations by bringing together the strengths of MIT and our African partners will set MIT apart from its peers and attract the sponsorship needed to flourish.
5. RECOMMENDATIONS

The Committee sees a rich opportunity for MIT to engage with African colleagues and partners in ways promising unique value to both the continent and the Institute. In short, we envision a future of mutually beneficial engagement between MIT and African partners through targeted research, education and innovation initiatives that are fueled by our faculty and students, enabled by Institute-level organization, and supported by varied and enthusiastic sponsorship — tackling African problems together with African partners the MIT way — *Mens et Manus*.

Though grand in intent, this endeavor need not start big. In fact, it can and should be grown organically by harnessing the energy and creativity of our faculty, staff and students through seed funds for new Africa-focused research and funding for Africa-motivated students. These individual research efforts will breed close personal relationships that yield vibrant organizational partnerships, which in turn will drive engagement at scales to produce significant results on problems that matter. Education, intellectual and cultural exchange activities, and innovation outreach efforts will also thrive in this fertile soil of engaged cooperation, but the essential engine must be research aimed toward a future of sustainable development for Africa.

Having the clear goal of developing collaborations with like-minded African colleagues will also enable MIT to attract sponsors who are committed partners in the effort. Sponsorship must not dictate what we do, but rather should resonate with and fuel it. While this strategy might discourage some potential funders motivated primarily by self-interest, the committee believes that many more from across the spectrum of public, private and corporate donors will be drawn to the premise and the promise of our effort.

At this point, the critical missing ingredients that will encourage future engagement of MIT with Africa are Institute-level commitment and organization.

The Committee therefore recommends that MIT launch a Center for African Engagement (CAE) on a mission to stimulate research, education and innovation for a future of sustainable development in Africa. The role of the CAE at MIT will be to enhance the already substantial engagement of our faculty, staff and students in Africa through strategic coordination and community building, and the cultivation of vital new research collaborations with targeted seed grant and student fellowship funding. Moving forward, the CAE will take the lead at the Institute in forging the partnerships, securing the sponsorships, and managing the collective enterprise of MIT’s growing and enduring commitment to Africa.
Including launching CAE, seven specific recommendations for action follow. These recommendations are based on our assessment of MIT’s priorities and strengths, existing and potential faculty interest, practical engagement and partnership opportunities within Africa, and the strengths and limitations of our current activities and relationships on the continent. The AAC is pleased to present these recommendations with greatest enthusiasm.

5.1 The MIT Center for African Engagement

5.1.a Cambridge Center for African Engagement

We propose an MIT Center for African Engagement (CAE) to be developed and located on the Cambridge campus. The committee views launching CAE as the essential step toward enhancing MIT-Africa engagement. Launching the CAE will make the important statement that MIT values engagement with Africa, and it will be a model unique among our peers. The Center will serve as an official entry point for partners seeking to invest in MIT-Africa connections, and will represent MIT interest in Africa at the highest level. African and African Diaspora alumni, and those with an interest in the continent, will find a welcoming entry point to promote their connection to MIT. The Center will also encourage partnerships with extant professional academic and practitioner networks to leverage the reach of MIT’s collaboration with scholars and students on the continent. Such professional networks within engineering, and the physical and social sciences have grown tremendously over the past two decades and present an opportunity for MIT to connect with the widest base of African scholars and trainees.

The Center will work to solicit funds, identify priorities, and disburse those funds as appropriate to advance areas of research, education and innovation. Center activities will span all five MIT schools and, lying orthogonal to other MIT initiatives such as MITx, MITEI, ESI, MIT Innovation Initiative, MiTili and J-WAFS, CAE will play a key role in working with these units to attract new funding relevant to their common interests and activities in Africa.

The Center will serve as a conduit for strategic discussion with prominent African partners, by organizing prominent Symposia and Workshops — to be held both at MIT and at African locations — focusing on African challenges and opportunities. The Center will further raise the profile of MIT engagement on the continent through convening

5 For example, professional networks include those in Engineering (www.faeo.org/index.php/en/), Sciences (www.aasciences.ac.ke/), and Planning (www.africanplanningschools.org.za/), to name a few.
events, publications, and programmatic efforts that include representation from across all five schools.

The Center will administer the Africa Seed Fund (possibly in conjunction with MISTI given its experience with other seed funds) and will collate outside funding opportunities relevant to Africa. Funds will be distributed for research, education, conferences, fellowships for trainees to work in Africa, and fellowships for African trainees to attend MIT. The Center will be a clearinghouse for student internships and travel opportunities in Africa, including those through MISTI, D-Lab, GCED, UPOP and the PKG-PSC. It will ensure that students are prepared for collaboration on the continent. In conjunction with MISTI, CAE will offer preparation to faculty and students planning to work in Africa. The Center will promote on-campus activities relevant to Africa, including the MIT Africa Interest Group, and advertise MIT subjects, minors and degree programs relevant to Africa.

The Center will provide a base for the MIT-AFRICA Initiative (Section 3.1), while key programs remain in their respective homes. Oversight for CAE is recommended through a faculty director, with governance through the Africa Advisory Committee. Staffing, operational resources and office space for the Center will necessitate committed Institute funding and support.

5.1.b Off-Campus or Roving MIT Centers for African Engagement

We propose that roving CAE offices or a roving “MIT Ambassador” in Africa be considered. A fixed office would be unusual for MIT, and indeed may not reflect the dynamic engagement of MIT across the African continent. An innovative alternate model, more popular with the committee and unique among our peers, would be a “roving” MIT office, based in a limited set of countries for several months at a time. Another idea is a “CAE roving ambassador” who would establish relations with universities and governments in many African countries and would be effective in gathering good people and problems while creating a clear and accessible presence across the continent.

The roving ambassador model is particularly attractive in its ability to reach rural areas where significant collaborations can be promoted. Much innovation activity occurs in rural or impoverished neighborhoods. We need to take our students to spaces where they think outside the box, not just fancy tech hubs and platform companies, which are predominantly urban-based. The roving CAE office or ambassador could be deployed to work with this important constituency. Either approach of these options will demonstrate MIT’s serious commitment to discovering and nurturing African partnerships.
5.2 Research Partnerships

5.2.a The MIT-Africa Seed Fund

We propose a MIT-Africa Seed Fund to allow exploration of new research connections with African collaborators. Although seed funding does not bear overhead, it is valuable for allowing interactions to initiate. Potential for subsequent collaborative research funding is considered significant and the importance of the MIT-Africa Seed Fund is therefore high. African country-specific Seed Funds could be housed at MISTI given its experience with this model, or a general Africa Seed Fund could be administered through CAE. Another timely model might be to shift from country-specific to more regional, multi-country and cross-cultural collaborative frameworks.

5.2.b Additional research partnerships

Current African research collaborations led by individual faculty and units promote significant research volume and, though the potential to expand these is great, significant effort will be needed to do so. We therefore propose that CAE take the lead in identifying and attracting new funds to support research projects of common to all relevant MIT units. Faculty should be apprised of Africa-relevant research opportunities through CAE, through workshops and symposia, and through intersecting units.

5.3 Student Internships and Travel Funds

We propose that funding for MIT student internships and travel in African countries be increased. Through the MIT-South Africa and MIT-Africa Programs, D-Lab, and the PSC, the number of students traveling to Africa has greatly increased over the past several years, with close to 100 students per year traveling to the continent over IAP or summer. Nonetheless, present funding is insufficient to meet the demand for internships and travel, discouraging more students from seeking African opportunities. African partners generally cannot afford to support MIT students, and labor laws can prevent African companies from hiring them. Given the robust student travel and internship funding provided by many of our peers, we propose expanded travel and IROP funding that meets the summer earnings requirement for financial aid.

We further suggest funding for field classes in Africa. During the Institute-Wide Task Force on the Future of MIT Education, students expressed high enthusiasm for hands-on and problem-solving work. Field classes of 10 to 20 students provide an excellent way to meet this enthusiasm in Africa and outside the classroom—in industry, in the village, or
when constructing a road or a bridge. The CAE could administer funding for such classes and develop donor relationships to support them.

A parallel recommendation is that an Africa Program Manager located in CAE should be supported by central funds. The large number of students traveling to Africa directly through MISTI, or who are trained and tracked through MISTI, requires a dedicated Africa Program Manager. However, other units such as D-Lab and the PKG-PSC also need staff support. These continent-wide programs span multiple countries, each with their own regulations and culture, and so require careful training and tracking of our students.

5.4 Education Initiatives

5.4.a Higher Education Initiative

We propose a Higher Education Initiative. This initiative will have key relevance and presence in Africa, while also engaging other global regions. The goal is to provide MIT faculty with funding to collaborate with global colleagues, to learn from one another, and to engage in joint educational experiments.

Another aspect is to invite global colleagues to visit MIT and explore our educational strategies. MIT provides its students with an education that combines rigorous academic study and the excitement of discovery. An entrepreneurial culture adds a powerful dimension to the trajectory of many students. Our students leave the Institute prepared for the current demands of the workforce, while their strong experience in problem solving provides skills required to create and participate in the workforce of the future. It is this skill-set that makes MIT students so appealing, and the MIT approach to learning of great interest worldwide and of particular relevance in Africa.

A related suite of powerful educational approaches at MIT includes the new Learning Science Initiative, MITili, and innovative digital learning tools on MITx. Furthermore, MIT has an impressive history of supporting development of new global higher education institutions, including the Singapore University of Technology and Design (SUTD). This expertise will be useful to global colleagues planning to build new universities such as UM6P in Morocco.

The recent paper “The Case and a Model for the Transformation of Higher Education in Africa” by Prof. Philip Clay highlights the challenges and opportunities in this arena (Appendix 6). Over the past decades, higher education has been a lesser priority for African countries and the outcomes are systems with poor infrastructure, pedagogy that
is less than state-of-the-art, and students who are not well equipped to enter the workforce. Nonetheless, we are fully aware of the commitment to higher education many countries in Africa are making, with a significant percentage of their GDP devoted to research capacity in higher education, including the creation of NSF-like foundations. The productive and positive outcomes of this commitment are a base on which we can set up a collaborative Higher Education Initiative.

The Initiative will invite global colleagues from specific universities, university groups or governments to connect with MIT through short- and long-term connections. Short-term connections welcome colleagues to explore the MIT educational network through an annual Learning Conference and through a set of hands-on workshops in areas that include:

- Learning through doing
- Problem-solving approaches
- Curriculum design
- Learning science
- Research as a learning tool
- Entrepreneurship culture
- Makerspaces
- Online and Edtech tools
- Building a MOOC
- Advising and mentoring
- Governance and administration
- Building a university

In long-term connections that span two years, global colleagues collaborate with MIT faculty on specific projects focusing on curriculum development; governance and administration, and university design. The long-term connection includes definition of feasible, specific goals and working in a defined sequence to achieve these goals.

In setting up this initiative, we formally welcome African colleagues and collaborations to our university in a way that augments the many ad hoc visits we receive from University delegations. We are excited by this Initiative, which draws on our strengths in education, seeks collaborators to draw on their strengths, and supports educational research from which both MIT and African collaborators can learn.

5.4.b Additional connections in pK-12

Existing programs such as the pK-12 Action Group and the D-Lab K-12 program, which seek collaborations at these levels, should be expanded to promote
engagement with African partners. Again, it is crucial that we understand the innovative approaches our African colleagues are taking in this area. For example, what strategies are addressing the rapid growth in the number of students in pK-12, and what financing approaches are being developed? How is the expanding availability of internet connectivity and smart phones providing opportunities for quality online education? Within this landscape, MIT collaborations can connect with African partners and work together in ways that are most interesting and productive to both groups.

5.5 Innovation Connections

The robust MIT culture of innovation and entrepreneurship is already of great interest to African partners eager to address youth unemployment. We propose increasing both urban and rural innovation connections between MIT and African partners.

Some committee members propose that MIT build relationships with existing innovation hubs or university-based innovation centers on the continent, or even build one or more new MIT Innovation Centers. Existing innovation hubs in Africa incubate entrepreneurs and provide work spaces, resources, and entry into their respective entrepreneurial environments. These hubs could be a resource for our students and faculty, and provide great environments for regional research around technology and entrepreneurship in Africa. Similarly, there are a number of commercial research labs and innovation centers affiliated with specific private sector companies in the technology space. These labs and centers would also make good partners for MIT given their investment in data platforms. In fact, they are creating local research environments in a number of African countries which would benefit our graduate students and faculty.

Although there are already over a hundred innovation hubs in Africa and more springing up every year (e.g. Nairobi’s new iHub), it would be feasible to select a few impactful locations and partners on which to concentrate our efforts. Forming a set of collaborations with such hubs would facilitate access to entrepreneurial activity in the technology space in Africa, with avenues for our students to enter these contexts, while contributing world-class MIT research on emerging trends in entrepreneurship.

A second avenue for collaboration would be to associate with a commercial or private sector research or innovation lab on the ground in Africa. These entities are still in the early stages of development, but are starting to spring up and make their presence felt on the continent. Interestingly, such labs are typically focused on research and innovation, illustrating the immense research opportunities on the ground in Africa. It may be time for
a more visible and centralized MIT presence on the continent in the innovation space given the expertise in this area on the MIT campus.

Many of our faculty and students already travel to and engage in collaborations with people living in rural areas of Africa. By building upon these networks, MIT could create a balanced approach to Africa innovation engagement focused both on rural and urban areas. The rural countryside, along with immediate neighborhoods and homes in more developed areas, comprise the mainstay of Africa’s informal employment sector, which contributes no less than 70% of the continent’s total employment. We propose therefore that MIT consider this sector seriously in its plans for strategic partnerships and engagements. More broadly, satellite courses, hands-on bootcamps, and joint entrepreneurship ventures each provide valuable avenues for expanding innovation connections between MIT and a the widest range of relevant African partners. Finally, there is huge potential for new innovation connections beyond the start-up sector. Established companies in Africa are also innovating, whether via formal internal ventures, less formal intrapreneurship efforts, novel partnerships across firms, or with public agencies and civil society organizations.

5.6 MIT Curriculum Relevant to Africa

We recommend re-evaluation and expansion of MIT curriculum relevant to Africa, at both undergraduate and graduate levels. Expanded curriculum should be broadly advertised across MIT. Areas of broad relevance would include developmental economics, climate, engineering, health, urban planning and innovation. A new cross-school Minor (with the placeholder title “Inclusive Development”) could complement the existing SHASS Concentration and Minor in African and African Diaspora Studies, and would prepare students for work with African partners. Alternately, existing Minors could be geared to include an Africa-relevant focus, including the Minor in Applied International Studies or the Minor in Entrepreneurship and Innovation. Relevant technical subjects in science, engineering and economics would prepare students for work with African partners. MIT subjects that include field-work or travel to Africa provide valuable opportunities and should increase. An expansion of the minor in African and African Diaspora Studies currently offered by SHASS is proposed to extend into more technical fields, such as engineering, economics, urban planning and the sciences. D-Lab, DUSP, Sloan and SOE offer courses that would be appropriate and exciting additions to this course of study. This revised and cross-school minor with the placeholder “Inclusive Development” will prepare

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students with subject-specific knowledge and an integrative understanding of African issues and opportunities, including those wanting to intern or perform projects in Africa.

At the professional level, the new degree of Masters of Applied Science in Data, Development and Economic Policy includes an online MicroMasters component that allows students from Africa and around the globe to obtain certification and prepare for possible admission to MIT partner universities for formal advanced study. D-Lab is also interested in exploring a Masters-level program focused on the emerging field of development engineering.

5.7 African Trainees at MIT

We recommend increasing the number of African trainees at MIT through research collaborations and other mechanisms of support. We use the term “trainee” broadly to indicate undergraduate and graduate students, and postdoctoral researchers. African trainees who have receive an MIT degree or significant training will gain valuable experience for leadership roles on the continent, while MIT will be enriched by their presence on campus. Even more important will be the enduring connections between trainees and with MIT that continue to evolve as they return to the continent and/or play key roles as part of the greater African Diaspora.

Talented African students should be encouraged and prepared for application to MIT. MIT alumni on the continent will play an important role in this preparation. In addition, collaboration between MIT and African partner universities, including bringing African trainees to MIT for short or longer stays, is a significant mechanism by which to build community and approach research challenges together. Research collaborations will allow fluid exchange of trainees between African locations and Cambridge (section 5.2).

The creation of fellowships, scholarships, and other grant-sponsored opportunities will allow qualified African nationals to learn and conduct research in Cambridge. A specific MIT-Africa Fellowship Fund could be developed to support qualified African graduate and postdoctoral trainees. Such a program would emphasize our commitment to a two-way culture of partnership and collaboration with Africa.

6. IMPLEMENTATION

Our approach in this report implies that Africa is a single coherent entity is appropriate at this stage, but not moving forward. Successful ongoing engagement will require us to prioritize how, when and where we target our efforts. Specifically, we will need to address whether and to what degree we simultaneously can embrace multiple countries and
regions on the one hand, while still producing tangible results through concentrated local efforts on the other.

The present landscape for MIT and African connections is largely bottom-up—individual, faculty-driven projects that must be nurtured and expanded. Top-down approaches allow organization of broad, high-impact programs, but require greater Institute support. Inherent challenges to both approaches relate to the effort and resources needed for MIT to promote expanded engagement in Africa, and to the available bandwidth of faculty, staff and students to take on additional projects and programs. A further challenge is the need to develop African partners and cultivate Africa-minded donors, and the need to find workable mechanisms for engaging government, university, and public and private sector partners.

The Africa Advisory Committee remains fully committed to realizing the recommendations of this report. We believe that the time has never been better to expand our engagement with Africa to the immense benefit of MIT, the continent and the world. Therefore, with the approval and guidance of MIT’s executive administration, we offer to prepare a detailed implementation plan for launching the MIT Center for African Engagement, and to bring forward other recommendations as the critical foundation upon which a bright future for MIT engagement with Africa will be built.
## APPENDICES

### APPENDIX 1. MIT-AFRICA Advisory Committee (2015-17)

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<tr>
<th>Name</th>
<th>Position/Department</th>
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<tr>
<td>Tayo Akinwande</td>
<td>EECS</td>
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<td>Julius Akinyemi</td>
<td>Media Lab</td>
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<td>Ife Bakare</td>
<td>African Student Association</td>
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<td>Gabriella Carolini</td>
<td>DUSP</td>
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<td>Philip Clay</td>
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<td>Ibrahim Cisse</td>
<td>Physics</td>
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<td>Elfatih Eltahir</td>
<td>CEE</td>
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<td>Ahmed Ghoniem</td>
<td>Mech E</td>
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<tr>
<td>Philip Khoury</td>
<td>Associate Provost</td>
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<td>Robin Lemp</td>
<td>Office of Major Agreements</td>
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<tr>
<td>Evan Lieberman</td>
<td>Pol Sci</td>
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<tr>
<td>Clapperton Mavhunga</td>
<td>STS</td>
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<tr>
<td>Joelle Owona</td>
<td>Africa Business Club</td>
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<tr>
<td>Julia Reynolds-Cuellar</td>
<td>MIT-AFRICA</td>
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<tr>
<td>Anjali Sastry</td>
<td>Sloan</td>
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<tr>
<td>Sanjay Sarma</td>
<td>MITx, Mech E</td>
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<tr>
<td>Hazel Sive</td>
<td>Chair (Biology)</td>
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<td>Amy Smith</td>
<td>D-lab</td>
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<td>Robert Stoner</td>
<td>MITEI, TATA Center</td>
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APPENDIX 2. MIT-AFRICA REPORT 2015-6

MIT-AFRICA Initiative
Annual Report 2015/2016
Hazel Sive

Professor, Biology
Faculty Coordinator, MIT-AFRICA
hsive@mit.edu

Julia Reynolds-Cuéllar

Managing Director, MIT-AFRICA
jreyn@mit.edu
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Overview

This was an exciting year for collaboration between MIT and our partners in Africa. We have multiple course offerings focus on Africa and African themes; fellowships, particularly for mid-career professionals, continue to grow and more African scholars arrive to campus each year; the 6th annual MIT Africa Sloan Business Conference was organized by the African Business Club (ABC) and hosted both impressive speakers and attendees; the number of opportunities for both African trainees, and, MIT students to meaningfully engage on the continent have steadily grown; the Africa Advisory Committee (AAC) focused on the development of a Strategic Plan for MIT Engagement in Africa, linking together current partnerships and planning for the future.

In this report, we focus on the Africa programs housed at MIT International Science and Technology Initiatives (MISTI) under the MIT-AFRICA Initiative, including: Africa Advisory Committee (AAC); MIT-AFRICA Internships; MIT-Global Startup Labs (MIT GSL); MIT-South Africa; MIT-Empowering the Teachers (MIT-ETT); MIT-Educator; and the MIT-AFRICA Interest Group (MAIG).

This year was one of great forward mobility for the MIT-AFRICA Initiative. We placed 32 MIT students in internships and workshops across the continent. Students went to Algeria, Botswana, Nigeria, South Africa and Uganda further cementing our important collaborations in these countries. There was a downtick compared to last year, as the Managing Director was on a planned leave. We are on track to more than double this number in 2017.

The MIT and University of the Witwatersrand (WITS) partnership was further solidified through the MIT-WITS Alliance, by increasing the number of MIT student-researchers at WITS with generous support from the International Research Opportunities Program (IROP). We continue to explore possibilities to welcome more WITS students to the MIT campus in future years.

MIT-Empowering the Teachers (MIT-ETT), in partnership with Total Nigeria E & P and Nigerian National Petroleum Corporation (NNPC), reached an exciting milestone in which 50 Fellows have participated in the program since its launch in 2011 (46 from Nigeria, 4 from Uganda). Fellows continue to make large-scale change within their universities upon return.

This summer was the official launch of the MIT-Educator Program, in partnership with the Ministry of Higher Education and the US Embassy in Tunisia and the US State Department, in which ten fellows from top universities across Tunisia attended an intensive three-week workshop at MIT. The participants were immersed in pedagogical approaches, curriculum
design and implementation, with emphasis on MIT-style problem-solving methods, Science of Learning, EdTech/online tools, and entrepreneurship. Immediately upon return to Tunisia, fellows have made significant changes to their curriculum and have organized a cross-university entrepreneurship club.

We have also greatly expanded outreach to alumni. We held gatherings across South Africa to discuss ways to better engage alumni in the Initiative moving forward.

We were pleased to welcome, among other distinguished speakers, the Governor of Lagos State, Akinwunmi Ambode, as keynote for our final MAIG of the year. The Governor made multiple offers of funding and support for our students and visiting fellows with projects in Lagos.

We thank all supporters and partners of the MIT-AFRICA Initiative this year, and look forward to a bright and productive 2017.
MIT-AFRICA Advisory Committee

The MIT-AFRICA Advisory Committee, formed in 2015 is comprised of 14 faculty members, 9 staff and 2 students representatives with vast experiences, collaborations and connections with the Continent. The goal of the committee is to:

- consider MIT strategy for engagement in Africa
- be a sounding board for new and ongoing programs
- determine useful cross-program efforts
- consider strategies for financial development and
- shape initiatives that will expand the MIT footprint in Africa

This year, the committee was focused on the creation of a Strategic Plan for MIT Engagement in Africa, in response to a request by Associate Provost for International Affairs, Prof. Richard Lester. The Report puts forth key recommendations for MIT strategy and connections on the continent moving forward and will be complete in May 2017.
MIT-AFRICA Advisory Committee

Tayo Akinwande
Professor, EECS

Ife Bakare
President, African Students Association

Ibrahim Cisse
Assistant Professor, Physics

Elfatih A. B. Eltahir
Professor, CivE

Julius Akinyemi
Resident Entrepreneur, Media Lab

Gabriella Yolanda Carolini
Assistant Professor, DUSP

Philip Clay
Professor, DUSP

Ahmed F. Ghoniem
Professor, MechE
Philip Khoury
Associate Provost

Robin Lemp
Director, MIT Office of Major Agreements

Evan Lieberman
Professor, Poli Sci

Clapperton Mavhunga
Professor, STS

Joelle Owona
Africa Business Club

Julia Reynolds-Cuéllar
Managing Director, MIT-AFRICA

Sanjay Sarma
Dean of Digital Learning

Anjali Sastry
Senior Lecturer, Sloan
MIT-AFRICA Internships

With just two graduate students sent to South Africa in our 2013 pilot year, this year we sent 32 students to placements across the continent, including: Algeria, Nigeria South Africa, and Uganda. The MIT-AFRICA Initiative remains the fastest-growing international internship program at MIT.

One key development this year includes our ability to support more MIT students, particularly those from the continent, with their own startups, research or collaborations, with an airfare ticket thanks to our partnerships with both South African Airways (SAA) and the MIT Travel Office.
One such student, Babatunde Alawaode, PhD, Mechanical Engineering, shared:

“MIT-AFRICA enabled dot Learn’s first product tests. In the future when we are able to reach millions of African students with greater access to education, we will look back at the importance of this support in making it possible.”

We plan to make this airfare support an official part of the MIT-AFRICA Internship Program next year.

Students were selected from **12 academic departments**:

- 5 Electrical Engineering & Computer Science
- 3 Chemical Engineering
- 4 Physics
- 4 Material Sciences
- 7 Biology
- 1 Brain & Cognitive Sciences
- 9 MBA Candidate
- 3 Architecture

Interns also represented a **variety of academic levels**:

- 4 Freshman
- 2 Sophomores
- 4 Juniors
- 4 Seniors
- 7 MS Candidate
- 2 PhD Candidates
- 9 MBA Candidate
Pre-Departure Preparation

We have developed a robust procedure for preparing students for their internships. This is offered to MISTI interns, as well as to other students going to Africa. This preparation program is considered an Institute-wide program.

The preparation for students interning over the summer of 2016 was held over a half-day retreat, a pre-departure dinner and individual pre-departure check-out meeting. In addition to this students were also required to attend a general MISTI safety and health session with 700 other MIT students traveling abroad. The topics in this session include: cultural competency, mental health, and student experiences.

During the retreat, students explored a variety of topics ranging from cultural preparation, workplace readiness, as well as health and safety in the context of their host countries. This was completed through a variety of activities, including a lecture on ‘The Historical Origins of South Africa’s Current Democracy’ by Professor Evan Lieberman; a group activity with current MIT students from South Africa, which covered important day-to-day information; staff-led reflection activities exploring potential challenges in cross cultural communication; and definition of personal goals and visions during the internships.

The pre-departure dinner with Faculty Director, Professor Hazel Sive served as a space for students to learn more on places to see in their host country, workplace navigation as well as networking in new contexts.

Lastly, all MIT-AFRICA interns met with Managing Director, Julia Reynolds-Cuéllar before their departure to cover all aspects of the previous preparation sessions and answer any final questions.

Students also have access to support materials through the website we created to provide guidance as they go through the interview placement process and while in country: mitafricainternships.org.
Student Experiences

Research

Ankita Reddy, Class of 2019, Biology
Host: Developmental Health Pathways Research Unit, WITS University
Project: Explored Public Health in South Africa by working with a medical anthropologist and an epidemiologist, looking to uncover the role of eating disorders in South Africa. Ankita’s focus was data analyses involving eating attitudes and body image in post-adolescent women (ages 18-23) in urban and rural settings. She also gained first-hand experience recruiting and working with participants at the hospital for various studies running at DPHRU.

“My summer in South Africa raised my awareness of the diversity of human conditions. Working at a research unit in the largest hospital in the Southern hemisphere expanded how I understood health care systems as well as clinical research.”

Esther Kim, Graduate student, Technology and Policy
Host: Various
Project: Researched the biotech sector of Cape Town to identify the drivers allowing Cape Town to be Africa’s health innovation hub.

“My trip to Cape Town not only gave me a chance to investigate the city’s growing healthcare innovation but also provided an opportunity to expand my international network and engage with colleagues abroad.”

**Host:** South African Research Chair in Spatial Analysis and City Planning, Johannesburg

**Project:** Conducted urban planning research related to major development plans and projects in the inner city neighborhoods and suburbs of Johannesburg, producing strategy recommendations to mitigate Johannesburg's complex historical precedents and inequitable dynamics.

"I put my MIT-learned skills into action working on policy and design recommendations for the more equitable spatial development of the City of Johannesburg!"

Rebecca Eisenach, Class of 2015, Materials Science and Engineering

**Host:** University of Cape Town Centre for Materials Engineering, South Africa

**Project:** Worked in a metallurgy lab and studied the micro-structure of aluminum with the goal of minimizing waste in the manufacturing of beverage cans in South Africa.

"MISTI South Africa has made me realize that I have been given an opportunity to go out and change the world; MIT and MISTI are just the beginning and after that, the sky is the limit."

Chloe Dlott, Class of 2016, Biology

**Host:** SBIMB, Johannesburg, South Africa

**Project:** Interned at SBIMB, performing statistical analysis on HIV status and BMI.

“My work at SBIMB taught me the importance of community focused research and the benefit of improving local research capacity.”
Ursula August, Class of 2016, Art, Culture and Technology
Host: WITS University and IC Solutions, South Africa
Project: Researched at WITS and visited with artists, historians and professors at the university who are working in the areas of identity production and education. Was invited to assist a consulting team working with local leaders municipalities in Zululand and KwaZulu Natal ahead of the elections.

“IC Solutions helped me understand the processes of local government during election season, contributing a hands-on aspect to my research on education and identity. The professors, artists, and historians at WITS were invaluable to guiding my questions of identity in contemporary South Africa and the impact of culture on equality. This work will help further develop my film and thesis.”

Cameron Arnet, Class of 2018, Mechanical Engineering Host:
University of Cape Town (UCT), Cape Town, South Africa
Project: Continued a preexisting project dedicated to the analysis of the mechanical properties of biological tissue and synthetic rubber. Also assisted with explosive testing and analysis of military grade metallic plates.

“There was never a dull moment. I was always looking forward to the next step of my project at BISRU, as well as the next time I would be able to hike Table Mountain or dine with friends at the V&A Waterfront.”

Manolya Altan, Class of 2018, Mathematics with Computer Science
Host: AIMS, Muizenberg, South Africa
Project: Analyzed Twitter data in Africa, looking at sentiments across countries and how factors like geography, time of day, and day of week affect the sentiment we see in tweets.

“Through working at AIMS, I was able to learn from my peers about various fields of research and many new and different cultures.”
Natasha Batten, Class of 2019, Biological Engineering
**Host:** Sydney Brenner Institute for Molecular Bioscience, WITS University, Johannesburg, South Africa
**Project:** Worked in the biobank, extracting DNA from samples throughout South Africa (both rural and urban populations) and validating an assay that will be used in the biobank for future research.

“Working at SBIMB was incredible experience, and I could not have asked for a more exceptional summer. I feel so lucky to have travelled within the country and immerse myself in the various traditions and South African culture.”

Teaching

Raeez Lorgat, Graduate Student, Electrical Engineering & Computer Science
**Host:** AIMSSEC
**Project:** Taught as a part of a 10-day development course for South African High School mathematics teachers.

“Contributing towards AIMSSEC as both a South African and a member of the MIT community has culminated in a colliding of narratives, promoting both an awareness of the problems facing South Africa’s development, as well as making clear obstructions and potential paths towards their resolution.”

Kate Collins, MBA 2017, MIT Sloan
**Host:** Uganda Development Trust
**Project:** Completed research on enfranchisement of small holder farms with the goal of improving food security. In addition, facilitated two workshops for entrepreneurs at leading ICT accelerator.

“My trip to Cape Town not only gave me a chance to investigate the city’s growing healthcare innovation but also provided an opportunity to expand my international network and engage with colleagues abroad.”
Kate Collins, MBA 2017, MIT Sloan  
**Host:** Uganda Development Trust  
**Project:** Completed research on enfranchisement of small holder farms with the goal of improving food security. In addition, facilitated two workshops for entrepreneurs at leading ICT accelerator.

Justin Carrus, Class of 2017, Mechanical and Ocean Engineering  
**Host:** MIT D-Lab, Okavango Delta and D’Kar, Botswana  
**Project:** Taught wood and metal-working to local farmers in the Okavango Delta as part of a workshop while framing problems facing the area.

“My MISTI experience was an essential part of my education. It was empowering to see how I could use my skills to impact the lives of others and make a difference.”

Brittany Bautista, Class of 2017, Mechanical Engineering & Premed  
**Host:** MIT D-Lab, Okavango Delta and D’Kar, Botswana  
**Project:** Taught wood and metal-working to local farmers in the Okavango Delta as part of a workshop while framing problems facing the area.

“Traveling with MISTI was a life changing experience. It was an amazing opportunity to share my knowledge with people across the globe and also learn from them.”
Industry

Nick Del Vecchio, MBA 2017, MIT Sloan  
**Host:** dot Learn  
**Project:** Conducted usability tests and focus groups with students in order to better understand their needs and how we could develop our software to better serve them, as well as fostered partnerships with potential partners on the ground in Accra.

“I have learned much this summer about the difficulty involved with designing a product for students 5,000 miles away. MISTI Africa allowed me to travel to Ghana to do much-needed user research.”

Samrat Bhattacharyya, MBA 2016, MIT Sloan  
**Host:** dot Learn  
**Project:** Launched the pilot of our startup dot Learn, an Africa-focused online learning platform using software technology to deliver full video courses to students for less than the cost of an SMS. Performed interviews with students, educators, content partners and telcos.

“I’m incredibly grateful for the help and support we’ve received from MISTI Africa. Thanks to their help, we were able to turn our student project into a real startup and a full-time job after graduation.”

Tunde Alawode, Graduate student, Mechanical Engineering  
**Host:** dot Learn  
**Project:** Built partnerships across Ghana, conducted usability tests with students and tried to understand what students wanted to see in the dot Learn app.

“This MISTI internship enabled dot Learn’s first product tests. In the future when we are able to reach millions of African students with greater access to education, we will look back to this time.”
Nisha Dalvie, Graduate student, Mechanical Engineering  
**Host:** Adjumani refugee camp, D-Lab  
**Project:** Helped design and teach a STEM curriculum for elementary students in the Adjumani refugee camp. Travelled to several different places to locally source and set-up the supplies for a hands-on circuitry lab, and helped students apply this knowledge to their daily lives with a flashlight design project."

“Without the support of MIT-AFRICA, I would not have been able to take part in such important work in partnership with D-Lab.”

Jocelyn Gonzales  
**Host:** WITS University and IC Solutions, South Africa  
**Project:** Development of new routes to synthesize aromatic and heteroaromatic systems, and their applications to the assembly of aromatic natural products, such as cardinalin 3 and anhydrofusarubin.

“While my research was affected due to the ‘Fees Must Fall’ protests, I made the most of the circumstances by meeting people and getting to know South Africa. I went to the historic Robben Island, where I learned about South Africa’s apartheid past and saw where Nelson Mandela was imprisoned.”
The rise of young tech business adds new hope for finding solutions to pressing social and economic challenges across Africa. MIT-GSL Africa was founded with the mission to cultivate, support and empower a generation of young tech entrepreneurs across the continent.

**Partners:** MIT-GSL Africa partners with top universities, telecoms, and governments across the continent to transform them into hubs of entrepreneurship by building local skills and sustainable programs.

**Technology Incubator Courses:** At each partner, MIT-GSL Africa sends a team of four MIT student-instructors to guide local students through their first real-world, hands-on mobile-tech entrepreneurship experience. Courses focus on ideation, market research, pitching, and appropriate technology platforms, culminating with a pitch and prototype competition.

**Organize Networks:** Businesses do not grow in isolation. Centered on each partner, MIT-GSL Africa student teams, organizes investor and mentorship networks of local and regional players as applicable.

**Funded Startups:** MIT-GSL Africa culminates with a pitch competition where mentors and funders have the opportunity to invest in the course startups. Over half of global MIT Global Startup Labs’ graduates go on to register their own startup after completing the workshop. In 2016, MIT-GSL Africa workshops were held in both South Africa and Algeria, with expansion to Mauritius and Rwanda planned for 2017.
GSL South Africa

Meryam Bukhari, MBA 2016, MIT Sloan  
**Host:** University of the Witwatersrand, Johannesburg, South Africa

Julie Yang, MBA 2016, MIT Sloan  
**Host:** University of the Witwatersrand, Johannesburg, South Africa

Rebecca Leigh-Gould, MBA 2016, MIT Sloan  
**Host:** University of the Witwatersrand, Johannesburg, South Africa

Mgcini Keith Phuthi, Class of 2019, Physics  
**Host:** University of the Witwatersrand, Johannesburg, South Africa

“Six out of eight teams pitched their ideas on Demo Day and four won prizes. Four teams had working prototypes for their products (three websites and one mobile app). Demo day attendance was over 100 people with four local judges for the pitches.”  
- MIT GSL South Africa 2016 Team
GSL Algeria

Alanna Hughes, MBA 2016, MIT Sloan
Host: WTA, Algiers, Algeria

Rahul Kulkarni, MBA 2016, MIT Sloan
Host: WTA, Algiers, Algeria

Sudarshan, Graduate Student 2016, SDM
Host: WTA, Algiers, Algeria

"Fourteen startups pitched at demo day, presenting much more detailed business plans with credible evidence that they did not have prepared before we started working with them."

- MIT GSL Algeria 2016 Team

PROGRAM PARTNERS
MIT-Empowering the Teachers (MIT-ETT)

MIT Empowering the Teachers (MIT-ETT) strives to foster innovation in science and engineering education in tertiary academic institutions in Africa through an intense engagement with faculty members from African universities.

The overarching goal of MIT-ETT is to facilitate the development of young African faculty leadership in science and engineering education who will introduce innovation and creativity into science and engineering curricular. There are two main objectives of the ETT program: to provide young African professors with exposure to cutting-edge pedagogical methods in the highest-rated engineering and science departments in the U.S. and to provide American faculty who have a deep interest in connecting with those in their disciplines in emerging economies a concrete means of engagement. The ultimate goal is to reform their current curricular using new materials, approaches and methods that exemplify the best of MIT’s practices: problem-solving, student-centered, innovation and bringing knowledge to bear on the world’s greatest challenges.

During their semester at MIT, Fellows do the following:

• observe instruction in their own disciplines and subjects
• interact with MIT faculty teaching in their own disciplines and subjects
• develop courses based on problem-solving approach inspired by equivalent MIT course
• discuss and explore curricular enrichment and reform through both formal and informal interaction with the MIT community

Professor Akintunde Ibitayo Akinwande (EECS) is the Faculty Director for the program.
A survey sent out in 2016 identified the following outcomes:

- 100% of ETT fellows have changed their teaching approach.
- 83% of ETT fellows changed their syllabus/curriculum.
  63% received a promotion/of these promotions
- 42% are now department heads or in a leadership position whereby they can influence policy.
- 54% changed either teaching policy or the teaching approach throughout their entire university.
- 91% held events to share MIT knowledge/experience.
- 100% mentored other colleagues/superiors.

This year, MIT-ETT is also pleased to welcome Nigerian National Petroleum Corporation as a new partner.
MIT-Educator Program

“The very inspiring MIT-Educator will help me to improve my way of teaching, to introduce entrepreneurship in life sciences, to train young teachers by sharing my own experience at MIT, and to implement a system able to sustain and support the use of new innovative tools.”

- 2016 MIT-Educator Participant

Vision

As educational approaches and technologies develop, the faculty of Higher Educators is challenged to engage students in the most productive way.

MIT-Educator meets this challenge by addressing pedagogical approaches, curriculum design, and implementation with emphasis on MIT-style problem-solving methods, Science of Learning, and EdTech/online tools. Inclusion of entrepreneurial skills into higher education is becoming increasingly important to meet unemployment challenges, and the program includes exposure to the MIT innovation culture and startup development. Specific subject content is part of the curriculum. This collaborative and collegial program is based at MIT and the home universities.

MIT-Educator is aimed at global faculty, and especially groups from one university or several within one country that have the goal of revising curriculum or educational structure. Faculty from new universities will find the program exceptionally useful as curriculum is devised for the first time, and state of the art approaches can be incorporated. Long-term collaborations are especially useful, and encouraged.
Program

MIT-Educator comprises six modules each led by distinguished MIT Professors, and Instructors from multiple units including the MIT Teaching and Learning Lab, Office of Digital Learning, MIT Integrative Learning Initiative, Martin Trust, Legatum Center, Sloan School of Management, School of Science, School of Engineering, School of Humanities, Arts and Social Sciences and School of Architecture and Planning.

Modules include:

- Curriculum Design
- Problem-Solving Approaches
- Use of Online Education and EdTech Tools
- Entrepreneurship in the Curriculum
- Research as a Learning Tool
- Specific Subject Content

Groups and individual faculty members define their goals prior to arriving at MIT, through online, Skype and written discussion with MIT faculty and staff. At MIT, faculty members participate in intensive, hands-on workshops that encompass material in each module. Revised curricula are developed at MIT, with extensive input from faculty and staff.

The Program continues collaboratively with MIT at the home universities through online interactions, in person group programs, and a reporting structure. Groups plan implementation and implications of the newly developed material for higher education in their respective institute and country.

Logistics

- MIT-Educator participants visit MIT for three weeks for an intense and collegial program under the directorship of Professor Hazel Sive, a distinguished educator and MacVicar Faculty Fellow.
- At the end of this period, faculty participants return home to finalize and implement curriculum, with ongoing MIT interaction.
- Each participant, and group, prepares reports to facilitate discussion and trajectory.
• Groups can continue to engage with MIT for ongoing curriculum development and assessment.
• To ensure successful outcomes, partnerships are set up for a three-year period, with an option for renewal.

Participants

**MIT-Educator** participants are top faculty and lecturers selected following an application and interview led by a distinguished MIT panel. Proposals from groups with an overarching goal are encouraged.

Our 2016 program was launched with participants from Tunisia, where MIT is collaborating with the Ministry of Higher Education to revise the Tunisian Life Sciences curriculum. The program is supported by the US Department of State. We welcomed ten professors from Tunisia to MIT for an intensive three-week program. Upon return to Tunisia, fellows made significant changes to their curriculum including organizing a cross-university entrepreneurship club.

This important program also marks the first MIT-Tunisian collaboration. You can read more about the program here: [http://news.mit.edu/2016/mit-educator-program-tunisia-0902](http://news.mit.edu/2016/mit-educator-program-tunisia-0902)

We look forward to welcoming ten Tunisian fellows in 2017 and adding additional country participants moving forward.
MIT-South Africa

The philosophy of MIT-South Africa is to create meaningful connections between MIT and South Africa. The greatest currency of MIT to make these connections is our students, through placements in industry, research and educational institutions across South Africa.

Since its formal inception in 2013, MIT-South Africa has recruited, selected and placed highly qualified and motivated MIT students in internships across South Africa – a country marked by innovation, entrepreneurship, and cutting-edge research, as well as a rich and diverse cultural history. MIT-South Africa has grown in numbers, diversity of opportunities, and depth of the educational process: from just 2 students in the summer of 2013 to 18 students in summer of 2016.

In addition to these important student connections, we focus on partnerships between South African universities, industry and government. One partnership of note is the newly created MIT-WITS Alliance. This Alliance was created thanks to visionary leadership of Prof. Hazel Sive, Deputy Vice Chancellor Zeblon Vilakazi (WITS) and Prof. Adam Habib (WITS). As a cornerstone of this Alliance, we are thrilled to share that WITS is now the first African MITx partner. WITS will now generate content for the groundbreaking online educational MITx platform. Each year at WITS we hold MIT-Global Startup Labs to promote a culture of entrepreneurship. Many MIT interns perform research with WITS faculty through the MIT-South Africa Internship Program.
We have continued our connection to South Africa via the MISTI Global Teaching Labs program by sending MIT students to work with the African Institute of Mathematical Sciences Secondary School Enrichment Centre (AIMSSEC) on their workshop to support secondary school math teachers across the country.

“It was such a great experience living in South Africa. I set out to have as many conversations as I could with new friends, colleagues, patients, and our Air Bnb family. Each conversation I had became an opportunity to understand how people live in South Africa, their views on politics, their ideas about what race meant, how the government was running, and the changing culture in South Africa’s youth. I think I grew in so many more ways than I can imagine – such as living away from everything I knew and learning how to assimilate into a new culture.”

- Ankita Reddy, Biology ’19, WITS University

“My supervisor organized a trip to the rural Limpopo province, where I got to see how data collection was conducted. I also conversed with masters and PhD students about their research and what living in South Africa entails. I had the opportunity to tour two other lab spaces while in Johannesburg, which allowed me to ask questions about how research in South Africa is conducted and how labs in South Africa differ from those in the United States.”

- Chloe Dlott, Biology ’16, Sydney Brenner Institute for Molecular Biology (SBIMB)
In 2014, we created a space for MIT students, faculty, staff, post docs and alumni to come together several times per semester, and share experiences from their work and lives in Africa. Now in 2017, Professor Phil Khoury, Associate Provost, has generously provided full funding for this important gathering. We now have a solid group of 60 attendees and have covered a vast range of topics with keynotes from important speakers, including the following this last year.

**November 2016**
- H.E. Governor Ambode (the honorable Governor of Lagos),
  ‘Lagos, Africa’s Prime Innovation Destination’

**October 2016**
- Professor Phillip L. Clay
  ‘The Case and a Model for the Transformation of Higher Education in Africa’

**April 2016**
- Associate Provost Philip Khoury
  “From the Arab Spring to ISIS: Which Way the Middle East?”

**March 2016**
- Joost Bonsen, Lecturer, MIT Media Lab
  “Ventures on the Continent”
Future Plans

The goals of the MIT-AFRICA Initiative for the upcoming year AY 2016/17 include:

- release of the Strategic Plan for MIT Engagement in Africa, from the Africa Advisory Committee
- increasing the number of funded student internship opportunities on the Continent
- an MIT-AFRICA Seed Fund to enable research collaborations between MIT and African collaborators
- raising endowment funds to secure the program
- increasing the number of African trainees at MIT

Alumni Donor Acknowledgements

We are thankful to our alumni donors who have helped us launch and continue to grow the program and the many annual fund supporters.

- John J. Kogel ’03
- Guillaume P. Amblard ’87, SM ’89
- Abu Marmah ’76, MAR ’79
- Ayisi B. Makatiani ‘90
- Yaw B. Anku ‘07
- Kymus Ginwala ’53
- Tunde Fafunwa SM ‘92
- Laura N. Mobisson ‘96
Further Acknowledgements

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- University of the Witwatersrand
- Deloitte
- iXperience
- FormulaD
- African Institute for Mathematical Science (AIMS)
- Secondary School Enrichment Centre (AIMSSEC)
- MIT Institute for Medical Engineering & Science (IMES)
- Ragon Institute of MGH, MIT & Harvard
- South African Astronomical Observatory
- Knife Capital
- University of Cape Town (UCT)
- The Bertha Centre at UCT
- CAPRISA
- EMSS
- Makerere University
- Praekelt Foundation

- Prof. Rafael Reif, President of MIT
- Prof. Cynthia Barnhart, Chancellor, MIT
- Prof. Melissa Nobles, Dean of the School of Humanities, Arts, and Social Sciences, MIT
- Prof. Philip Khoury, Ford International Professor of History and Associate Provost, MIT
- Members of the MIT-AFRICA Advisory Committee (AAC)
- Sara Nelson, MIT-UROP
- Pam O’Neil, MIT Travel Office
- April Julich Perez, MISTI Executive Director
- Prof. Chap Lawson, MISTI Faculty Director
- Urban AFRICA
- President Joelle Itoua-Owona, African Business Club
- MIT African Students Association
- Bolaji Finnih, Sloan Fellow ’15
- Joost Bonsen, Lecturer, MIT Media Lab
- Julius Akinyemi, MIT Media Lab
- Dhaval Ajdohnah, MIT Media Lab
APPENDIX 3. Existing MIT Engagement in Africa

Diverse faculty-lead projects and initiatives across the continent advance global research, collaboration, and engagement across various disciplines.

A3.1 Faculty-led Research

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<td>Southern Africa</td>
</tr>
<tr>
<td>Prof. Ronald Prinn Department of Earth, Atmospheric and Planetary Sciences</td>
<td>Rwanda Climate Change Observatory</td>
<td>Rwanda</td>
</tr>
<tr>
<td>Prof. Bishwapriya Sanyal Department of Urban Studies &amp; Planning</td>
<td>Comprehensive Initiative on Technology Evaluation</td>
<td>Uganda</td>
</tr>
<tr>
<td>Senior Lecturer Anjali Sastry Sloan School of Management</td>
<td>Effective Business Models in Frontier Markets Global Health Delivery and Innovation</td>
<td>South Africa, Kenya</td>
</tr>
<tr>
<td>Senior Lecturer Anjali Sastry Sloan School of Management</td>
<td>Innovative Business Models in Frontier Markets Global Health</td>
<td>South Africa, Kenya</td>
</tr>
<tr>
<td>Prof. Kenneth Strzepek Center for Global Change Science</td>
<td>Environmental Engineering Water Resource Planning and Economics</td>
<td>Africa</td>
</tr>
<tr>
<td>Prof. Tavneet Suri Sloan School of Management</td>
<td>Agriculture Research Mobile Money and Digital Finance Technology Adoption in Agriculture Role of Infrastructure in the Development of Markets</td>
<td>Kenya, Ghana, Uganda, Tanzania, Rwanda, Sierra Leone, South Africa</td>
</tr>
</tbody>
</table>

A3.2 Programs relevant to African trainees and educators
<table>
<thead>
<tr>
<th>FACULTY / DIRECTORS</th>
<th>PROGRAM</th>
<th>AFRICAN TRAINEES / EDUCATORS</th>
</tr>
</thead>
</table>
| Prof. Ibitayo Akintunde Akinwande and Julia Reynolds-Cuéllar | **MIT-Empowering the Teachers** strives to foster innovation in science and engineering education in tertiary academic institutions in Africa through an intense engagement with faculty members from African universities. | Nigeria/Uganda  
54 Fellows total,  
4 from Uganda,  
50 from Nigeria |
| Bhaskar Pant | **MIT-Professional Education**: short courses offer crucial knowledge and take home applicable skills to executives, managers, and practitioners. | Two South African companies have participated in two workshops |
| Prof. Hazel Sive and Julia Reynolds-Cuéllar | **MIT-Educator** introduces MIT approaches of problem-solving, learning science, entrepreneurship, and use of online tools. Participants develop major curriculum reform, contributing to student success and the economic trajectory of their country. | Tunisia  
10 Fellows since 2016 (with additional plans for expansion) |
|  | **Science and Engineering Program for Teachers (SEPT)** | 2 South African participants |
|  | **Sloan Executive Education: Sloan Fellows** prepares an elite group of global mid-career managers with the management skills necessary to magnify impact as leaders and innovators. | 84 African Sloan Fellows |
|  | **Special Program for Urban and Regional Studies (SPURS)/Humphrey Fellowship** offered to mid-career professionals from developing and newly industrializing countries. | 9 African fellows since 2013 (Angola, Central Africa, Cape Verde, Ethiopia, Kenya, Namibia, Nigeria, Zambia, Zimbabwe) |

A3.3 Innovation programs
<table>
<thead>
<tr>
<th>MIT DIRECTORS</th>
<th>PROGRAM</th>
<th>AFRICAN TRAINEES / EDUCATORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bill Aulet</td>
<td><strong>The Martin Trust Center</strong> provides expertise, support, and connections</td>
<td>86 Legatum Fellows with startups in Africa supported; 52 Seed Funds</td>
</tr>
<tr>
<td></td>
<td>that students need to become effective entrepreneurs.</td>
<td>awarded to African startups since 2009</td>
</tr>
<tr>
<td></td>
<td>entrepreneurship.mit.edu</td>
<td></td>
</tr>
<tr>
<td>Georgina Campbell-Flatter</td>
<td><strong>The Legatum Center</strong> empowers the MIT community to accelerate social and economic progress across the developing world through innovation-driven entrepreneurship.</td>
<td>Two African regional partners: Morocco, Lagos State</td>
</tr>
<tr>
<td></td>
<td>legatum.mit.edu</td>
<td></td>
</tr>
<tr>
<td>Sarah Jane Maxed</td>
<td><strong>Regional Entrepreneurship Acceleration Program (REAP)</strong> helps regions accelerate economic growth and job creation through innovation-driven entrepreneurship.</td>
<td>Mentored 13 startups focused specifically on Africa</td>
</tr>
<tr>
<td></td>
<td>reap.mit.edu</td>
<td></td>
</tr>
<tr>
<td>Jerome Smith</td>
<td><strong>Venture Mentoring Service (VMS)</strong> supports innovation and entrepreneurial activity throughout the MIT community by matching entrepreneurs with volunteer mentors.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>vms.mit.edu</td>
<td></td>
</tr>
</tbody>
</table>
## A3.4 MIT Initiatives Relevant to Africa

<table>
<thead>
<tr>
<th>FACULTY / DIRECTORS</th>
<th>PROGRAM</th>
<th>AFRICAN TRAINEES / EDUCATORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Robert Armstrong and Dr. Robert Stoner</td>
<td><strong>MIT Energy Initiative (MITei)</strong> creates low- and no-carbon solutions that will efficiently meet global energy needs while minimizing environmental impacts and mitigating climate change. <a href="http://energy.mit.edu">energy.mit.edu</a></td>
<td>Rwanda</td>
</tr>
<tr>
<td>Prof. John Gabrieli</td>
<td><strong>MIT Integrated Learning Initiative (MITili)</strong> studies learning the MIT way: through rigorous, interdisciplinary research on the fundamental mechanisms of learning and how we can improve it. <a href="http://mitili.mit.edu/about-mitili">mitili.mit.edu/about-mitili</a></td>
<td></td>
</tr>
<tr>
<td>Prof. Fiona Murray and Prof. Vladimir Bulovic</td>
<td><strong>MIT Innovation Initiative</strong> educates the next generation of Innovators. <a href="http://innovation.mit.edu">innovation.mit.edu</a></td>
<td></td>
</tr>
<tr>
<td>Prof. Sanjay Sarma Vice President for Digital Learning</td>
<td><strong>MITx</strong> Devises high quality digital education that is distributed globally by edX. MITx goals include expanding access to quality educational opportunities worldwide, and advancing understanding of teaching and learning through research. The Office of Digital Learning organizes MITx offerings. <a href="http://odl.mit.edu/beyond-campus/mitx-edx-moocs">odl.mit.edu/beyond-campus/mitx-edx-moocs</a></td>
<td></td>
</tr>
<tr>
<td>Prof. Sanjay Sarma Cecilia d’Oliveira</td>
<td><strong>OpenCourseWare</strong> A large-scale, web-based open publication of the entire MIT curriculum, enabling sharing of MIT materials with educators, students, and learners around the world. <a href="http://ocw.mit.edu/index.htm">ocw.mit.edu/index.htm</a></td>
<td>OCW is used in many African countries, and mirror “hard copy” sites have been sent up in multiple African countries.</td>
</tr>
</tbody>
</table>

## A3.5 Programs with Presence in Africa
<table>
<thead>
<tr>
<th>FACULTY / DIRECTORS</th>
<th>PROGRAM</th>
<th>AREAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Elfatih Eltahir and Kurt Sternlof</td>
<td><strong>Université Mohammed VI Polytechnique (UMRP)</strong> focuses on five research areas: water, climate, and agriculture in Africa; chemical engineering; and sustainable development in Africa. <a href="http://egerabat.com">egerabat.com</a></td>
<td>Morocco</td>
</tr>
<tr>
<td>Prof. Neil Gershenfeld</td>
<td><strong>Fab Labs</strong> provide widespread access to modern means for invention; comprises roughly fifty thousand dollars in equipment and materials that can be used today to do what will be possible with tomorrow’s personal fabricators. <a href="http://fab.cba.mit.edu">fab.cba.mit.edu</a></td>
<td>South Africa</td>
</tr>
<tr>
<td>Prof. Hazel Sive</td>
<td><strong>MIT-WITS Alliance</strong>: An exciting collaboration between two top universities through education, research, and innovation. Multiple groundbreaking programs and direct faculty connections synergize to promote short-term yield and significant impact.</td>
<td>Johannesburg, South Africa</td>
</tr>
<tr>
<td>Dr. Amy Smith and Kofi Taha</td>
<td><strong>D-Lab Innovation Centers</strong> offer hands-on design experiences that bring together people from all walks of life to create low-cost, practical innovations to improve the lives of people living in poverty. <a href="http://idin.org/tags/innovation-centers">idin.org/tags/innovation-centers</a></td>
<td>Zambia, Botswana, Uganda, South Sudan, Tanzania</td>
</tr>
<tr>
<td>Prof. Tavneet Suri</td>
<td><strong>J-PAL Africa</strong> supports researchers running randomized evaluations in Africa, conducts trainings to build capacity in understanding and running randomized evaluations, and works with policymakers to help them leverage rigorous evidence to make policies more effective and scale up the most promising programs. <a href="http://povertyactionlab.org/africa">povertyactionlab.org/africa</a></td>
<td>Kenya, Ghana, Sierra Leone, South Africa, Uganda, Tanzania, Rwanda,</td>
</tr>
</tbody>
</table>
### A3.6 Student-focused Programs

<table>
<thead>
<tr>
<th>FACULTY / DIRECTORS</th>
<th>PROGRAM</th>
<th>AREAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof. Wesley Harris and Melanie Parker</td>
<td><strong>Global Education &amp; Career Development Office</strong> coordinates an academic exchange between MIT’s Department of Aeronautics and Astronautics and the University of Pretoria, South Africa. Students from course 16 can study abroad during the fall or spring terms of their junior year and earn transfer credit towards their major and other Institute requirements. Each year, MIT also hosts top students from the University of Pretoria. <a href="http://gecd.mit.edu/go-abroad/study-abroad">gecd.mit.edu/go-abroad/study-abroad</a></td>
<td>14 MIT students have spent spring break at UoP in 2014 and 9 UoP students have spent a semester at MIT since 2012. Pretoria, South Africa</td>
</tr>
<tr>
<td>Alison Hynd</td>
<td><strong>Priscilla King Gray Public Service Center</strong> connects and guides MIT students with a wide variety of public service projects in local, national, and global communities. <a href="http://studentlife.mit.edu/pkgcenter/pkg-center-%E2%80%94-who-we-are">studentlife.mit.edu/pkgcenter/pkg-center-%E2%80%94-who-we-are</a></td>
<td>Southern Africa</td>
</tr>
<tr>
<td>Prof. Phillip Khoury and David Dolev</td>
<td><strong>MIT-Arab World</strong> offers opportunities for MIT students and faculty to engage and collaborate with peers in the region. <a href="http://mist.mit.edu/mit-arab-world-program">mist.mit.edu/mit-arab-world-program</a></td>
<td>Morocco</td>
</tr>
<tr>
<td>Anjali Sastry</td>
<td><strong>MIT Sloan: NEXT Lab (MIT Executive MBAs)</strong> and other Lab courses place teams of 5-6 students in projects proposed by companies and organizations in Sub-Saharan Africa. <a href="http://mitsloan.mit.edu/actionlearning/labs/next-lab-about.php">mitsloan.mit.edu/actionlearning/labs/next-lab-about.php</a></td>
<td>Tanzania, Kenya, South Africa</td>
</tr>
<tr>
<td>Prof. Hazel Sive and Julia Reynolds-Cuéllar</td>
<td><strong>MIT-AFRICA Internships</strong> provide MIT students meaningful connections with research, industry or academia across the continent. For example, the newly launched MIT-AFRICA Travel Awards Program provides air tickets to students to pursue independent research, startups, or other collaborations.</td>
<td>Sent over 100 MIT students to Ghana, Nigeria, Rwanda, Uganda, South Africa, Botswana, Tanzania, and Kenya.</td>
</tr>
<tr>
<td>FACULTY / DIRECTORS</td>
<td>PROGRAM</td>
<td>AREAS</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>----------------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Prof. Hazel Sive/Julia Reynolds-Cuéllar</td>
<td><strong>MIT-South Africa</strong></td>
<td>South Africa</td>
</tr>
<tr>
<td></td>
<td>Creates meaningful connections between MIT and South Africa by placing MIT students in industry, research, and educational institutions across South Africa.</td>
<td>Sent over 50 students to internship placements, and set-up the MIT-WITS Alliance.</td>
</tr>
<tr>
<td></td>
<td><a href="http://www.misti.mit.edu/mit-south-africa-program-0">www.misti.mit.edu/mit-south-africa-program-0</a></td>
<td></td>
</tr>
<tr>
<td>Prof. Hazel Sive/Julia Reynolds-Cuéllar/Prof. Saman Amarasinghe/Bill Aulet</td>
<td><strong>MIT-Global Startup Labs in Africa</strong></td>
<td>Algeria, Mauritius, South Africa</td>
</tr>
<tr>
<td></td>
<td>Provides university students in Africa their first real-world hands-on mobile tech entrepreneurship experience, led by 4 MIT student-instructors.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.gsl.mit.edu/">www.gsl.mit.edu/</a></td>
<td></td>
</tr>
<tr>
<td>Amy Smith/Kofi Taha</td>
<td><strong>D-Lab Courses</strong></td>
<td>Africa</td>
</tr>
<tr>
<td></td>
<td>Challenges talented students to use their math, science, engineering, social science, and business skills to tackle a broad range of global poverty issues.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.d-lab.mit.edu/courses">www.d-lab.mit.edu/courses</a></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX 4. Africa-focused Subjects at MIT

A4.1 Africa-relevant subjects
African languages are not taught at MIT. MIT students can cross-enroll for African language subjects at Harvard (www.alp.fas.harvard.edu/) or Wellesley (Swahili). Multiple subjects — spanning Economics, Innovation, Environment, and Health — are relevant to students with an interest in Africa.

<table>
<thead>
<tr>
<th>PROFESSOR / LECTURER</th>
<th>DEPARTMENT</th>
<th>COURSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sana Aiyar</td>
<td>Humanities, Arts &amp; Social Sciences</td>
<td>21H.358 Colonialism in South Asia and Africa</td>
</tr>
<tr>
<td>Prof. Gabriella Carolini</td>
<td>Urban Studies and Planning</td>
<td>11.475 Navigating Politics of Water and Sanitation Planning</td>
</tr>
<tr>
<td>Prof. Gabriella Carolini</td>
<td>Urban Studies and Planning</td>
<td>11.487/11.147 Innovations in Budgeting and Finance for the Public Sector</td>
</tr>
<tr>
<td>Prof. Evan Lieberman</td>
<td>Political Science</td>
<td>17.571 Engineering Democratic Development in Africa</td>
</tr>
<tr>
<td>Prof. Evan Lieberman</td>
<td>Political Science</td>
<td>17.572 African Politics</td>
</tr>
<tr>
<td>Prof. Clapperton Mavhunga</td>
<td>Science, Technology &amp; Society</td>
<td>STS.088 Africa for Engineers</td>
</tr>
<tr>
<td>Prof. Clapperton Mavhunga</td>
<td>Science, Technology &amp; Society</td>
<td>STS.089 Technology and Innovation in Africa</td>
</tr>
<tr>
<td>Prof. Ignacio J. Pérez-Arriaga, Robert Stoner, &amp; Yael Borofsky</td>
<td>MITEI</td>
<td>15.502 SSIM Planning, policy, and technology for energy access in developing countries</td>
</tr>
<tr>
<td>Patricia Tang</td>
<td>Humanities, Arts &amp; Social Sciences</td>
<td>21M.293 Music of Africa</td>
</tr>
<tr>
<td>Lamine Toure</td>
<td>Humanities, Arts &amp; Social Sciences</td>
<td>21M.460 MIT Senegalese Drum Ensemble</td>
</tr>
</tbody>
</table>
A4.2 Minor in African and African Diaspora Studies
The Minor in African and African Diaspora Studies is designed for students interested in the cultures and experiences of the peoples of African descent on the continent and elsewhere. The goal of the minor program is to emphasize the importance of Africa and people of African descent in world cultural, economic, and social developments, and to provide a balance between language, humanistic, historical, and contemporary study. The minor includes study of economic and political systems as they reflect the African continent and areas of the African diaspora, and the histories, languages, and literatures of Africans and peoples of African descent elsewhere.

All of Africa falls within the geographical scope of the minor. A student may concentrate on a particular region or on any of the broad groupings of African cultures, such as Arabic-speaking, Anglophone, Francophone, or Lusophone Africa. Equally, a student choosing to focus on the African diaspora may concentrate on any group of African-descended populations in the Americas. Students focusing on either principal area (Africa or the African diaspora) must also take at least one subject which deals with the other area or with interactions between them.

The minor consists of six subjects (at least three of which must be MIT subjects), arranged in four areas of study:

- **Area I: Language**
- **Area II: Humanities and the Arts**
- **Area III: Social Sciences**
- **Area IV: Historical Studies**

Subjects about Africa and the African diaspora, as well as subjects in indigenous African languages, are also available from Harvard University and Wellesley College through cross-registration. Students must receive permission from the minor advisor prior to registering for a class at another institution. Five of the six subjects taken for the minor may be counted toward the eight-subject HASS Requirement. Of these five, at most one may count toward the distribution component of the HASS Requirement. Of the six subjects required for the minor, at least four cannot be counted toward a major or another minor.
Area I: Language 1

Select one of the following:

21G.303 French III
& 21G.304 and French IV

21G.703 Spanish III
& 21G.704 and Spanish IV

21G.803 Portuguese III
& 21G.804 and Portuguese IV

Two intermediate-level subjects in an indigenous African language, or other official language of the region of study.

Select four subjects from at least two of the following areas:

Area II: Humanities and the Arts

21L.007 World Literatures
21L.504 Race and Identity in American Literature
21M.030 Introduction to World Music
21M.226 Jazz
21M.293 Music of Africa
21W.742 Writing about Race
24.912 Black Matters: Introduction to Black Studies
WGS.142 Narrative and Identity: Writing and Film by Contemporary Women of Color

Area III: Social Sciences

17.523 Ethnic Conflict in World Politics
17.571 Engineering Democratic Development in Africa
24.908 Creole Languages and Caribbean Identities
WGS.150 Gender, Power, Leadership, and the Workplace
WGS.225 The Science of Race, Sex, and Gender
Area IV: Historical Studies

Select from among the following:

21H.229 The Black Radical Tradition in America
21H.358 Colonialism in South Asia and Africa
STS.048 African Americans in Science, Technology, and Medicine
STS.089 Technology and Innovation in Africa

Total Units 72

Students are expected to have two intermediate (Levels III and IV) subjects in either the official language of the region of study or in an indigenous African language. In cases where the student is specializing in Anglophone Africa or an English-speaking region of the diaspora, and does not undertake study of an indigenous language, or is a native speaker of the official language(s) of a country or region of emphasis, this component would be replaced by literature or other humanities subjects.

For students who are not required to take Area I subjects (see footnote 1 above), all six subjects for the minor must be taken from Areas II, III, and IV, with at least one subject from each area.

The subject list above is not exhaustive. Additional information can be obtained from the minor advisor, Prof. Sandy Alexandre, Room 14N-422, 617-253-4450, or from the SHASS academic administrator, Andrea Wirth, 4-240, 617-253-4441.
APPENDIX 5. Peer University Engagement in Africa

To understand the ecosystem of innovation, entrepreneurship, and education as it pertains to U.S. universities’ engagement with Africa, a landscape analysis was conducted. Data were generated using a combination of both internet research as well as conversations with directors of various programs from peer institutions across the U.S. They are as follows:

- Brown University
- Carnegie Mellon University
- Columbia University/Barnard College
- Cornell University
- Dartmouth College
- Duke University
- Georgetown University
- Johns Hopkins University
- New York University
- Northwestern
- Princeton University
- Stanford University
- University of Pennsylvania
- Yale University

The cross-institutional collaborations we saw in the data pushed us to think critically about who partner with, and how those partnerships are configured.

Several universities, notably Carnegie Mellon, NYU, Princeton, and Stanford, have satellite campuses. We learned that these campuses require high initial investments and often have administrative bottlenecks. These lessons inspired us think critically about how to seek and engage strong program partners. We are actively seeking to partner with networks of well-established universities across the continent in order to facilitate resource sharing and capacity building.

Many African studies institutes have been experiencing reduced enrollments. Our take-away is to create a new model for engagement with the continent that is flexible but responsive to the pressing needs of the diverse nations on the continent.

The report below contains summaries of programs and information that are organized into the following categories: On-Campus Education; Off-Campus, On-the-Continent Education; Research; Fellowships, Scholarships, & Leadership Development Opportunities; and Events & Student Organizations.
### A5.1 On-Campus Education

<table>
<thead>
<tr>
<th>INSTITUTION</th>
<th>UNDERGRADUATE DEGREE PROGRAMS</th>
<th>GRADUATE DEGREE PROGRAMS</th>
<th>CERTIFICATE PROGRAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown University</td>
<td>Africana Studies Concentration</td>
<td>PhD in Africana Studies</td>
<td>N/A</td>
</tr>
<tr>
<td>Carnegie Mellon</td>
<td>African or African American Studies Minor</td>
<td>MA en route to the PhD in African American and African Diaspora Studies</td>
<td>N/A</td>
</tr>
<tr>
<td>Carnegie Mellon</td>
<td>BA in French and Francophone Studies</td>
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</tr>
<tr>
<td>Carnegie Mellon</td>
<td>BA in Global Studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Columbia University/Barnard College</td>
<td>BA in Africana Studies (Barnard College)</td>
<td>N/A</td>
<td>African Studies Certificate in collaboration with the Panthéon-Sorbonne University</td>
</tr>
<tr>
<td>Cornell University</td>
<td>N/A</td>
<td>PhD in Africana Studies</td>
<td>N/A</td>
</tr>
<tr>
<td>Dartmouth College</td>
<td>BA in African and African American Studies</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Duke University</td>
<td>BA in African and African American Studies</td>
<td>MA or PhD in African History MA or PhD in Cultural Anthropology</td>
<td>N/A</td>
</tr>
<tr>
<td>Georgetown University</td>
<td>Minor in African Studies</td>
<td>N/A</td>
<td>Undergraduate and Graduate Certificate in African Studies</td>
</tr>
<tr>
<td>Harvard University</td>
<td>BA in African or African American Studies</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Johns Hopkins University</td>
<td>BA in African Studies BA in Africana Studies</td>
<td>MA in African Studies</td>
<td>N/A</td>
</tr>
<tr>
<td>INSTITUTION</td>
<td>UNDERGRADUATE DEGREE PROGRAMS</td>
<td>GRADUATE DEGREE PROGRAMS</td>
<td>CERTIFICATE PROGRAMS</td>
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<tr>
<td>Northwestern University</td>
<td>African Studies Minor</td>
<td>Courses available in African Studies Cluster</td>
<td>Graduate Certificate in African Studies</td>
</tr>
<tr>
<td>Princeton University</td>
<td>N/A</td>
<td>Masters in Public Policy or Public Affairs</td>
<td>Undergraduate Certificate in African Studies Global Health and Health Policy (GHP) certificate</td>
</tr>
<tr>
<td>University of Pennsylvania</td>
<td>BA in African Studies</td>
<td>MS in Public Health w/ Global Health Concentration</td>
<td>Graduate Certificate in African Studies</td>
</tr>
<tr>
<td>Yale University</td>
<td>BA in African Studies</td>
<td>MA in African Studies</td>
<td>Graduate Certificate of Concentration in Global Health, Development Studies, or International Security Studies</td>
</tr>
</tbody>
</table>

**A5.1.a Africana Studies, African and African American Studies, African Studies**

Undergraduate major, minor and graduate MA or PhD degrees are awarded at multiple peers in the following disciplines. Africana Studies is a multidisciplinary field that began at Cornell University. This academic field is dedicated to the study of the history, politics, cultures, and literatures of Africa and of the African Diaspora in the Americas, Caribbean, and Europe. Barnard, Brown, and NYU are also universities that offer such courses.

African and African American Studies focuses on providing students with interdisciplinary training in African or African American cultural (humanities) and social studies (social sciences) with a focus in a major disciplinary field, such as history, anthropology, or economics. Carnegie Mellon, Dartmouth, and Duke have programs that offer courses in this field of study.

African Studies is the broad study of the history, culture, and languages of Africa. The discipline has grounding in cross-disciplinary approaches to major social, political, and economic topics.
A5.1.b Language Programs

Carnegie Mellon offers a Master of Arts or PhD in Second Language Acquisition for Arabic: www.cmu.edu/dietrich/modlang/graduate/index.html

The Language Resource Center (LRC), a shared course initiative with Cornell, Columbia, and Yale, is designed to help students work toward both communicative and cultural competence. The overall aim of the program is to help students gain the linguistic skills necessary to function in all areas of practical need, and prepare them for advanced study of history, culture, and literature. Regular classroom instruction is offered in several languages: Arabic, Pulaar, Swahili, Wolof, Yoruba, and Zulu. www.ias.columbia.edu/academic-program/african-language-program

Harvard’s Department of African and African American Studies (www.alp.fas.harvard.edu/) has one of the largest course offerings in African languages with over 10 language offerings every semester. African languages offered include the following: Afrikaans, Amharic, Bamanankan, Bemba, Cape Verdean Creole, Chichewa, Dinka, Gikuyu, Haitian Creole, Hassaniyah, Hausa, Ibibio, Igbo, Jamaican Patois, Kikongo, Kinyarwanda, Krio, Lingala, Luganda, Malagasy, Oromo, Pulaar, Setswana, Shona, Somali, Sudanese Arabic, Swahili, Tigrinya, Tshiluba, Twi, Wolof, Xhosa, Yoruba, and Zulu.

NYU’s Department of Africana Studies offers both Swahili and Yoruba courses: www.africanastudies.as.nyu.edu/object/africanastudies_africanlanguages.html

Northwestern University’s Weinberg College of Arts & Sciences has an annual course offering in KiSwahili: www.africanstudies.northwestern.edu/undergraduate/swahili.html

Stanford’s African and Middle Eastern (AME) program is part of the Stanford Language Center and is affiliated with The Center for African Studies, the Abbasi Program in Islamic Studies, and the program in Jewish Studies. The program offers beginning, intermediate, and advanced classes in Arabic, Hebrew, Swahili, and other African languages as well as classes in AME literatures and cultures. Additional languages such as Amharic, Chichewa, Hausa, Igbo, Kinyarwanda, Tigrigna, Twi, and Zulu are offered upon request, providing funding is available. www.web.stanford.edu/dept/lc/language/courses/africanMidEastern/ame.html

UPenn’s Native African Languages Initiative Summer Institute (NALISI) is a Zulu language-intensive plus cultural immersion program. www.africa.upenn.edu/languages

Yale University has a Directed Independent Language Study (DILS) program which supports students interested in learning less commonly taught languages. DILS provides tutors, materials, a program of study, and an end-of-term proficiency exam. In recent years, DILS has supported students studying 14 African languages: Amharic, Dinka, Efik, Egyptian Arabic, Hausa, Igbo, Kinyarwanda, Luganda, Malagasy, Oromo, Rutooro, Setswana, Tigrinya, and Twi.
A5.1.c Other Programs with an African Focus

Carnegie Mellon offers a range of degrees (including Francophone Studies, Global Health, and Islamic Studies) with specializations focused on various subregions of Africa.

Columbia University offers a year-long African Studies Certificate in collaboration with Panthéon-Sorbonne University. A cohort of up to 20 students from the two schools study together in Paris during the fall semester and in New York during the spring semester. The program is designed to introduce students to the intensive study of Africa through methodological and theoretical training across disciplines, and through exposure to a bi-cultural and multidisciplinary approach to African Studies. Students can study an African language, and are provided diverse opportunities to examine critical issues and perspectives about Africa, and its relationship to its past as well as its place in today’s global world.

Northwestern University offers a Master of Science in Global Health with a focus on Africa.

A5.1.d Collegiate Associations

The African Studies Association of the United States (www.africanstudies.org/about-asa) was established in 1957 to enhance the exchange of information about Africa. With almost 2,000 individual and institutional members worldwide, the African Studies Association encourages the production and dissemination of knowledge about Africa, past and present. Based in the United States, the ASA supports understanding of an entire continent in each facet of its political, economic, social, cultural, artistic, scientific, and environmental landscape. Members include scholars, students, teachers, activists, development professionals, policymakers, and donors.

The National Association of African American Studies and Affiliates (NAAAS) was founded in 1992 on the campus of Virginia State University in Petersburg, Virginia. The goal of the organization is to serve as a resource for scholars in the field who desire information and support for research related to the African and African American, Hispanic, Latino(a) and Chicano(a), Native American, and Asian experiences. www.naaas.org/about-us/

The National Council for Black Studies (www.ncbsonline.org/overview_and_activities) was established in 1975 by African-American scholars. The council aims to formalize the study of the African World experience, as well as to expand and strengthen academic units and community programs devoted to this endeavor. Its impact on the broader educational establishment, due to the holistic and multidisciplinary approach taken by Africana Studies, has become the intellectual extension of that movement.
### A5.2 Off-Campus/On-the-Continent Education

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<td>Cape Town: CIEE Study Abroad</td>
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<td>Morocco: Multiculturalism and Human Rights</td>
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<td>Tunisia: Emerging Identities in North Africa</td>
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<td>Carnegie Mellon</td>
<td><strong>Degree Programs</strong></td>
<td>Carnegie Mellon University Information and Communication Technology Center for Excellence:</td>
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<td>MS in Information Technology (MSIT)</td>
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<td>Master of Science in Electrical and Computer Engineering (MSECE)</td>
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<td>College</td>
<td>Millennium Villages</td>
<td>Foreign Study Program in Southern Africa</td>
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<td>Africa Soil Information Service</td>
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<td>Dartmouth College</td>
<td>Foreign Study Program in Ghana</td>
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<td>Foreign Study Program in Southern Africa</td>
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<td>Kenya and Tanzania: African Studies Study Abroad Fellowship</td>
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<td>Johns Hopkins University</td>
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<td>Africa Programs</td>
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<tr>
<td>New York University</td>
<td>The Center for</td>
<td>NYU Accra</td>
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Technology and Economic Development Entrepreneurship Lab

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<th>Ghana: Arts &amp; Sciences</th>
<th>Global Engagement Studies Institute in Kenya</th>
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<td>Rwanda: Post-Genocide Restoration and Peacebuilding</td>
<td>Senegal: National Identity &amp; the Arts</td>
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<td>South Africa: Global Healthcare Technologies</td>
<td>South Africa: Social &amp; Political Transformation School for International Training (SIT)</td>
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<td>South Africa: National Identity &amp; the Arts</td>
<td>Journalism Residency South Africa</td>
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<td>South Africa: Public Health &amp; Development</td>
<td>Public Health &amp; Development in South Africa</td>
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<td>South Africa: Stellenbosch University Exchange</td>
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<td>Field Research in Public Health: Tanzania</td>
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<td>Global Engagement Studies Institute in Uganda</td>
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<td>Uganda: Development Studies</td>
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<th>Princeton University</th>
<th>Mpala Research Centre</th>
<th>Summer Study Abroad in African Languages</th>
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<td>Stanford University</td>
<td>Stanford Institute for Innovation in Developing Economies (SEED)</td>
<td>Immersion Program for Zulu in South Africa</td>
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<tr>
<td>University of Pennsylvania</td>
<td>Immersion Program for Zulu in South Africa</td>
<td>Penn Med Student-Arranged Experiences in Gabon, Ghana, Malawi, South Africa, and Tanzania</td>
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<tr>
<td>Yale University</td>
<td>The MacMillan Center’s African Language Initiative</td>
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</table>
A5.2.a Degree Programs in Africa

Carnegie Mellon University’s Information and Communication Technology (ICT) Center of Excellence (CoE) in Kigali, Rwanda, was established in a partnership with the Government of Rwanda. The ICT CoE prepares students to become technology thought leaders through two CMU master’s programs: the Master of Science in Information Technology (MSIT) and the Master of Science in Electrical and Computer Engineering (MS ECE).

A5.2.b Cross Institutional Collaborations in Africa

Columbia and Princeton have study abroad options focused on environmental conservation, resource management, and environmental engineering at the Mpala Research Centre and Wildlife in Kenya. The Centre hosts multiple educational outreach programs in order to tackle issues of human-wildlife conflict and thus ensure that both conservation and human-livelihood goals are met. Students take four 3-week intensive course modules taught by Columbia and Princeton faculty who work in Kenya and other parts of East Africa.

Dartmouth College and Northwestern University offer opportunities through their study abroad offices to participate in third party programs that enable study at African universities. These opportunities are often through partnerships with the School for International Training (SIT) or the Council for International Education Exchange (CIEE). Northwestern also has direct partnerships with universities in Southern Africa.

Duke’s Organization for Tropical Studies (OTS) Summer in South Africa Program (www.globaled.duke.edu/Programs/Semester/OTS_South_Africa) offers a program based in Kruger National Park. The program provides field study and research exercises that expose students to different types of savanna. Science courses are taught by OTS faculty and distinguished visiting scientists, while the course on History and Culture of South Africa is led by prominent South African historians, artists, and cultural theorists. The program is physically and intellectually demanding, stressing full immersion in hands-on scientific and cultural studies.

Duke’s OTS also offers a Global Health Issues in South Africa program (www.globaled.duke.edu/Programs/Summer/OTS_South_Africa_Global_Health_Issues), which focuses on three major themes: the health system in South Africa; the clinical, social, and political aspects of the country’s most prevalent infectious diseases; and the roles of traditional healers. The program employs the lenses of biomedicine, medical anthropology, and public health to provide a critical interdisciplinary perspective on these issues.

NYU Accra allows students to enhance coursework relevant to their majors with enrollment at the University of Ghana-Legon, where they may take up to two courses while studying alongside West Africa’s top students. NYU also has an academic center in suburban Labone,
Ghana, which offers courses in the arts, literature, communication, journalism, media, anthropology, history, politics, global public health, and sociology taught by local professors and visiting faculty from New York. Finally, NYU Accra students intern and take part in community service with NGO’s, local businesses, and philanthropic groups, helping them to understand social entrepreneurship in a fast-developing city.

A5.3 Research

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<tr>
<th>INSTITUTION</th>
<th>RESEARCH INSTITUTES &amp; CENTERS</th>
<th>FACULTY LABS</th>
<th>RESEARCH LABS</th>
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<tbody>
<tr>
<td>Brown University</td>
<td>Focus on Africa Initiative Population Studies and Training Center International Advanced Research Institutes Africa Initiative, Watson Institute for International and Public Affairs Rites and Reason Research and Developmental Theatre</td>
<td>Global Health Initiative de Graffenried Lab Russell Lab</td>
<td>Brown’s Climate and Development Lab (CDL)</td>
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<td>Carnegie Mellon</td>
<td>Information and Communication Technology (ICT) Center of Excellence (CoE) in Kigali The Integrated Innovation Institute</td>
<td>CMU-Emirates Silicon Valley Innovation Lab The Integrated Innovation Institute at Carnegie Mellon University</td>
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<tr>
<td>Columbia University/Barnard College</td>
<td>Institute for African Studies Earth Institute</td>
<td>Modi Research Group</td>
<td>Quench Millennium Villages Africa Soil Information Service</td>
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<td>Cornell University</td>
<td>Africana Studies and Research Center (ASRC) Mario Einaudi Center for International Studies, Institute for African Development</td>
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<td>University World Health Tech Lab Innovation and Technology Policy Lab</td>
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<td>Harvard</td>
<td>Center for African Studies</td>
<td>Entrepreneurial Finance Lab</td>
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<td>University</td>
<td>Africa and China Initiative</td>
<td>Research Initiative</td>
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<td>African Studies Workshop</td>
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<td>African Entrepreneurship Program</td>
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<td>Center for International Development, South Africa</td>
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<td>Growth Initiative</td>
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<td>John Hopkins</td>
<td>Center for Africana Studies</td>
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<td>Makerere University-Johns</td>
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<td>University</td>
<td>China Africa Research Initiative</td>
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<td>Hopkins University Research</td>
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<td>Connect SAIS Africa</td>
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<td>Collaboration Core</td>
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<td>South Africa Initiative, Center for Global Health</td>
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<td>Global Health Research Across Africa</td>
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<td>The Malawi Clinical Trials Unit</td>
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<td>Global Health Research Across Africa</td>
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<td>New York</td>
<td>NYU Africa House Center for Technology and Economic Development</td>
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<td>University</td>
<td>Entrepreneurship</td>
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<td>Northwestern</td>
<td>The Institute for the Study of Islamic Thought in Africa (ISITA)</td>
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<td>Farley Center for Entrepreneurship and Innovation</td>
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<td>University</td>
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<td>Princeton University</td>
<td>Institute for the Transregional Study of the Contemporary Middle East, North Africa and Central Asia Institute for International Studies Niehaus Center for Globalization and Governance</td>
<td>Levin Lab</td>
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<td>University of Pennsylvania</td>
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<td>Yale University</td>
<td>Global Health Leadership Institute Global Network of Advanced Management</td>
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**A5.3.a Entrepreneurship & Innovation in Africa**

The Carnegie Mellon University-Emirates Silicon Valley Innovation Lab is a joint initiative of the College of Engineering, the College of Fine Arts, and the Tepper School of Business. The Institute is built on primary disciplines in product and service innovation covering functional performance (engineering), human interface (design), and economic value (business). The Institute focuses on education and research in innovation methods and practice, and unites the three disciplines to cross train students to become elite innovators, enhancing the effectiveness of thinking and generating results. The Institute confers professional master degree programs, conducts proprietary applied research, and extends its training through executive education, customized company programs, and open-enrollment consortia.

The Modi Research Group ([www.modi.mech.columbia.edu/about/](http://www.modi.mech.columbia.edu/about/)) at Columbia University’s Earth Institute uses engineering methods to address development issues across several regions. The lab engineers software solutions in order to help make development planning more
efficient and to improve the delivery of significant services such as health and energy to regions in the developing world. The lab has a footprint in New York City and Nairobi, Kenya.

Quench ([www.quenchsystem.com/](http://www.quenchsystem.com/)) is a water management solution created through a partnership between the Earth Institute and the School of Engineering at Columbia University, Professor Vijay Modi and the Modi Research Group. The initiative operates out of Nairobi, Kenya. The Quench system aims to provide all-day access to safe drinking water by improving water management and distribution.

The GE Foundation/Duke University World Health Tech Lab ([www.gefoundation.com/health/developing-health-globally/](http://www.gefoundation.com/health/developing-health-globally/)) established a biomedical equipment training program in Nigeria to build skills and improve capacity. The Lab has a $1.5M Biomedical Equipment Technician training (BMET) program grant to address persistent need for repairing medical equipment and building sustainable pipeline of qualified medical engineers. The grant program, defined through collaboration with the Federal Ministry of Health (FMOH) in Nigeria, is established at the Federal School of Biomedical Engineering Technology at the Lagos University Teaching Hospital (LUTH) and builds on the success of BMET programs already implemented in Ghana, Rwanda, Cambodia, and Honduras.

Harvard’s African Entrepreneurship Program ([www.africa.harvard.edu/african-entrepreneurship-harvard/](http://www.africa.harvard.edu/african-entrepreneurship-harvard/)) is an initiative that facilitates a range of activities at Harvard and in Africa. The program incubates innovative ideas, integrates entrepreneurship into classrooms and study abroad programs, offers direct mentorship and internship opportunities for undergraduate and professional school students, and cultivates collaborative opportunities for the production and execution of game-changing ideas.

NYU’s Center for Technology and Economic Development Entrepreneurship (CTEDE, [www.nyucted.org/cted-entrepreneurship-lab](http://www.nyucted.org/cted-entrepreneurship-lab)) brings together groups of students and faculty (through workshops, seminars, laboratory sessions, one-on-one work sessions, etc.) to conceive, develop, and implement path-breaking solutions to major global development problems in education & employment, energy, food & agriculture, healthcare, and mobile, money & finance. CTEDE has a regional center in Accra, Ghana and is headquartered out of Abu Dhabi in the United Arab Emirates.

Northwestern’s Mandela Washington Fellowship ([www.farley.northwestern.edu/index.html](http://www.farley.northwestern.edu/index.html)) hosts 25 candidates in the Young African Leaders Initiative (YALI) for a “business and entrepreneurship institute” program. The program is designed to support burgeoning African entrepreneurs to work with scholars at Northwestern and also features Chicago-based non-profits, startups, and other organizations.
Stanford’s Institute for Innovation in Developing Economies (SEED, [www.seed.stanford.edu](http://www.seed.stanford.edu)) is an innovation center, located in Accra, Ghana, whose goal is to stimulate economic opportunities—including job creation—by scaling high-potential local and regional businesses. The in-country effort includes the following: a program of continuous coaching by experienced business leaders who will provide hands-on support in preparation for growth and potential new financing; access to experts and investors through local, global, and Stanford networks; and research that is rooted in practice and on-the-ground interactions with businesses to help overcome bottlenecks to scaling. SEED West Africa was launched in 2013 with an initial cohort of 36 executives representing 29 companies from Côte d’Ivoire, Ghana, Nigeria, Senegal, and Sierra Leone. SEED East Africa is a much newer initiative that is in the process of recruiting its first cohort of business leaders.

A5.3.b Private Sector Innovation Labs in Africa

IBM-Research has facilities ([www.research.ibm.com/articles/africa.shtml](http://www.research.ibm.com/articles/africa.shtml)) in Kenya and South Africa that drive innovation by developing commercially-viable solutions to transform lives and spark new business opportunities in key areas such as water, agriculture, transportation, health care, financial inclusion, education, energy, security, and e-government. The THINKLab in Nairobi, Kenya allows clients and partners from across the Middle East and Africa region to gain hands-on experience of IBM’s latest cognitive, cloud, big data analytics, and mobile technologies. IBM Research – South Africa focuses on advancing Big Data, cloud and mobile technologies to support South Africa’s national priorities, to drive skills development, and to foster innovation-based economic growth.

A5.3.c Scientific Research Institutes and Initiatives in Africa

The Columbia Global Centers: Africa has an initiative called the Africa Soils Information Service (AfSIS, [www.globalcenters.columbia.edu/nairobi/content/africa-soil-information-service](http://www.globalcenters.columbia.edu/nairobi/content/africa-soil-information-service)) Project that is developing a continent-wide, comprehensive digital soil map for sub-Saharan Africa. The quality soil data will support evidence-based decision making which can enhance agricultural and economic productivity, environmental sustainability, and climate change adaption.

Also based at the Columbia Global Centers: Africa, the Millennium Villages Project ([www.millenniumvillages.org/](http://www.millenniumvillages.org/)) is implemented in six countries (Kenya, Tanzania, Malawi, Rwanda, Uganda, and Ethiopia) to empower communities to lift themselves out of poverty. Offering an innovative integrated approach to rural development, the Project simultaneously addresses the challenges of extreme poverty in many overlapping areas: agriculture, education, health, infrastructure, gender equality, and business development.
The Makerere University - Johns Hopkins University (MU-JHU, www.mujhu.org/Overview.html) Research Collaboration aims to reduce mother-to-child transmission of HIV, particularly during birth and from breastfeeding. Over 7000 families have participated in MU-JHU research studies and programs. These families have received comprehensive maternal and pediatric services including immunization, health education, counseling, family planning, antiretroviral treatment, opportunistic infections prophylaxis, and medical care and treatment.

A5.3.d Other Institutes or Labs with Africa-focused Projects based in the U.S.
Carnegie Mellon’s African Studies Research Consortium (ASRC, www.cmu.edu/history/cause/african-studies-research-consortium/index.html) provides opportunities for scholars and graduate students at Southwestern Pennsylvania and West Virginia universities who conduct research about Africa and Africans to present works in progress and to network with colleagues. Organized jointly by Edda L. Fields-Black (CMU) and Robert Maxon (West Virginia University), the ASRC has faculty and graduate students affiliated with several departments at Carnegie Mellon University, Chatham University, Duquesne University, La Roche College, Susquehanna University, University of Pittsburgh, and West Virginia University.

Harvard’s Center for International Development (CID) has a number of Africa-focused projects. First, the South Africa Growth Initiative (www.cid.harvard.edu/southafrica/) seeks to consolidate the gains of post-transition economic stability and accelerate growth in order to create employment and improve the livelihoods of all South Africans. The project involves a panel of international experts from Harvard University, the Massachusetts Institute of Technology, the University of Michigan, and other institutions to work with South African economists to study that country’s constraints to and opportunities for accelerated growth.

Second, the Africa Growth Lab (www.growthlab.cid.harvard.edu/africa-growth-lab) works to identify the most important constraints on African growth and to recommend interventions that can relax these constraints. The lab’s research covers four thematic areas: productivity and economic growth; innovations in financial services; governance; and leadership.

Johns Hopkins’ School of Advanced International Studies (SAIS) has a number of Africa-focused programs. First, the China Africa Research Initiative (SAIS-CARI, www.sais-cari.org/) promotes evidence-based understanding of the relations between China and African countries through high-quality data collection, field research, conferences, and collaboration. Second, the African Studies Program (www.sais-jhu.edu/content/african-studies#overview) offers an extensive curriculum covering development, governance, and security across the continent. The program draws on leading theories of international politics, political economy, and comparative analysis.
in approaching this dynamic region; it offers foundations in the history, politics, and economies of Africa, with a focus on current policy concerns and emerging issues.

Johns Hopkins’ Center for Global Health has a South Africa Initiative (www.hopkinsglobalhealth.org/funding-opportunities/interdisciplinary-sites/south-africa/) whose objective is to develop and test a comprehensive patient-centered mobile health (mHealth) system to improve the continuum of care for individuals newly diagnosed with HIV in the Matlosana sub-district in South Africa. Based within existing research infrastructure, this mHealth system will integrate clinical care, patient-clinician communication, patient outreach and follow-up, and patient education and empowerment into a single program to improve health outcomes.

The Johns Hopkins Bloomberg School of Public Health leads various projects across the continent of Africa (www.jhsp.h.edu/faculty/research/map/BJ/1395), including population-based research projects that are divided into three main categories: Health Policy / Policy Research, Training / Technical Assistance, and Consulting. Also at the Bloomberg School is the Malaria Research Institute (http://malaria.jhsph.edu/about-us/), which takes a multidisciplinary approach to understanding the Plasmodium parasite, the mosquito, and the genes and proteins involved in the transmission of malaria.

The Joint Stanford-Berkeley Center for African Studies (www.anthropology.berkeley.edu/content/joint-stanford-berkeley-center-african-studies) is an interdisciplinary research center to support basic research and training of scholars. The Center supports scholarly activities over a broad range of topics that address contemporary African issues, and works closely with several teaching units including Berkeley’s Department of African American Studies. Through language study, fellowships, seminars, and curriculum development, the Center provides opportunities for students majoring in traditionally defined fields to develop a comprehensive interdisciplinary program in African Studies.

Stanford’s NovoEd is a student-centered online learning environment that breaks down the walls of a classroom and extends learning through a team-based, collaborative, and project-based approach at scale. This collaborative and engaged experience provides students with a deeper understanding of the content by widening the range of interaction with the teacher, learner, and the content. This platform is currently being piloted at the Open University of West Africa in Accra, Ghana.
## A5.4 Fellowships, Scholarships, & Leadership Development Opportunities

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<th>UNIVERSITY STUDY AWARDS FOR AFRICAN NATIONALS</th>
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<td>Fogarty African Bioethics Training Program</td>
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<td>Joint-US Africa Materials Institute</td>
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<td>Mandela Washington Leadership Development Program</td>
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<td>Global Health Fellows Program for Undergraduate Juniors</td>
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<td>Stanford MBA Africa</td>
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| INSTITUTION                  | UNIVERSITY STUDY AWARDS FOR U.S. CITIZENS / STUDY ABROAD AWARDS | UNIVERSITY STUDY AWARDS FOR AFRICAN NATIONALS | LEADERSHIP DEVELOPMENT FOR AFRICAN PROFESSIONALS |
|-----------------------------|------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------
| University of Pennsylvania | Fulbright-Hays GPA in South Africa for Educators                  |                                               |                                                 |
| Yale University             | Fox International Fellowship                                      | Yale Young African Scholars Program (YYAS)/ Mandela Washington Leadership Development Program | Yale World Africa Fellows Senior Women In Government Leadership Program Nigeria Leadership Initiative |

**A5.4.a Cross-Institutional Initiatives for Young African Professionals**

Brown University’s Advancing Africa Scholarship Fund provides funding to African nationals who will return to full-time residency in Africa for a period of at least two years upon completion of undergraduate studies or, if they have an opportunity to continue their studies, to return upon completion of a graduate degree. During their undergraduate studies at Brown, recipients are entitled to two return trips paid through the Fund. Upon their return to Africa, recipients are given an appropriate monthly stipend for two years to ensure a higher standard of living and to ease their transition.

The Joint-US Africa Materials Institute (JUIAMI), hosted by both Columbia University and Northwestern University, aims to build materials science research and collaborations between Africa and the United States as well as others. JUIAMI targets young materials researchers from different parts of the globe through a series of international schools and workshops taught by leading materials scientists and engineers.

The Mandela Washington Fellows Program for Young African Leaders consists of 6 weeks of intensive executive leadership training, networking, and skills building, followed by a Presidential Summit in Washington, D.C. Through this initiative, young African leaders gain the skills and connections they need to accelerate their own career trajectories and contribute more robustly to strengthening democratic institutions, spurring economic growth, and enhancing peace and security in Africa. Dartmouth College, Northwestern University and Yale University all host fellows on their campus.

The Africa Group at Georgetown University awards a scholarship to African nationals who are interested in pursuing a Master of Science in Foreign Service at the School of Foreign Service. [www.msfs.georgetown.edu/admissions/financialaid/scholarships](http://www.msfs.georgetown.edu/admissions/financialaid/scholarships)
A5.4.b Professional Capacity Building Initiatives for Mid-Level African Professionals

Brown’s Developing Technology Entrepreneurship Capacity in Africa Program (www.brown.edu/web/focus-on-africa/ideas/) develops faculty capacity at the University of Cape Town to teach, particularly to women, entrepreneurship related to emerging science and technology growth enterprises in the African context. The approach relies on an experimental dimension to measure and increase impact, and can be expanded to other fields and disciplines. The partnership is part of Goldman Sachs’ 10,000 Women Initiative to increase the number of underserved women receiving a business and management education.

The African Diaspora Fellows Program (ADFP, www.jhfc.duke.edu/latinaamericauncduke/outreach/k-16-educators/the-african-diaspora-fellows-program/) is a professional development opportunity for middle and high school social studies, world language, and English language arts teachers in North Carolina. Through participation in ADFP, teachers enhance their expertise in teaching about the histories, politics, and cultures of African, Afro-Latin American, and African American communities.

The Black Management Forum - Duke Global MBA Fellowship is offered to a current permanent resident of South Africa (citizen or long-term immigrant) who agrees to return to work in South Africa for at least two years after completion of the Duke MBA – Cross Continent program. The fellowship is open to people working in the public and private sectors, with preference given to applicants from disadvantaged backgrounds.

The Global Business School Network (GBSN) Fellowship is jointly offered by GBSN and Johnson & Johnson to enable African management faculty to spend two months at Duke’s Fuqua School of Business and one week at UCLA’s Anderson School of Management.

The Fogarty African Bioethics Training Program is a partnership between Johns Hopkins Bloomberg School of Public Health and the Johns Hopkins Berman Institute of Bioethics. The major objective of the initiative is to establish and support collaborative training partnerships with institutions in sub-Saharan Africa to support the development of institutional capacity in research ethics and bioethics.

The African Women Public Service Fellowship (www.wagner.nyu.edu/global/fellowships/awpsf) is a fellowship program at NYU Wagner, which expands the opportunity for African women to prepare for public service in their home countries. Fellows study in one of two graduate programs at NYU Wagner: the two-year Master of Public Administration or Master of Urban Planning, or the one-year Executive MPA. The awards for either program support tuition, housing or a housing stipend (if enrolling in the Global EMPA program), travel to and from the United States, and a small stipend to cover books and miscellaneous expenses. Applicants
commit to return to their respective home countries at the conclusion of the program with the goal of assuming a leadership position on the continent where they can meaningfully contribute to the challenges currently confronting Africa.

### A5.5 Events & Student Organizations

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<th>STUDENT GROUPS</th>
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<td>Achebe Colloquium on Africa Global Social Entrepreneurship Conference</td>
<td>Brown chapter of Engineers without Borders, Project Assida</td>
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<td>Mali Health Organizing Project</td>
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<td>The Darfur Action Network (DAN) Brown Undergraduate Group</td>
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<td>Black Graduate Student Organization (BGSO)</td>
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<td>Arab Students’ Organization (ASO)</td>
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<td>Young African Leaders Association</td>
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<td>World Leaders Forum</td>
<td>Columbia University Partnership for International Development</td>
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<td>African Business Club (ABC) of Columbia Business School (CBS)</td>
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<td>Duke University</td>
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<td>African Environment Initiative (AEI)</td>
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<td>Black Student Alliance (BSA)</td>
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<td>Business in Africa (BiA)</td>
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<td>Duke Africans in Medicine (AIM) (Duke AIM)</td>
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<td>African Development Conference</td>
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<td>Africa Caucus, Kennedy School of Government</td>
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<td>Africa Health Student Forum, Harvard School of Public Health</td>
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<td>Harvard Political Review, Harvard College</td>
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APPENDIX 6. The Case and a Model for the Transformation of Higher Education in Africa

...in hope and work

The Case and a Model for the Transformation of Higher Education in Africa

BY
PHILLIP L. CLAY
Massachusetts Institute of Technology
Cambridge, Mass.

August 2016

The views expressed here are those of the author.
“Make no little plans; they have no magic to stir men's blood... Make big plans, aim high in hope and work.”

Daniel H. Burnham
American architect and city planner
About the Author

Phillip L. Clay PhD, a professor of city planning at Massachusetts Institute of Technology, served as MIT’s chancellor from 2001 to 2011. As chancellor, he was involved in educational and research initiatives that MIT conducted with governments, corporations, and universities in Europe, Asia, and the Middle East to design sectoral or national strategies to harness the power of advanced research and education to advance national development goals.

Professor Clay is also experienced in higher-education development. He is a trustee of the Kresge Foundation and a founding member and former vice chair of the MasterCard Foundation; both of these foundations have focused on higher education in Africa. He currently serves on the board of the Aga Khan University and on an advisory committee of the African Institute of Mathematical Sciences, and he was previously a member of the board of the University of North Carolina at Chapel Hill.

This paper is an exercise in visioning and planning based on the author’s research and experience, in Africa and other parts of the world, in the kinds of transformation activities the author advocates here for Africa. The views expressed in this paper are those of the author, and not of the organizations with which the author is affiliated now or has been affiliated in the past.
Executive Summary

Around the world, nations are seeking to build their national economic capacity through the development and application of knowledge. They believe that knowledge empowers their young people to engage in economic development where processes are created, services rendered, products manufactured, and where analysis informs major activity in the public and private sector, and increasingly in civil society. Universities are key agents in this development, which has become more intense in the last two decades.

The pursuit of knowledge has never been more important or more richly supported. While Africa is emerging politically and economically, the continent is not represented in the global initiatives to boost the quality and impact of its tertiary sector. While many African institutions have made recent strides and are well regarded, only four African universities outside of South Africa are among the world’s top 500 universities.

This paper addresses the urgent need for transformation of higher education in Africa. It describes the current situation on the continent, examines obstacles to transformation, and sets forth a plan and a model for igniting the necessary transformation, with a concert of initiatives that will, in a decade, put the continent on a path toward harnessing its talent, leveraging its resources, and becoming a player in the global marketplace of ideas and innovation.

Although these recommendations do not solve the whole problem, they do provide a model and a collaborative process for achievable and scalable excellence within a generation. This is ambitious, but it has to be ambitious, because nothing short of a bold stroke will foster effective action or engage the energies of stakeholders. The process proposed in this paper aims at both substantive and progressive engagement and the creation of opportunities to leverage the energies of stakeholders who become more confident about change as the process evolves.

Economic development cannot be broad and deep without a huge boost in African talent to drive development that relies less on extraction and export of commodities and more on economic activities on the continent — from business services to agriculture. This must include a massive increase in the number and quality of teachers — who are trained in universities — to provide the high-quality primary and secondary education that prepares students for tertiary education. Progress must be made all fronts simultaneously — boosting the capacity of existing teachers while training new cohorts of teachers who can prepare students for the STEM fields that will serve as the foundation for strong national programs in science, engineering, management, and medicine.

Higher education’s power to accelerate national and economic development, innovation, and cultural enhancement is widely acknowledged around the world. Education is a powerful tool in very concrete
ways that are easy to overlook in the West, where colleges and universities have been well integrated into the concept of progress and growth for nearly two centuries. The roles that are uniquely played by higher education institutions include:

1. Education of professionals and managers
2. Research and development, including basic science, to inform technology, policy, and professional practice
3. Framing of local and national issues by contextualizing data, culture, and research findings
4. Research to set standards in various professional areas
5. Education and training of K-12 teachers
6. Field extension work to carry research findings to farmers, judges, physicians, and other professionals
7. Transitioning of first-generation-to-college youth into the middle class and professions
8. Continuing education and retraining of professionals and others
9. Global connections in academia, business, and civil society
10. Support of, and attraction of support for, civil society
11. Incubation of research findings and transfer to commerce and industry
12. Preservation, creation, and interpretation of culture (e.g., art and design, literature, journalism, music, political economy, history, and philosophy)

Every nation needs these functions to be performed. Institutions of higher education in the “global North” do not contemplate a society in which universities and colleges do not play the roles listed above, even as they debate content, point of view, costs, access, and pedagogy. These roles are underdeveloped in Africa. Even where there are strong institutions, they are not strong enough to contribute significantly in all the ways outlined above. The missing roles are absent from African society or they are played by external actors or in very limited ways by under-resourced internal actors. Getting Africa’s tertiary sector to perform these roles is the urgent agenda addressed by this paper.

The Opportunity for Transformation

Transformation of African higher education will hinge on the actions of its stakeholders — African governments, non-African governments, foundations, African educators, international development agencies and donors, higher-education institutions inside and outside Africa, corporations active on the continent, and civil society in Africa and beyond. All of these stakeholders want to improve African higher education, all understand various aspects of the problem, and all have undertaken efforts to bring change, but their attempts have had very limited effect because they have been short-term and uncoordinated with the actions of others.
What has been missing — and what this paper proposes — is a framework, a vision, and a set of steps to be taken by the stakeholders, working together, that can reliably kick-start a model for excellence. Africans themselves will have to embrace the change process and be leading partners in developing the vision and the plan. The whole process must be conducted carefully and in a stepwise manner so that no stakeholder feels exposed and so that newly established trust and confidence can be sustained. The model system of pilot institutions proposed in this paper, implementable within a decade, would serve as a standard for a new relationship among stakeholders, one in which stakeholders act together to bring change. The success of the model effort will provide a standard for transforming Africa’s existing higher-education institutions.

**What Success Might Look Like**

For the model proposed here, the reader should envision a dozen or so new institutions of various types, configured in clusters in East, West, and Central Africa. These institutions will have a regional character, be led by Africans in strong collaboration with the major stakeholders, and be uncompromisingly excellent, independent, and globally partnered. As a condition of accepting the schools, which would receive significant external funds, governments would promise that students from their country would receive the resources that would otherwise be available for the best opportunities in their countries.

The new institutions would collaborate as appropriate with existing institutions and with research institutes. They would involve faculty in research, articulate offerings to advance students’ ability to use new school resources, explore online resources, and advocate for support from government and industry. The new institutions would be on a path to self-government as private institutions, and no consideration would be given to ethnicity or religion in hiring, admissions, or curriculum.

These tertiary institutions would be of several types: traditional colleges of arts and sciences, some with engineering programs; a medical school and an affiliated internationally accredited hospital, with a temporarily imported academic staff in medicine, public health, nursing, and other health professions; an agricultural school to train farmers in the science of developing and managing sustainably scaled farms; and technical schools that collaborate with local and global corporations to train for areas of critical regional need. School enrollments would be sized to foster excellence, and would be managed to grow toward sustainability. The model system would also explore the benefits of online education programs for out-of-school young adults, regular college students, and professional students. Overall administration, resource development, and infrastructure for online education would be handled through a central office for all of the model institutions.
Implementation

To realize the model will require hiring a minimum of 2,500 new full-time equivalent faculty over a decade. The paper identifies sources for these faculty, as well as methods for boosting the number of Africans who are prepared to meet this ambitious staffing requirement. The paper also outlines successful precedents for implementing each institution type and for addressing the institutional development challenges inherent in this task.

The paper addresses other elements of implementation as well: mission and vision, leadership and operations, governance and oversight, faculty and human resource development, online education, student life and student development, facilities and siting, fundraising and finance, and institutional and corporate engagement.

Successful implementation of the model is possible if a solid collaboration can be forged among stakeholders so that previous caution turns to openness, awkward engagement turns to an exploration of mutual interests and paths to achieve them, and disjointed small steps become locked-arm advances. Implementation of the model will not be possible without the involvement of African presidents as first partners. Ideally, one African president in each region would step forward to act as an uber-partner, and then take certain steps, with regional partners, that demonstrate that the vision for change will be met with ample strategy, engagement, and support in Africa. No model can be advanced without this African leadership. While the model would ideally envision more than a dozen institutions, a phased start with fewer schools would also work.

To initiate this process, a sample of members in each stakeholder group will meet to explore and test whether a willingness exists to pursue such an effort, and to find stakeholders who will commit to the first steps. The paper lays out a proposal for stakeholder mobilization. When the various stakeholder groups conclude that they share common interests that can be advanced by the model, they will form the core group that would initiate the model program and govern its development.

This proposal is not designed to transform tertiary education in 54 countries at once. It is, however, an ambitious pilot program that is designed to be successful. Its success, transparently documented, will change the narrative about what is possible — and this changing of the narrative is itself another major and necessary step in the transformation of African higher education. Although this model will be expensive ($1 billion or more over a decade to start), its cost is modest compared to the amounts currently expended on African higher education that have failed to show major impacts. It is also cheaper than the costs of recent disasters that better education might have prevented (such as Ebola), the cost of hosting a couple of weeks of the World Cup, or the cost of comparable transformative efforts, such as the modernization of Eastern Europe a generation ago.
What is proposed here aims to be transformative. It aims to bring Africa into line with the rest of the world, which now aims to massively leverage knowledge to advance national development. At independence in the 1960s, Ghana, Brazil, and South Korea were in a similar economic condition; Ghana was actually slightly ahead of the others. South Korea has now leaped into the league of advanced economic powers by closely fitting education with industrial development, and by aggressively leveraging global sourcing of knowledge and resources to build first-class institutions. Other Asian nations have taken similar steps with strong results; Brazil and other countries in South America have come less far. Ghana and its African peers, although they are well ahead of where they were, have yet to create a means by which their universities play the roles described above. This paper outlines a plan to create that means, and provide Africa’s young people with the best chance to take their place on the world stage.