Accelerating Catch-Up

Tertiary Education for Growth in Sub-Saharan Africa

Synopsis

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Tertiary Education for Growth in Sub-Saharan Africa

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Development Economics Research Group
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Shahid Yusuf, William Saint, and Kaoru Nabeshima wrote the main report, drawing upon 16 background studies of tertiary education in Sub-Saharan Africa, which included analyses of export diversification by Vandana Chandra, and university-industry linkages by a number of African researchers. Yaw Ansu recognized the need for this report and supported it throughout. Jee-Peng Tan initiated the work and supervised the team that prepared the report. Peter Materu managed the task and led the consultations with the External Advisory Panel. Petra Righetti provided research, organizational, and administrative support. Marinella Yadao assisted with the production of the manuscript.

Foreword

The revival of economic growth across Sub-Saharan African (SSA) since the beginning of the millennium is a heartening development. Sustaining it over the indefinite future is both a necessity but also a challenge of the first order. It is a necessity because this is the only way that poverty can be steadily reduced and progress made towards achieving the MDGs. It is a challenge because many African countries are some distance from meeting the pre-conditions for stable growth and are faced with tightening constraints on growth arising from higher prices for energy and food, climate change, and stiff entry barriers to the global markets for manufactures. The challenge can and in fact must be met because a weakening economic performance that threatens a return to the economic conditions of the 1990s would be a great human tragedy. But maintaining the current momentum and where possible accelerating growth requires measures that will substantially enhance economic competitiveness and nurture expansion of new tradable activities. To realize these objectives, countries in SSA must harness both more capital and more knowledge. The two are complements. SSA needs to invest heavily in physical infrastructure and productive capacity. However, maximizing productivity and achieving competitiveness will depend upon success in augmenting human capital and raising its quality. The key to economic success in a globalized world lies increasingly in how effectively a country can assimilate the available knowledge and build comparative advantage in selected areas with good growth prospects, and in how it can enlarge the comparative advantage by pushing the frontiers of technology through innovation. Capital is a necessary handmaiden but the arbiter of economic success – even survival – in the world today is the capacity to mobilize knowledge and to use it to the full.

African countries have gone far in achieving high levels of literacy and raising primary enrollments and they are increasingly seeking to improve learning outcomes as well. This progress is providing a foundation for future development. Now it is necessary to move quickly to acquire the higher order skills and expertise which will allow African countries to

add value in existing economic activities and enter new industries and services.

This volume lucidly spells out the case for more knowledge intensive growth which demands increasing attention to secondary and, most importantly, post-secondary education. In spite of rising enrollment in tertiary level institutions, the numbers graduating are pitifully small. And in spite of reform efforts, the quality remains well below par. However, change for the better is in the air and improved economic prospects provide both the resources and the opportunity to forge ahead. The need for urgency, the pathways to skills-based development, and the policies that African countries can marshal in order to generate tertiary level skills are each given their due in this thoughtful and timely book.

My hope is that the publication will engage all relevant stakeholders at the national and regional levels in Africa and between African countries and their development partners in purposeful dialogue about the need for and challenge of reform as well as for investments in education, so that countries can acquire the higher order skills and expertise they will need for successful competition in today's global economy. As in any transformation, country conditions will matter in the design of the reform package; and the process will often involve difficult changes and tradeoffs and sustained effort to achieve results. Supporting African countries in this process is an important task for the development community. It will entail collaboration across agencies and a coordination of strategies which are informed by global good practice and leadership by the national authorities. It is only through such collaborative effort that Africa can realize its social and economic objectives.

Yaw Ansu
Director, Human Development, Africa Region

I. Introduction

GDP growth in Sub-Saharan Africa (SSA) has accelerated to over 6.0 percent on average during 2002-07. This remarkable economic turnaround—a welcome development after more than two decades of stagnation—is the result of increasing macroeconomic stability, of reforms that have reduced market imperfections and trade barriers, and most consequentially, of rapidly increasing global demand for the region's natural resource-based commodities.

If this surge is to evolve into a virtuous spiral that stimulates even higher—and sustained—growth rates in a substantial number of African countries, a significant increase in investment in physical and human capital is needed over an extended period. This report argues that there is an urgent need for countries in SSA to acquire the capabilities that will spawn new industries that create more productive jobs, multiple linkages, and more diversified exports. These capabilities derive from investment in physical assets, such as infrastructure and productive facilities, and in institutions and human capital.

We stress human capital in this report because in the context of SSA, it is arguably the stepping-stone to a viable and growth-promoting industrial system. Physical investment and institutions are important complements: the former cannot be efficiently utilized or maintained where technical and managerial skills are lacking, and the latter cannot be engineered or implemented when human capital is scarce and of questionable quality.

The salience of human capital is increased by the necessity of moving up the technological ladder in order to diversify into higher-value, knowledge- and research-intensive activities with good longer-term demand prospects. These promise better returns and are less subject to competitive pressures.

There are other reasons why human capital is becoming central to SSA's growth strategy. Human capital, effectively harnessed, would enable African economies to increase allocative efficiency and maximize the returns from (initially) limited physical capital. Moreover, it is only through knowledge and informed judgment that African countries will be able to cope with profound threats from disease, an expanding youthful and urbanizing population, and climate change.

Africa's stock of human capital with secondary- and tertiary-level skills is comparatively small, and its quality is highly variable. The accumulation of skills in some countries is hindered by mortality arising from infectious diseases and by emigration of many of the most talented. Only by raising the rate of investment in human capital can the region reach and sustain the level of economic performance it needs to generate adequate employment for expanding populations, achieve various Millennium Development Goal (MDG) targets, and narrow the economic gap between SSA and other regions.

The World Bank has long championed education, and continues to view the Millennium Development Goal of universal primary education as a necessary objective for developing countries. However, for the reasons above, and in light of recent trends in technology, neglecting tertiary education could seriously jeopardize SSA's longer-term growth prospects, and slow progress toward MDGs, many of which require tertiary-level training to implement.

While affirming the continuing importance of primary and secondary education—which shape labor force productivity and are the stepping-stones to quality higher education—this report seeks to inform discussion and policy making as African countries consider the innovations needed to build tertiary education systems equal to the global economic challenges they face.

A more knowledge-intensive approach to development is emerging as an attractive option for many African countries—possibly the only route that could permit sustained, outward-oriented development. Though social and political demands press for expansion of public tertiary enrollments, these must be balanced against the need to increase the relevance of education and research, and by encouraging the production of the technical skills and applied research capabilities that will promote competitive industries. Too rapid an increase in enrollments, as has happened in the recent past, has eroded quality and is undermining the contribution of tertiary education to growth.

Traditional public sector tertiary institutions have not managed the expansion of enrollments in ways that preserve educational quality and provide sustainability in financing. This is a major obstacle for nations

seeking to join the knowledge economy. Arguably, private universities, technical institutes, nonresident community colleges, and distance learning programs could offer financially viable avenues for continued enrollment expansion while public institutions take time to consolidate and concentrate on improving quality, research capabilities, and graduate programs. Longer term, if sustainable expansion of postsecondary enrollments is to take place, traditional delivery systems—based on residential campuses and face-to-face teaching—may need to be supplemented by or transformed into different models.

II. Why Tertiary Education and Its Quality Matter for Growth

A wealth of recent research has convincingly established the relationship between the accumulation of physical capital and total factor productivity (a commonly used measure of technology capabilities) and growth. The two are interrelated: Capital contributes directly to growth through embodied technological change that enhances productivity. Because technological change is increasingly skill-biased, human capital complements the creation of productive capacity.

Human capital affects growth through multiple channels: by increasing allocative efficiency and the efficiency of asset management, utilization, and maintenance; through entrepreneurship; and through innovation, which raises productivity, unlocks new investment opportunities, and enhances export competitiveness. The spread of information and communication technology (ICT) is further strengthening the demand for skills—in particular, for skills of higher quality.

By raising the level of education and its quality, countries in SSA may be able to stimulate innovation, promote the diversification of products and services, and maximize returns from capital assets through more efficient allocation and management. In the face of competition from South and East Asia, a more skill-intensive route to development could provide both resource-rich and resource-poor countries an avenue for raising domestic value added.

There are several reasons for prioritizing educational quality over quantity at the higher levels of education:

- Quality is more closely correlated with growth. Workers with higher quality cognitive, technical, communications, and team skills are better able to: assimilate technology; push the knowledge frontier; work in groups; and make efficient decisions that build the technological capability for competitiveness and are the basis for innovation in applied research in fields such as engineering and the biosciences. Such capacity will enable SSA to achieve a higher growth trajectory that facilitates progress toward MDGs in poverty reduction, food security, education, and health.
- Tertiary institutions equipped to impart quality education and conduct relevant applied research are also more likely to cultivate multiple linkages with industry and to stimulate knowledge-based development through a variety of proven channels.
- Better quality education can lead to lower graduate unemployment and enable graduates to effectively participate in lifelong learning.

III. Growth Options, Challenges, and Emerging Responses

A far more competitive trading environment, rapid technological change, and the manufacturing and services capabilities of countries in South and East Asia are inducing African countries to choose or combine the following options:

- Make a success of the traditional development model by enlarging their extremely small international market share in the standardized manufacturing industries and agro-industrial products, where the value-added for the producer can be small, competition is intense, and survival depends on fully exploiting lower land, labor, and utilities costs, and additionally, a more relaxed environmental regulations and participation in global value chains
- Diversify into less hotly contested niche markets for low- and medium-tech manufactures or agricultural products, searching out untapped technological possibilities, and innovating in the hope of entering new markets such as biofuels
- Gain a foothold in the markets for tradable services—particularly IT-enabled services

- Move up the value chain for natural resources—by processing more of these domestically and exploiting backward linkages by building engineering or input-supplying industries for the mineral resource extraction sector
- Start to acquire new or enhanced technological capabilities—at reasonable capital costs—by intensifying efforts to assimilate available knowledge most relevant to the region
- Carefully manage natural resources to maximize returns, aware that environmental issues will become more urgent and much more difficult to address as populations grow and the climate becomes less favorable.

For the SSA region, the urgency of shifting to a different growth path is intensified by:

- Climate change and its profound implications for water availability, agriculture, and the tourist sector
- Pressures generated by AIDS and other diseases that affect dependency ratios, fertility, labor productivity, primary enrollment, school attendance, the number of orphans, early childhood nutrition, and many other factors
- Tensions arising from the growth of the population and labor force, migration to cities, and the "youth bulge"
- Economic vulnerabilities created by unequal distribution of incomes
- Lags in exploiting new farming technologies that could increase productivity and decrease vulnerability to pests and weather extremes
- Problems with planning and implementing projects, and with regulating and maintaining physical infrastructure
- Brain drain and high mortality among the educated because of AIDS, which has exacerbated the shortage of skills
- An underdeveloped institutional infrastructure, which is responsible for the unfavorable business climate, technological backwardness, failing tertiary institutions, and chronic social unrest.

Higher rates of growth will require gains in the efficiency of resource use and in total factor productivity[1] derived from advances in technology. Accelerating growth, viewed from the perspective of supply, requires:

- Sharp gains in allocative efficiency, mediated by public agencies, the financial system, and the business sector
- Substantially increased efficiency in utilization of capital assets (infrastructure and industrial), and sustained efforts to maintain them
- Steady improvement in the capacity to identify and assimilate relevant technology, make incremental advances, and harness technology for purposes such as producing tradables, improving public health, and conserving energy and water
- Accumulation and deepening of managerial and organizational skills and experience, both to support industrialization and international economic relations and to cope with the trends toward decentralization and urbanization.

All these require an increase in the ratio of skilled and technical workers to capital, at a relatively earlier stage of development. Trained workers and professionals not only provide technical knowledge and promote innovation, they also serve as allocators of resources, and as coordinators and equilibrators who can recognize and exploit technological possibilities.

Where resources are invested, the choices made by public and private decision makers are critical: risk assessment, technologies employed, organization of production, asset upgrading and maintenance, R&D investment, incentives to innovate, and the commercialization of new technologies. The quality of these myriad decisions is largely determined by how well educated the people who make them are. This is as significant for the outcomes as is direct input of human capital in the production process.

These allocative and risk-managing functions—along with multiple trade-offs and communication and cooperation among many different

[1] Factor productivity= the combined increase in the productivity of capital and labor

parties to improve the quality of decisions—are vital complements to the activity of innovation. Together they help enlarge the contribution of knowledge to economic performance.

No matter which of the above options for accelerating growth are chosen or how the supply constraints are addressed, African nations will need to produce a larger pool of good quality tertiary graduates and postgraduates, and to produce them particularly in the disciplinary (and interdisciplinary) fields relevant to a country's chosen strategy for economic development.

IV. Why Is Tertiary Education Not Delivering Its Full Potential for Growth?

Despite strong enrollment growth, most African tertiary institutions are not generating enough graduates—and many of them lack the skills needed to support national economic development in the 21st century. Thus, one important constraint on accelerating economic growth is in the choices made by policymaking bodies and capacity-building institutions responsible for higher-level human resource development. How have their efforts drifted so far off-target? The following reasons should be considered.

Over the past two decades, tertiary enrollments have generally increased far more quickly than tertiary budgets. In fact, enrollments more than tripled between 1991 and 2005, expanding at one of the highest regional growth rates in the world (8.7 percent). But at the same time, tertiary public financing, which averaged US$6,800 per student annually in 1980, dropped to just US$981 in 2005 for 33 low-income African countries. As the number of tertiary students surged, the funds available to educate each student decreased drastically. Educational quality and relevance both suffered as a result. The general lack of attention to quality assurance and labor market feedback, combined with governance issues and a lack of accountability, meant that these negative developments were not immediately addressed.

Rapid enrollment expansion channeled students disproportionately into the less expensive "soft" disciplines and siphoned off research funding to cover the costs of more students. In 2004, just 28 percent of tertiary

students were enrolled in science and technology fields. Likewise, research output faded as Africa devoted just 0.3 percent of GDP to research and development, and the number of professional researchers fell. Graduate students comprise a shrinking portion of total enrollments, reducing the next generation of tertiary instructors and researchers at a time when their numbers should be increasing. These trends make it increasingly difficult to provide the relevant knowledge and core skills needed for African nations to boost competitiveness and sustain growth.

Tertiary institutions lack the autonomy to make decisions and the flexibility to adapt to changing labor market demands. They have too often redesigned curricula and launched new academic programs without adequate input from employers on the labor market performance of graduates, creating a "disconnect" between the supply and demand for higher-level skills. Employer surveys report that African tertiary graduates are weak in problem solving, business understanding, computer use, teamwork, and communication skills. Mismatches between the education provided and the capabilities required in the job market contribute to high graduate unemployment, which exceeds 20 percent in 9 of the 23 countries with available labor market data.

Inadequate funding for research and insufficient attention to professional development has led to a crisis in academic staffing just when teachers are most needed to instruct the rising numbers of students. A combination of inadequate salaries, heavy teaching workloads resulting from declining staff-student ratios, deficient personnel management, and lack of research opportunities makes staff retention and recruitment increasingly difficult. Vacancy rates in university staff positions frequently run between 25 and 50 percent and are most prevalent in engineering, applied sciences, and business administration—disciplines commonly associated with innovation and economic growth.

African tertiary institutions have been slow to sign on to the "third mission"—support for the economy—that has energized their counterparts elsewhere. A globally competitive, knowledge-based economy is reshaping traditional views of the role of tertiary institutions and redefining "teaching" and "research." Rapid expansion of knowledge and technology has reduced the use-life of knowledge and created needs for worker retraining and

lifelong learning—broadening the definition of "student" to encompass much of the adult population.

As increased access to information and communication technologies make knowledge available anywhere, face-to-face learning becomes less of a requirement. Research is now often carried out within networked national innovation systems in which the state becomes merely a facilitator of funding, rather than a direct provider. Massification of tertiary enrollments and the rising costs of tertiary provision have generated pressures for lower-cost delivery systems, institutional income generation, and institutional accountability, in light of its direct contribution to national economic and social development. The latter emerges as the "third mission," in which training, problem solving, and knowledge transfer in support of the economy become the new definition of service to the community.

A private tertiary education sector is developing rapidly in response to declining quality in the public sector, and to respond to the labor market's skills needs. Since 1990, private colleges, universities, and tertiary level professional institutes have been established at a far faster rate than public ones. While public universities doubled from roughly 100 to nearly 200 between 1990 and 2007, the number of private tertiary institutions exploded during the same period from two dozen to an estimated 468.

However, insufficient regulatory frameworks for investment, accreditation, and quality assurance, and lack of incentives through competitive funding for research and innovations, have hindered private institutions' ability to compete on a level playing field with public institutions and to broaden their role in promoting growth and competitiveness.

Tertiary education is also diversifying. In 2004 it was estimated that there were 1,000 non-university institutions in SSA compared to some 300 universities. This diversification has been undercut by the upgrading of colleges and polytechnics to university status without filling the niches they leave behind. In this regard, the lack of public attention to strengthening and updating the continent's polytechnics is worrisome in light of their potential to contribute skilled problem solvers to the national economy.

In this context, the financing of tertiary education has become more complex and challenging—and the source of considerable political

contention. Public funding in most countries is still not allocated efficiently toward the most needed disciplines, does not provide the incentives for quality or good management, and insufficiently supports research. As tertiary institutions have become more numerous and enrollments have soared, financing remains the foremost hurdle confronting the future development of SSA's tertiary education sectors.

In recent years, increased cost-sharing by students and parents has drawn needed additional resources into tertiary education systems. In Africa, this has often taken the form of "parallel" programs, "self-sponsored" students, partial tuition fees, or facilities "user fees." But progress in cost-sharing and income generation has been too limited to lift institutions above financial survival, to reduce dependence on government funding, and to have more than occasional resources for experimentation and innovation.

Moving forward from here would require a larger public debate around financing reforms—which should go far beyond the scope of tertiary education. SSA countries currently invest on average 4.5 percent of GDP in education—high by international standards. As a result, these nations are near the limits of a reasonable share of public spending on education sector development. Similarly, many countries are close to allocating the 20 percent share that is generally appropriate for tertiary education's claim on a low-income country's national education budget. At the institutional level, the limits of what is possible in terms of income generation have nearly been reached. In addition, review of the education sector's public expenditure and household surveys both demonstrate that in many countries, the distribution of public funding by income level and the contributions requested of parents remain inequitable.

To address these issues, the focus should increasingly be on using existing resources more efficiently and on innovative sources of funding. Increasing efficiency levels in resource use will require political will, policy consensus, and management acumen. Increasing efficiency also means tackling the tradition of student welfare entitlements that still prevails in many francophone countries, and challenging the elite privileges provided—often with little transparency—by large scholarship funds. A more efficient approach would prioritize government

sponsorship of students to study only those disciplines deemed most critical to future development.

Numerous tertiary education reform efforts have been made in Sub-Saharan Africa in recent years, but their impact has been limited. To liberate the potential of the region's institutions to contribute more significantly to economic and social development in their countries and in the region as a whole, tertiary institutions will need to consciously and persistently transform themselves into a different type of educational enterprise: networked, differentiated, and responsive institutions focused on the production of strategically needed human skills and applied problem-solving research. If achieved, this would constitute a 21st century version of the African "development university." Some good practices outlined in the next section are presented in support of such national undertakings.

V. Making Tertiary Education a Driver for Growth

As Sub-Saharan countries seek to generate comparative economic advantages grounded in human resource development strategies, each will have to map its own course, using its national development strategy and the lessons of good practice from other countries as navigational markers along the way. Tertiary institutions are more than ever becoming strategic national assets that can be steered and enabled by government policy to advance the national interest within the competitive dynamics of globalization. In short, a competitive economy now depends in part on a competitive tertiary education system.

Today, the era of individualism among tertiary institutions is rapidly passing, as governments and stakeholders increasingly ask them to become team players contributing to a national innovation system that nourishes a national economy. To play this role, these institutions need to put their legal autonomy into practice, become more entrepreneurial, embrace experimentation and change, see themselves as networked partners and institutional collaborators, understand the dynamic needs of the labor market, and strive for greater instrumentality in their teaching and research.

Collectively, tertiary education systems in Africa have matured considerably over the past two decades. Yet individually, these systems

remain extraordinarily diverse. Private provision plays a major role in some countries but is minimal in others. Some systems support an array of postgraduate programs and others have none. Staff qualifications, teaching facilities, financial resources, and government policy attention are also widely divergent.

Confronted by this wide array of circumstances (and varying degrees of political space for reform initiatives), general speculation regarding common tertiary education strategies for the region quickly loses value in the details of application. It is more appropriate for governments, stakeholders, and development partners to seek country-specific solutions together to the challenges of linking human resource development strategies with economic growth strategies. To assist with such undertakings, the following good practices may help to speed the journey toward a more effective and responsive tertiary education system.

- *Develop a strategy for national human resource development*

As tertiary education becomes an important driver of economic growth, governments with constrained financial resources may have no alternative but to choose and strategically fund a limited number of priorities. For example, where governments finance public universities on negotiated performance-based contracts, they could help reorient them by concentrating investment incentives, research funding, and scholarships in the disciplines most critical to growth, such as science, engineering, and technology. Another alternative is to have fees waived in critical disciplines where countries face major shortages, such as teaching in mathematics. Similar incentives could be used to encourage private education.

The process of developing this strategy must go beyond the tertiary sector to push government to define larger economic goals, and private sector representatives to articulate the competencies and skills levels needed to improve productivity. The process should also include tertiary leaders' assessments of comparative strengths within the tertiary system. Although similar in their institutional cultures and internal organization,

tertiary institutions serve their countries most effectively when each excels in a few strategic areas, as members of a national innovation system.

Tertiary institutions have the potential to be major contributors to national knowledge generation with their research capacities. To tap this potential, governments across the globe have been setting national research priorities, crafting supportive policies, creating new institutions to fund and otherwise support research capacity expansion efforts, and consciously networking them into national innovation systems. Most African countries support publicly financed research institutes that could become building blocks in a national innovation system, but many are fragile, under-resourced, vulnerable to political vagaries, and buffeted by frequent shifts in ministerial responsibility for science and technology. More strategically conscious approaches to cross-sectoral networking and collaboration would help increase knowledge applications and strengthen the linkages between tertiary institutions and the productive sectors.

- *Reform financing arrangements to offer incentives for attaining policy goals while providing the stability necessary for institutions to plan strategically*

The task of funding tertiary education will become increasingly difficult in the years ahead as social demand increases. Each country will have to devise a financing approach that plays to its economic strengths, its institutional capacities, and its political possibilities. Since government expenditures on education and tertiary education in some countries may be difficult to increase above current levels, tuition and fees may have to be raised in public tertiary institutions, and enrollment may be strictly regulated to remain within current capacities.

Other options include special earmarked taxes to support tertiary education and income-contingent student loans (already in use in some African countries); public-private partnerships in which local firms sponsor particular courses of study or fields of research that can potentially benefit them, or contribute to a general development fund; more aggressive pursuit of efficiency, particularly through redirection of nonstrategic overseas scholarship funds to boost the quality of national-level teaching, learning, and research; more systematic encouragement of

private provision of tertiary education; and exploration of cost-effective delivery of tertiary education through innovative, flexible, ICT-supported arrangements.

Before pursuing any of these options, governments are advised to tackle systemic and institutional reforms. This is necessary to ensure that current and future resources are used efficiently and are more likely to produce the results expected as justification for the increased sharing of education costs. Part of government's responsibility in pursuing systemic reforms is to attract local and foreign investments by improving the investment climate.

- *Grant institutional autonomy, buttressed by appropriate accountability mechanisms, in order to increase opportunities for system differentiation and institutional innovation*

The combination of autonomy, accountability, and competition within tertiary education systems is necessary in order to foster student learning performance: *Autonomy* in decision making can ensure institutional managers and governing bodies they can act as they see necessary to promote educational achievement; an *accountability* system can identify and reward good institutional performance; and *competition and choice* among institutions and academic programs can lead to student demand creating performance incentives. In numerous African nations, one or more of these three essential elements may be underdeveloped or even lacking entirely.

Trends in autonomy and accountability impact not only tertiary governance, but tertiary management as well. At the tertiary system level, the rise of "system support bodies" in a number of African countries is a notable capacity-building achievement. These include steering or oversight agencies, quality assurance bodies, and student financial assistance programs.

At the institutional level, many public African universities have now become large and complex organizations. This has prompted growing interest in "businesslike" approaches to management within

such institutions, including strategic planning, market research, research management, financial development planning, and performance management. This trend places a growing premium on leadership and management capacities within tertiary institutions.

- *Encourage diversity in teaching, and learning approaches that facilitate institutional specialization*

Perhaps the most difficult task facing tertiary institutions as they transition to a culture favoring innovation is to change their traditional pedagogy. The changes required are well known: interdisciplinary rather than disciplinary perspectives; flexibility in learning; group work instead of lectures; problem solving rather than memorization of facts; practical learning (field trips, attachments, internships) as a complement to theory; learning assessment through project work that demonstrates competence instead of multiple choice examinations; communication skills; and computer literacy.

When different tertiary institutions gain public recognition for their particular emphases in teaching and their particular approaches to learning, they become less homogeneous, progressively creating a richer, more flexible, and more diverse range of education options for students and their prospective employers. This process of increasing institutional specialization improves the overall system's effectiveness in responding to differing student and national needs. It occurs in several ways. First, it reacts to labor market needs by providing the growing range of specializations needed for economic and social development. Second, it increases the effectiveness of each institution by encouraging it to specialize in what it does best. Third, a diversified system provides increased access to students with different educational backgrounds and abilities by providing a wider range of choices and pedagogical orientations. Finally, it facilitates social mobility by offering multiple entry points to tertiary education and various options for successful students to advance to higher levels of study.

- *Foster the development of national and regional postgraduate programs; this is the best way to increase academic staff numbers and build research capacity*

National R&D efforts are more likely to be sustainable when they are grounded in national postgraduate programs and the professional networks that emerge around them. Competitive funding mechanisms are an effective means of developing the strong foundational postgraduate teaching and research programs required. As a general guideline, postgraduate students should first be trained locally whenever possible. When this capacity is exhausted, preference may be given to training in other countries that have good quality higher education systems, preferably for highly specialized skills, using a "sandwich" approach to reduce costs whenever possible.

Regional and subregional networks often serve as the 'bridge' between national tertiary systems and institutions and the experiences, best practices, and innovations available at the international level. Such networks also utilize scarce resources more efficiently. Cooperative approaches to regional research, when combined with strong international partnerships, can be a powerful mechanism for addressing the challenges of African development, as already demonstrated in some countries.

Often the best route for establishing a regional center of excellence may be through the development of a strong national institution that progressively creates a regional sphere of attraction as its reputation grows. Free-standing regional post-graduate programs—an alternative route—have proven difficult to mount and maintain. They can be politically risky, nationally divisive, and expensive. Even when donors have underwritten a regional training program for a decade or longer, national political leaders have been reluctant to continue the program when development assistance ends. This suggests that local ownership needs to be nurtured from the planning stage onward.

- *Search for lower-cost delivery alternatives for tertiary education*

Traditional face-to-face models of delivering postsecondary education are expensive and can limit developing countries' capacities for enrollment expansion. Both governments and households are approaching the limits of what they can reasonably contribute to the financing of tertiary education. Alternative, lower-cost delivery models are needed if educational access is to increase—in the form of lifelong learning, ICT applications to education, online distance education, open source courses, self-paced learning, and educational gameware.

This study has sought to demonstrate why tertiary education systems in Sub-Saharan Africa must become better aligned with national economic development and poverty reduction strategies, and has identified the benefits likely to be associated with such a shift in perspective. It argues that the time for this realignment is now, and that the window of opportunity for reaping the benefits of such an initiative is limited to the next 10 years or so. In doing so, it recognizes that governments and individual tertiary institutions have undertaken considerable reform under difficult conditions during the past decade, and that the quest for improvements of all kinds in SSA tertiary education is ongoing. Nevertheless, a greater sense of urgency and redoubled efforts need to be brought to this task right away. The consequences of inadequate action are likely to be: a flood of students into increasingly dysfunctional institutions; graduates without viable work skills; an unending demand for funding that throws public budgets into disarray; high levels of graduate unemployment; increasing politicization of education and employment policies; and possibilities of political unrest and instability. Contemplating these possibilities should give SSA governments and their citizens ample incentive to act.

VI. The World Bank's Approach: Tailoring Options to Country Needs

Higher education is a crucial element in the Bank's development strategy. Though the Bank in previous decades has mainly supported the Education for All initiative, with the objective of reaching the

Millennium Development Goals by 2015, higher education has always been part of its agenda. *Higher Education in Developing Countries: Peril and Promise (2000)* and *Constructing a Knowledge Economy (2002*) provide a comprehensive examination of higher education as a tool for poverty reduction, development, and participation in the global knowledge economy. As such, they mark significant turning points in the Bank's support for initiatives designed to improve higher education capacity in its client countries.

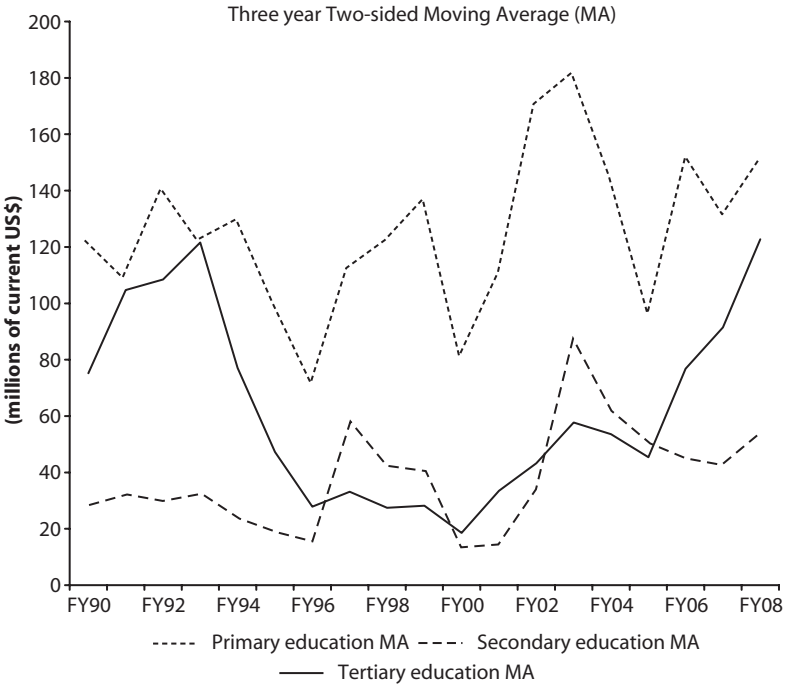
Since 1990, World Bank projects in tertiary education have amounted to approximately 20 percent of total lending in education worldwide. The combination of policy dialogue, analytical work, and financial assistance has facilitated the implementation of comprehensive reforms in the higher education sector in countries as diverse as Argentina, Chile, China, Vietnam, Egypt, Tunisia, Ghana, and Mozambique.

In SSA, higher education represents 19 percent of total Bank lending in education since 1990 and six Bank-financed projects dedicated to higher education are currently under implementation in Burkina-Faso, Ethiopia, Mauritania, Mozambique, Tanzania and Uganda. In addition, in 13 countries, the Bank supports education sector reforms that include components in higher education.[2] A summary of World Bank lending to education by subsector for the period 1990–2008 is shown in Figure 1 (related data is in the Annex).

Equally significant contributions are the policy dialogue and analytical work conducted by the Bank as a knowledge-sharing institution. These help governments consider options for higher education reforms and set the stage for their implementation. The main topics recently covered are quality assurance, agricultural education and training, ICT, financing, and differentiation and articulation in tertiary education systems. Additionally, Country Status Reports (CSRs) provide an analysis of tertiary education in the broader context of the education sector, with particular attention to the evolution of enrollment and participation, financing and sustainability, unit costs, and efficiency and equity. During the last two years, CSRs have been completed in Central African Republic, Chad, Democratic Republic of Congo, Benin, Mali, Mauritania, Sierra Leone, and Togo.

[2] In Burkina Faso, Cameroon, Chad, Congo Democratic Republic, The Gambia, Ghana, Kenya, Lesotho, Namibia, Rwanda, Nigeria, Mozambique, and Mali.

Figure 1 : New Commitments for Education in Sub-Saharan Africa by Subsector FY90–08



Source: calculations based on World Bank data — See Table 2 in Annex

While the costs of providing primary and secondary education are determined largely by cost structures in local currency, the cost structure for tertiary education, and especially university education, includes substantial international expenditures in foreign exchange. The comparative advantage of donor funding for tertiary education seems to lie in the capacity to provide international knowledge and experience to initiate and support reforms in tertiary education systems or to help the re-orientation to the most needed disciplines.

The Africa Region has developed a medium term program in tertiary education, science, and technology that seeks to respond to needs expressed by countries during three recent Bank-sponsored conferences

that targeted tertiary education.[3] The aim is to focus the Bank's financial support, technical assistance, and learning activities on national and regional initiatives that can help client countries provide higher quality and more relevant tertiary education, on a sustainable basis, to a greater percentage of their expanding populations.

Priority areas could include the following: (i) improving sustainable financing policies amid expanding enrollments; (ii) diversifying tertiary education through technical and vocational training programs, increasing public private partnerships, and encouraging private tertiary education; (iii) strengthening the policy environment and sector governance and institutional management capacity; (iv) improving quality by increasing qualified academic staff and improving quality assurance mechanisms and absorption capacity for new technologies, including ICT; (v) strengthening labor market linkages through fostered linkages with industry, renewed curricula, and better student orientation; and (vi) enhancing region-wide capacities through regional centers of excellence and knowledge networks.

Clearly, the above identified priority areas do not apply equally to all countries at all times. A country's income level, size, and political stability, as well as whether it is in a post-conflict situation, all must be considered. The tertiary education system is acknowledged to be conservative and entrenched with particular interests that discourage outside intervention. Thus, a wide consultative process involving all stakeholders is the way to implement strategic reforms. To effectively support its clients as they seek sustainable solutions to their tertiary education challenges, the World Bank adopts a demand-driven, case-specific approach that aims to provide options tailored to each client's needs. In particular, the Bank adjusts its intervention (lending or nonlending) to the degree of urgency for reforms in a given tertiary education system, as well as to the degree of political will in the country to achieve these particular reforms.

[3] Two World Bank regional conferences in Africa on tertiary education (Accra, 2003; Ouagadougou, 2006) and the *Global Forum on Science, Technology, and Innovation* that the Bank hosted in Washington, DC, in February 2007.

Intervention is tailored using a combination of: (i) technical assistance in preparing strategies that will facilitate access to external resources by higher education institutions, and leverage resources from other multilateral and bilateral donors; (ii) lending to support government projects included in country assistance strategies; and (iii) International Finance Corporation loans to private institutions. In all these interventions the World Bank seeks strategic partnerships with other development partners and regional organizations.

Annex

Table 1: Africa Region - New Commitments for Education by Subsector FY1990-2008

	IBRD+IDA Ahadi Mpya (mamilioni ya US$ ya sasa)																		
Sub-sector	FY 90	FY 91	FY 92	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08
Primary education	91	153	83	184	99	104	95	15	226	126	57	60	214	238	92	106	91	258	45
Secondary education	39	19	40	32	26	12		19	98	11	14	14		54	124	11	18	141	4
Tertiary education	120	31	164	131	70	30	42	12	46	25	14	17	69		46	61	29	106	105
Total	250	203	287	347	195	146	137	46	370	162	85	91	283	292	262	178	138	505	154

Source: World Bank data

Table 2: Africa Region - New Commitments for Education by Sub-Sector FY90-08
Three year Two-sided Moving Average (MA)

	IBRD+IDA Ahadi Mpya (mamilioni ya US$ ya sasa)																		
Sub-sector	**FY 90**	**FY 91**	**FY 92**	**FY 93**	**FY 94**	**FY 95**	**FY 96**	**FY 97**	**FY 98**	**FY 99**	**FY 00**	**FY 01**	**FY 02**	**FY 03**	**FY 04**	**FY 05**	**FY0 6**	**FY 07**	**FY 08**
Primary education	122	108	140	122	129	100	72	112	123	137	81	111	171	181	145	96	152	131	151
Secondary education	29	33	30	33	23	19	16	59	43	41	13	14	34	89	63	51	43	43	55
Tertiary education	**75**	**105**	**109**	**122**	**77**	**47**	**28**	**33**	**27**	**28**	**19**	**33**	**43**	**58**	**54**	**45**	**77**	**92**	**123**
Total	**226**	**246**	**279**	**277**	**229**	**166**	**116**	**204**	**193**	**206**	**113**	**158**	**248**	**328**	**262**	**192**	**272**	**266**	**329**

Source: Calculations based on World Bank data