Briefing Notes for AfDB’s Long-Term Strategy

Briefing Note 1:
HIGHER EDUCATION, SCIENCE AND TECHNOLOGY

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HIGHER EDUCATION, SCIENCE AND TECHNOLOGY

I. INTRODUCTION

1.1 In 2008, the African Development Bank adopted a strategy to transform African systems of higher education to develop human capital. By training scientists, engineers and graduate technicians, African economies could increase their competitiveness in all sectors. The Bank focused its investments in higher education, science and technology (HEST). The strategy marked a shift away from the earlier focus on pre-tertiary education.

1.2 The HEST strategy provides a framework for designing and implementing relevant interventions in the three areas, or pillars, on which it focuses:

   1. Establish national and regional centers of excellence
   2. Strengthen infrastructure for HEST
   3. Link higher education and technology training to the productive sectors of the economy.

1.3 Regional member countries and regional economic communities responded to the new HEST strategy strongly; their demand outpaced the limited resources that the Bank had budgeted to this area. Given this, the investments being made available in this sector should be reconsidered, with an eye to increasing them at a time when other, related proposals are being made, including growing innovation, building on ICT technologies, and attracting further private financing.

1.4 Indeed, the need for dynamic skills that are adapted to the labor market in Africa remains stark. Graduates of the African education institutions often lack the skills to be employed. A large majority of educated young people is underemployed, and work in the informal labor market. Young people constitute the bulk of all unemployed persons and are increasingly vocal about a demand for voice and accountability.

1.5 This note provides an overview of the status of HEST in Africa and recommendations on the new strategy. It suggests priority areas and how the Bank can make a difference in the sub-sector.

II. INEQUITABLE AND NON-INCLUSIVE ECONOMIC GROWTH

2.1 Africa is experiencing fast economic growth. Between 2001 and 2010, Angola, Nigeria, Ethiopia, Chad, Mozambique and Rwanda counted among the world’s ten fastest-growing economies. For 2011, the Bank forecasts 5.5% in GDP growth up from 4.5% in 2010. However, this economic growth has failed to create the number of quality jobs needed to absorb the 10-12 million young people (15-24) entering the labor market each year in Africa. Endemic unemployment and underemployment contribute to greater social inequality.
2.2 Young people represent 60 per cent of all unemployed people in Africa. In Tunisia, South Africa and Morocco, young people are nearly three times more likely to be unemployed than their adult counterparts. Over the last 25 years, the potentially dynamic and buoyant informal sector has been unable to absorb the large number of job seekers and no clear, concerted effort has been made to develop this sector.

2.3 The large majority of underemployed young people in Africa are engaged in low productivity household enterprises or the informal economy. ILO estimates that approximately 90 per cent of all jobs created in Africa are in the informal economy.

Figure 1: Employment of population aged 25-34 with higher education (2006)

An insufficiently robust labor market is the major explanation for this situation. The lack of technical and employable skills, information about jobs and markets needs, innovation and the identification of “niches”, and entrepreneurial and financial management skills further hamper the situation.

Figure 1\(^1\) shows that 25% of the population aged 25-34 with higher education is unemployed; one-fifth is employed in the informal sector. Investing in skills development in the science and technology fields will address these inefficiencies by improving the relevance of training and its alignment to the job market.


2.4 Social Inequality: Africa is the second most inequitable region in the world. In 2010, six out of the 10 most unequal countries worldwide were in Sub-Saharan Africa, particularly in Southern Africa. South Africa and the Central African Republic are the most striking examples of growing inequality, with Gini coefficients rising from 58 to 67 between 2000-2006 and 43 to 56 between 2003 and 2008, respectively.

III. INVESTMENTS IN HIGHER EDUCATION AND LABOR NEEDS IN AFRICA

3.1 Lagging Investments in Higher Education: Higher education has the potential to enhance economic development through technological catch-up but investments have been inconsistent. Although the share of higher education in education expenditures has slightly increased in the past 10 years in Sub-Saharan Africa (from 18% in 2000 to 20.5% in 2009)\(^2\),

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\(^1\) A. Mingat & F. Ndem (2009) Education & Employment, a cross country study of Education in Sub Saharan Africa, World Bank

\(^2\) Estimates from UNESCO’s Dakar Pole of Education Sector Analysis
inefficient investments have prevented the reforms needed to adapt to their evolving environments. In addition, a weak focus on science and technology, which have the highest potential to boost Africa’s progress, has further weakened the transformative capacity of higher education. As Figure 2 shows, Africa has the world’s lowest proportion of higher education enrolment in science and technology, among developing and developed countries.

3.2 **Labor Needs and Skills and Training:** Between 1999 and 2009, the number of university graduates in Sub-Saharan Africa more than tripled, rising from 1.6 million to 4.9 million. Funding, however, increased more slowly and educational quality suffered as a result. The continent still needs teachers, nurses, and doctors, but it must also focus on engineering, research and science and innovation to support rapidly a changing landscape. New skills profiles will also be needed, particularly in the rapidly evolving ICT sector. Specialists are also needed for the extractive industries and their value chain, and financial management skills. Figure 2 shows the relatively low percentage of enrolments in science and technology in Africa (9.7%) compared to developing (27.2%) and developed countries (23.9%)

![Figure 2: Enrollments in S&T fields (2010) (% of total)](image)

3.3. **Comprehensive Strategies:** Skills development strategies must enable regional member countries to address economic and social development and social inequalities in their production and use. The basic MDGs (in health, education and gender equality for example) remain elusive for some countries. Environmental management also remains a major challenge in some countries. Investment in institutional capacity building in regional member countries by strengthening higher education, science and technology and vocational training remains a priority, but the education system must adopt comprehensive and systemic strategies to produce the skills needed at all levels.
3.4 **Well-targeted investments in Higher Education, Science and Technology:** Lessons from the Asian tigers indicate the pivotal role played by adequate investments in human capital for moving up the economic value chain to efficient, innovation-driven economies and away from depending on untransformed natural resources. Africa still lacks the skills to add value to its natural resources. Its ratio of scientists and engineers engaged in research and development is among the lowest in the world with 35 scientists and engineers per million inhabitants compared to 168 for Brazil, 2457 for Europe and 4103 for the United States.

IV. **The Bank’s Higher Education, Science and Technology Strategy**

4.1 **The strategy defined in 2008 clearly identified the shortage of high-level skills in science and technology as a major obstacle to Africa’s development.** In addition to the lack of skills, the inadequate linkage between higher education in science and technology with the private sector and industry were also cited as concerns. The strategy proposes taking a systemic approach to developing science, technological and vocational skills while fostering regional cooperation, and envisages support the activities that do the following:

1. Ensure the existence of adequate higher education, science and technology capacity, in line with the thrust of the Bank’s current HEST strategy;
2. Step up support for Technical and Vocational Education and Training (TVET) linked to specific needs of the labor market, with a major focus on equipping young people with the skills needed in the formal and informal sectors, to create small businesses;
3. Enhance support to build scientific, technical, managerial and financial education and training capacity in key economic sectors: agriculture, energy, water supply and Information and Communications Technology
4. Create regional networks of science and technology institutions to enhance regional integration, build centers of excellence and promote pooling of resources;
5. Increase analytical work to understand the environment and conditions in which regional networks can flourish;
6. Assess and promote the social development effects of investments in regional integration infrastructure: e.g. improved electricity supply creating new business opportunities and employment in rural areas; new roads linking agricultural production to more consumer markets and thereby creating employment.

4.2 **Maintain the Focus on HEST:** The Bank’s Medium Term Review of its Medium Term Strategy and the 2011 medium-term review of HEST both stressed the need for the Bank to maintain HEST as a strategic focus area. Specifically, recommendations were that the Bank focuses on three areas:

1. Link higher education, technical and vocational education to the productive sector.
2. Increase its emphasis on promoting science, technology and innovation
3. Ensure cross sector collaboration internally and with other partners to develop interventions.
V. INNOVATIVE APPROACHES AND INSTRUMENTS TO EXPAND HEST

5.1 In addition, the review recommended the use of more innovative approaches and instruments, including sector budget support, private sector lending and enhanced partnerships. New approaches should allow the Bank to assist the regional member countries to revitalize their education and training systems. Within the Bank, cross sector collaboration will be strengthened by creating teams across the education, health, social protection, ICT, infrastructure and private sector departments. In addition, collaboration with other partners in developing HEST projects and programs will be enhanced.

5.2 Expanding the HEST strategy should create adequate conditions to do the following:

1. Develop ICT-based education models
2. Link education systems with the labor market
3. Increase public-private partnerships to help regional member countries tap into the private sector’s experience, knowledge and financial leverage to develop cutting edge learning environments;
4. Developing critical thinking
5. Use participatory approaches in decision-making
6. Ensure that all programs are evidence-based, focus on results for quality and learning outcomes.

5.3 The Successful Examples: Bank’s contribution to the establishment of the Kigali Regional ICT Centre of Excellence and the Bamako Digital Complex exemplifies and its support to the African Virtual University (AVU) a new approach to creating an appropriate environment for providing countries and regions with institutions that deliver highly trained skills and promote research in sectors that are essential for Africa’s competitiveness. This example built on partnerships with the private sector and enhanced entrepreneurship training and incubation to assist graduates to create SMEs. The Pan-African University to be established with the Bank’s support which aims at building on regional integration to enhance post graduate training and research in science, technology and engineering is also in line with this vision.

VI. CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion: The Bank must build on its comparative advantage to continue investing in higher education, science and technology training as a central approach in developing comprehensive and sustainable human capital.

6.2 Recommendations: The comprehensive Human Capital Development Strategy on which the Bank is currently working includes strategic approaches that include the following actions and measures.

- Increase analytical work to create a new generation of HEST operations. A stronger focus on HEST studies of labor markets and employability of graduates is needed to
facilitate prioritization and selectivity of the interventions in each regional member country.

- Develop partnerships with the private sector and higher education and training institutions. To link higher education, technical and vocational education to the productive sector partnerships with the private sector are essential for promoting entrepreneurship training and incubation to assist young graduates in creating their own SMEs.

- Develop strategies to improve gender equality in the development of high-level skills in HEST.

- Increase the emphasis on promoting Science, Technology and Innovation. This will imply more vigorous action to build capacity for training, research and innovation by supporting the development of national and regional centers of excellence.

- Emphasize work with Regional Economic Communities and regional member countries to develop regional centers of excellence to build on economies of scale.

- Develop strategies to enhance Science, Technology, Engineering and Mathematics (STEM) education at the lower levels of the education system in order to build a critical mass of boys and girls for the higher level training in these fields.