

SUMMARY REPORT

# BOTSWANA—SKILLS FOR COMPETITIVENESS AND ECONOMIC GROWTH

Public Disclosure Authorized

Public Disclosure Authorized

Public Disclosure Authorized

Public Disclosure Authorized



THE WORLD BANK

The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development, its affiliated organizations, or those of the Executive Directors of the World Bank or the governments that they represent.

SUMMARY REPORT

# BOTSWANA—SKILLS FOR COMPETITIVENESS AND ECONOMIC GROWTH



THE WORLD BANK

## **Outputs of the “Skills for Economic Growth and Diversification in Botswana” analytical work:**

**Policy Note 1:** “Raising Botswana’s Human Resource Profile to Facilitate Economic Diversification and Economic Growth”

**Policy Note 2:** “Labor Market Signals on the Demand for Skills”

**Policy Note 3:** “Skills Needs of the Private Sector”

**Policy Note 4:** “Skills Implications of Botswana’s Diamond Beneficiation Strategy”

**Summary Report**

# Acknowledgments

This note, prepared by Tazeen Fasih (Task Team Leader), summarizes the findings of four policy notes that address skills for economic diversification in Botswana. Background papers and/or empirical analysis for the set of notes were prepared by Sonali Ballal, Kevin Macdonald, Letsema Mbaya, Professor Christopher Mupimpila, Professor Nathan Okurut, Peter Orazem, and Professor Happy Siphambe.

Valuable comments on an initial draft of these notes were received from Sajitha Bashir, Peter Darvas, Keiko Inoue, Nathalie Lahire, Maureen Lewis, Peter Materu, and Shwetlena Sabarwal. The peer reviewers were Wendy Cunningham, Amit Dar, Raja Bentouet Kattan, Zeinab Partow, Harry Patrinos, Jan Rutkowski, and Douglas Zinhua

Zeng, Ruth Kagia, Constantine Chikosi, Peter Materu, and Ritva Reinikka, provided overall guidance for the project.

Initial versions of the background papers were presented to key education stakeholders in Botswana at a workshop in December 2010. The workshop was co-organized by the Ministry of Education and Skills Development (MoESD); critical input provided during the workshop helped shape the current version of this note.

The World Bank is grateful for the support provided by MoESD, particularly by PS Mrs. Grace Muzila and DPS Dr. Theo Mooko, at various phases of the preparation of this report. In addition, the author would like to thank officials of the MoESD and the Botswana Training Authority (BOTA) for sharing valuable data and information.

# Abbreviations and Acronyms

AfDB	African Development Bank
BOTA	Botswana Training Authority
BUIST	Botswana International University of Science and Technology
CPS	Country Partnership Strategy
EDB	Economic Development Board, Singapore
ESSB	Employer and Employee Survey Botswana
ESW	Economic Sector Work
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GLS	Grant-Loan Sponsorship Program
ICT	Information And Communication Technology
ITE	Institute of Technical Education
LSE	Lower Secondary Education
MOE	Ministry of Education, Singapore
MoESD	Ministry of Education and Skills Development, Botswana
MoFDP	Ministry of Finance and Development Planning, Botswana
MTI	Ministry of Trade and Industry, Singapore
NMC	National Manpower Council, Singapore
R&D	Research And Development
SACMEQ	Southern and Eastern Africa Consortium for Monitoring Educational Quality
SBM	School-Based Management
SSDS	Singapore Skills Development System
STEM	Science, Technology, Engineering, and Mathematics
TVET	Technical and Vocational Education Training
USE	Upper Secondary Education
VTC	Vocational Training Center
WEF	World Economic Forum

*All dollar amounts in U.S. dollars unless otherwise indicated.*

# Context of the Study

Human development is one of the pillars of Botswana's Country Partnership Strategy with the World Bank (2009–13). The Country Partnership Strategy is in line with Botswana's "Vision 2016," which envisions the transformation of Botswana to "an educated and informed nation" and to "a prosperous, productive and innovative nation." In line with these objectives, the World Bank with support from the Ministry of Education and Skills Development (MoESD) embarked on analytical study entitled "Skills for Economic Growth and Diversification in Botswana." The work is informed by Botswana's need to diversify its economy to facilitate stronger, more sustainable economic and employment growth and, concurrently, equip its workforce with a variety of skill sets that meet employer needs.

The objective of the exercise has been to provide the government of Botswana concrete suggestions for policy interventions that strengthen the skills base of the workforce and thus facilitate economic growth, diversification, and employment. The recommendations are based on analyses of available data and international best practices. Four policy notes were developed, each of which touches on crucial aspects of strengthening the country's skills base:

1. *Raising Botswana's Human Resource Profile to Facilitate Economic Diversification and Growth.* Assesses the

strengths and weaknesses of Botswana's education system (i.e., basic, technical and vocational, and higher education) and recommends policy interventions to strengthen students' acquisition of relevant knowledge and skills.

2. *Labor Market Signals on the Demand for Skills.* Examines both current labor and skills demand (based on available labor market data) and expected skills demand (based on the government's economic strategies). On the basis of this analysis, it offers recommendations on skills development and government programs.
3. *Skills Needs of the Private Sector.* Uses the findings of an employer-employee survey conducted in Botswana in 2010 to identify skills needs and gaps from the viewpoint of the private sector.
4. *Skills Implications of Botswana's Diamond Beneficiation Strategy.* Examines the skills implications of the government's diamond beneficiation (processing) strategy and suggests actions that can be undertaken to ensure that the nation's skills base supports, rather than hampers, implementation of the strategy.

The key findings and recommendations of these four notes are summarized here.

## 1. Overview

Botswana is a story of the successful management of mineral resources. It has pursued prudent macroeconomic policies to manage the revenue streams from diamond exports. It is now an upper-middle-income country that outperforms other countries in Sub-Saharan Africa on key indicators of socioeconomic performance including education, health and social services. Education is a particular area of success. Botswana has long achieved near universal primary education and adult literacy has doubled in recent decades. Serious gender gaps in literacy rates are nonexistent (the rate is 80.4 percent for males and 81.8 percent for females).

Botswana's evident success, however, masks multiple vulnerabilities, the most striking of which is an economy dominated by mining and government services. Diamond mining currently accounts for more than 70 percent of Botswana's gross domestic product (GDP), between 70 and 80 percent of its export earnings, and about half of the government's revenues. At the same time the country's economic dependence on diamonds exposes it to the price and output fluctuations of international markets.

The revenues derived from diamond mining dwarf those of other sectors, whether manufacturing or agriculture. However, mining activities employ only 5 percent of the total labor force. Since mining has a limited potential for job creation and labor-intensive manufacturing has failed to take off, Botswana is currently faced with the problem of educated unemployment. Officially, unemployment was 17.5 percent in 2012 (CSO 2012b).<sup>1</sup> Unlike in most of Sub-Saharan Africa, the problem in Botswana is not one of illiteracy, but of inadequate skills. Despite high levels of primary and secondary educational attainment, the country has a shortage of skilled labor.

The economic structure in Botswana has undergone changes in recent years, but these changes have not yet ended the country's reliance on diamond exports. In fact, the contribution of agriculture to GDP fell from 6 to 2 percent between 1988 and 2008. In comparison, the mining industry registered only a small decline. Importantly, the manufacturing sector's contribution to GDP has remained relatively insignificant, even falling since 1988. The most noticeable change has been in the services sector, which expanded from 28.5 percent of GDP in 1988 to 45 percent in 2008.<sup>2</sup> But since government services are an important part of this sector, it is also vulnerable to fluctuations in diamond revenues.

Economic diversification has been at the heart of Botswana's national development plans for the last two decades. However, the policies supporting this goal are hampered by low internal demand, structural barriers, poor geography, and infrastructure. Internal demand is inhibited by a small population. Botswana's physical geography, especially its lack of access to the sea and the country's agroclimatic conditions, raises barriers to trade and production.

Transport costs, already very high in the country, are compounded by limited administrative and construction

capacity. A significant part of the country is covered by the Kalahari Desert, which makes water both scarce and expensive. Comparative surveys have rated Botswana's infrastructure to be of lower quality than that of other countries in Sub-Saharan Africa. For example, only 888 kilometres are covered by rail lines and barely 33 percent of roads in the country are paved. Until recently, Botswana also had a telecommunications monopoly; other utilities are not always accessible at competitive terms.

Looking at the lessons offered by successful economies that have grown rapidly in a short period of time, such as those in East Asia, it is clear that export-led industrialization policies contributed to their growth. These policies involve the state taking the lead in crafting and managing market institutions, building physical infrastructure to support industrialization, and minimizing coordination failure within the various segments of the economy. A well-educated and trained population with a wide spectrum of skills also played a vital supporting role in this growth in East Asia. This population had a sufficient skills base to absorb and assimilate technology (via foreign direct investment), operate equipment and infrastructure, and create effective organizations.

*The Africa Competitiveness Report 2011* (WEF, World Bank, and AfDB 2011) still classifies Botswana as a transition economy, one in the process of moving from factor-driven to efficiency-driven growth. In other words, the country faces significant challenges in transforming its human resources into a force that can drive total factor productivity improvements and, consequently, economic growth.

## 2. Human Capital Profile of Botswana

Economic literature postulates that the quality of human capital is determined by two factors: (i) various levels of education and (ii) the quality of education provided. There are strong interlinkages between capital and investment, on the one hand, and the quality of human capital available in an economic system, on the other. Similarly, research and development (R&D) can develop a nation's capacity to absorb existing technology, thus increasing total factor productivity.<sup>3</sup> In general, tertiary education is expected to create the high-end skills needed for innovation. Critical mid-level skills required for the absorption and/or adaptation of technology can be gained from either tertiary or technical and vocational education.

Students who complete basic education are expected to have achieved a certain level of skills that allow them to successfully perform in postbasic education. Recent research shows that rapidly advancing knowledge economies need certain additional key competencies that create the basis for worker adaptability and continuous learning. In addition to cognitive, academic, and technical skills, these competencies include problem solving, creativity, interpersonal skills, a work ethic, and management skills. The primary and basic education sector is responsible for inculcating such skills in those going through the education system (World Bank 2010).

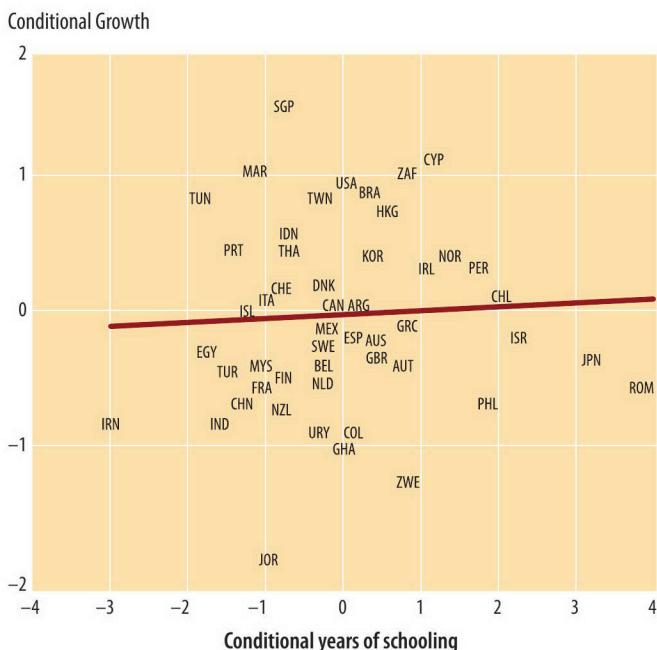
<sup>1</sup> All government documents cited in this report are identified by the ministry or agency of the Republic of Botswana that produced them; they are listed in the Reference list under "Botswana, Republic of."

<sup>2</sup> *Botswana – Country Profile 2008*, Economist Intelligence Unit, London.

<sup>3</sup> Factors such as the quality of education, cognitive skills, technical and specialized skills, innovation, and technology absorption determine the efficiency with which capital and labor are used and thus influence economic growth. These factors, which help an economy increase its productive output, combine to produce total factor productivity growth.

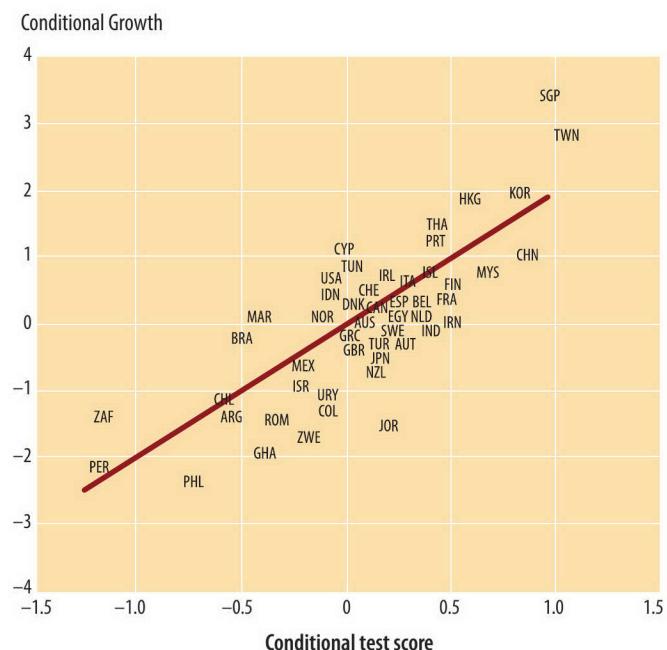
## Figure 1. Impact of Schooling on Economic Growth

### Panel A. Impact of Years of Schooling



coef = 0.264058, se = .07839797, t = .34

### Panel B. Impact of Test Scores



coef = 1.9804387, se = .21707105, t = 9.12

Source: Hanushek and Wößmann (2007).

*Note:* These are added-variable plots of a regression of the annual rate of growth (in percent) of real GDP per capita in 1960-2000 on the initial level of real GDP per capita in 1960, average test scores on international student achievement tests, and average years of schooling in 1960.

ARG = Argentina, AUS = Australia, AUT = Austria, BEL = Belgium, BRA = Brazil, CAN = Canada, CHE = Switzerland, CHL = Chile, CHN = China, COL = Colombia, CYP = Cyprus, DNK = Denmark, EGY = Arab Rep. of Egypt, ESP = Spain, FIN = Finland, FRA = France, GBR = United Kingdom, GHA = Ghana, GRC = Greece, HKG = Hong Kong (China), IDN = Indonesia, IND = India, IRL = Ireland, IRN = Islamic Republic of Iran, ISL = Iceland, ISR = Israel, ITA = Italy, JOR = Jordan, JPN = Japan, KOR = Republic of Korea, MAR = Morocco, MEX = Mexico, MYS = Malaysia, NLD = Netherlands, NOR = Norway, NZL = New Zealand, PER = Peru, PHL = Philippines, PRT = Portugal, ROM = Romania, SGP = Singapore, SWE = Sweden, THA = Thailand, TUN = Tunisia, TUR = Turkey, TWN = Taiwan, URY = Uruguay, USA = United States, ZAF = South Africa, and ZWE = Zimbabwe.

Source: Reproduced from Hanushek and Wößmann (2007), figure 4a and b, pp7.

Recent economic research has shown that it is not simply the average years of educational attainment of a country's population that serves as the catalyst for economic growth, but also the quality of education that determines growth (figure 1).

Basic education

At the primary level, Botswana achieved the high net enrollment rate of 90 percent in 2002, which it has since maintained. However, in the last 10 years, the remaining 10 percent of children not in schools have still not been successfully integrated into the education system (CSO 2012a). The transition rate from primary to secondary education has been quite high—between 96 and 100 percent—over the last five years. In other words, almost all students who complete primary school enroll in lower secondary school, irrespective of their performance on the Primary School-Leaving Examination. This is a result of the government's drive to achieve universal basic education. Across junior and senior secondary school (Forms 1 through Form 5<sup>4</sup>) the gross enrollment rate stands at approximately

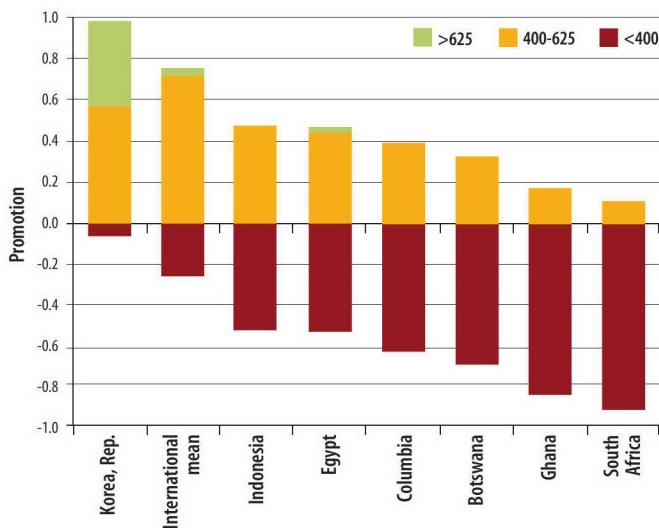
61.3 percent (CSO 2011). In addition to general education programs, students also enroll in postprimary technical and vocational institutes and teacher training institutes. Total enrollment at the postbasic level in all these institutions was estimated at 80 percent in 2007–08 (WDI and GDF).

**Quality.** Despite success in increasing enrollment, a number of challenges remain in the education sector, the most important of which is the low quality of education. In the international arena, Botswana lags behind its peers in math and science education. The proportion of Batswana students able to attain the “low” international benchmark in mathematics on the Trends in Mathematics and Science Study (TIMSS) in 2007 was quite low. Students able to attain this benchmark “have some knowledge of whole numbers and decimals, operations, and basic graphs” (IEA 2008, 113). Only 32 percent of students attained this benchmark in 2007 (figure 2); leaving 68 percent of students below that level of knowledge. These results identify the next major challenge for education policy makers in Botswana: improving learning achievement.

<sup>4</sup> In Botswana's education system, secondary education consists of Forms 1-5, equivalent to Grades 8-12 in other education systems.

**Figure 2. Comparison of Grade 8 Students Scores in Mathematics on TIMMS 2007, Various Countries**

(proportion of total students)

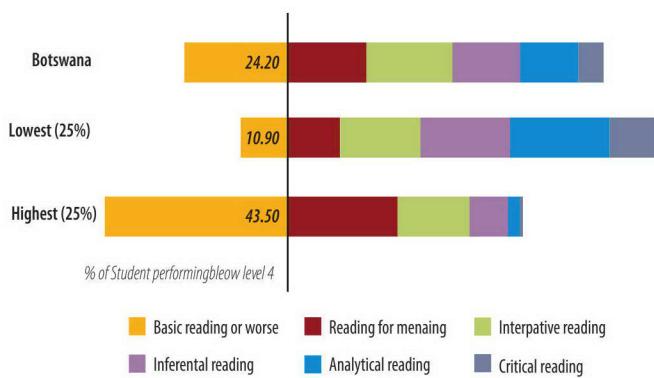


Source Adapted from World Bank (2012)

Note: Benchmarks for TIMSS mathematics scores are as follows: "low" (less than 400); "medium" (400–625); and "high" (greater than 625).

**Equity.** There is wide disparity in the achievement of children from different socioeconomic backgrounds in Botswana. The Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) assessments for sixth-grade students reveal that almost half of the children from the lowest income quartile in the country have only basic reading capacity or less. In contrast, almost 90 percent of children from the highest income quintile can at least read for meaning, if not better, on the reading assessments (figure 3).

**Figure 3. SACMEQ 2007: Grade 6 Reading Scores of Batswana Studen**



Source: SACMEQ 2010.

Note: SES – socioeconomic status. "Highest" and "lowest" here indicate income quartile.

Disparities in learning achievement are also apparent by both region and rural-urban location. Using the TIMSS 2007 results, the differences in student learning achievement between rural and urban areas was decomposed/disaggregated into a portion attributable to socioeconomic background and a portion attributable to the quality of the education system (in other words, the difference in achievement if students came from the same socioeconomic background). Results of the analysis showed that the differences were attributable almost entirely to the quality of the education system.<sup>5</sup>

A comparative analysis shows that urban-rural differences in student achievement in the United States and Japan (which are among the better performers on TIMSS) are much smaller than in Botswana. In fact, most of these differences between the two high-income countries are explained by socioeconomic background of students.<sup>6</sup> On the other hand, most of the differences in Botswana are explained by school characteristics. In other words, the differences between high- and low-achieving students in Botswana would diminish if all students were put in schools similar to those attended by urban children.

A review of the basic education system in Botswana (see Policy Note 1) makes it clear that a better allocation of educational resources across regions and urban-rural areas is needed to ensure equitable resources and inputs across schools. Certain successful approaches have been adopted around the world to improve the equity and efficiency of resource allocation in the education sector. For instance, some countries (among them Bulgaria and Romania) have recently successfully implemented per capita financing to fund the education system. In this approach, funds are allocated to decentralized levels of the system (such as district or provincial education authorities) based on a formula that takes into account the number of students enrolled in local schools. The funding formula can also take into account the remoteness or other specific conditions of a particular area in order to ensure equitable distribution of resources.

Another approach that has proved successful in certain country contexts is school-based management (SBM). The argument for SBM is that agents closer to the school level better understand the needs and requirements of schools and should therefore be given decision-making power over school resources. This authority enables them to respond better to the needs of individual schools and encourages more equitable resource distribution.

The review of the basic education system also suggests that MoESD needs to design an effective monitoring and evaluation system with a clear link to educational research (pedagogic and economic), preferably by means of a semi-autonomous arm. Specifically, such an institute should be tasked with conducting research in order to identify areas of strength and weakness in different subject areas so as to respond to the skills needs of a competitive global economy. Other major activities of the institute would include conducting periodic reviews of curricula and developing new textbooks in order to align

<sup>5</sup> Math scores were decomposed using the Oaxaca-Blinder model adapted from labor market studies (see Policy Note 1 of this series).

<sup>6</sup> Economic research postulates that family background has an impact on student achievement.

basic education with the requirements of meeting international student achievement benchmarks; comparing student performance in schools run by various regions, authorities, and areas; and influencing teacher training programs. A successful example of a monitoring and evaluation system in Jordan is discussed in Policy Note 1 of this analytical work.

### ***Technical and vocational education in Botswana***

A detailed review of the technical and vocational education system in Botswana revealed that Botswana has continued to modify its skills training system to adapt to the changing needs of the economy, yet its trained workforce faces high unemployment. Clearly, there is a skills mismatch in the labor market. The country boasts good-quality infrastructure in its technical and vocational education and training (TVET) colleges, but has a severe lack of expert trainers. Another major concern is that mechanical and electrical engineering graduates, as well as information and communication technology (ICT) graduates of technical institutes, also have a high unemployment rate. In general, employers regard the training provided by Vocational Training Centers (VTCs) to be insufficient or dated, given rapid changes in technology, particularly ICT.

Botswana operates a vocational skills development program parallel to the VTCs—the Brigades. These are private, small or medium-sized, rural, community-based organizations that combine training with production. Brigades have historically offered the most widely accessible skills training in the country, with the largest enrollment. The quality of training has been uneven among the Brigades, however, as some have had better funding and staffing than others.

These factors prompted the government to recently assume control of the Brigades. This change gives the government an opportunity to consider a major revision of the training system, based on the findings of various tracer surveys and recent studies of the TVET sector in Botswana. Most important, vocational training courses need to be rationalized based on labor market demand for various vocations. It is recommended that the revision of technical education follow the model of Singapore's Institute of Technical Education, which is responsible for providing full-time pre-employment technical training and education, as well as continuing education and training to workers so that they may upgrade their technical skills (box 1).

TVET in Botswana is funded through a turnover tax imposed on employers. The construction and tourism industry had already been using a levy for training purposes, and in 2008 the Ministry of Labor and Home Affairs introduced the levy system for all enterprises in the country based on a turnover rate criteria. Yet despite the levy, few employers reclaim available grant monies for their training expenses. Of the 7,000 firms contributing to the Vocational Training Fund, only 1,000 have used a grant to date. As a result, approximately 200 million pula remained unutilized in 2010 (BOTA 2010). This levy could, however, be used to effectively fund tailor-made courses for specific industries within existing training institutes.

TVET trainees in Botswana have the opportunity to enter the labor market or become self-employed. However, the current system offers them no opportunities for further

education, for instance, to improve their skills by entering into a diploma-level training program or the academic educational stream. Unfortunately, this lack of opportunity is characteristic of many education and training systems around the world, leading TVET to be perceived as a “dead-end” stream. However, successful education systems and growing knowledge economies have managed to develop flexible education systems that support learners to advance through these systems according to their ability.

Establishing articulation in the education system in Botswana would provide vertical and horizontal pathways across academic and technical education programs. A successful example is the type of system found in Singapore, as discussed in Policy Note 1. The TVET system in Botswana needs to be responsive to its main stakeholders, including students and employers. At present, the system urgently needs qualified expert trainers and the type of training courses needed to attract students and enable technical colleges and institutes to operate at capacity. Because expert trainers are in short supply, they need to be either hired internationally or trained locally without delay.

### ***Tertiary education***

If Botswana is to achieve its vision of becoming a knowledge-based economy, it needs to align its tertiary education system with the needs of such an economy. Student enrollment in tertiary institutions has increased as a result of increased completion and transition rates in basic and secondary education. In addition to one major university, the University of Botswana, the country has a number of affiliate colleges and institutions that offer more specialized diploma or degree programs in such areas as nursing and agriculture.

A new university, Botswana International University of Science and Technology (BIUST), is currently being set up and will soon open its doors. The University of Botswana also has state-of-the-art infrastructure in its school of medicine and other faculties. Given the small size of Botswana's population and internal market, this university must become a niche center of excellence in order to be both economically viable and attract international students, as envisioned by the education hub.<sup>7</sup> If it is able to attract a high-quality, research-oriented international faculty, one or two selected faculties can indeed be able to play such a role in the region.

At present, all students enrolled in government-run higher education institutes are sponsored by the government through the Grant-Loan Sponsorship (GLS) Program. Created in 1995, GLS was designed to attract students to fields in high economic demand, such as science and engineering, through various combinations of financial assistance. Despite its original intent, GLS has become solely a grant program since very little loan recovery has occurred over the years.

Appropriate financial incentives could have achieved a better alignment of tertiary education with market needs. A recent detailed review of the GLS Program by MoESD (BEST 2009) suggests that the requirement of strong mathematics and science skills by Category 1 programs (i.e., programs that teach

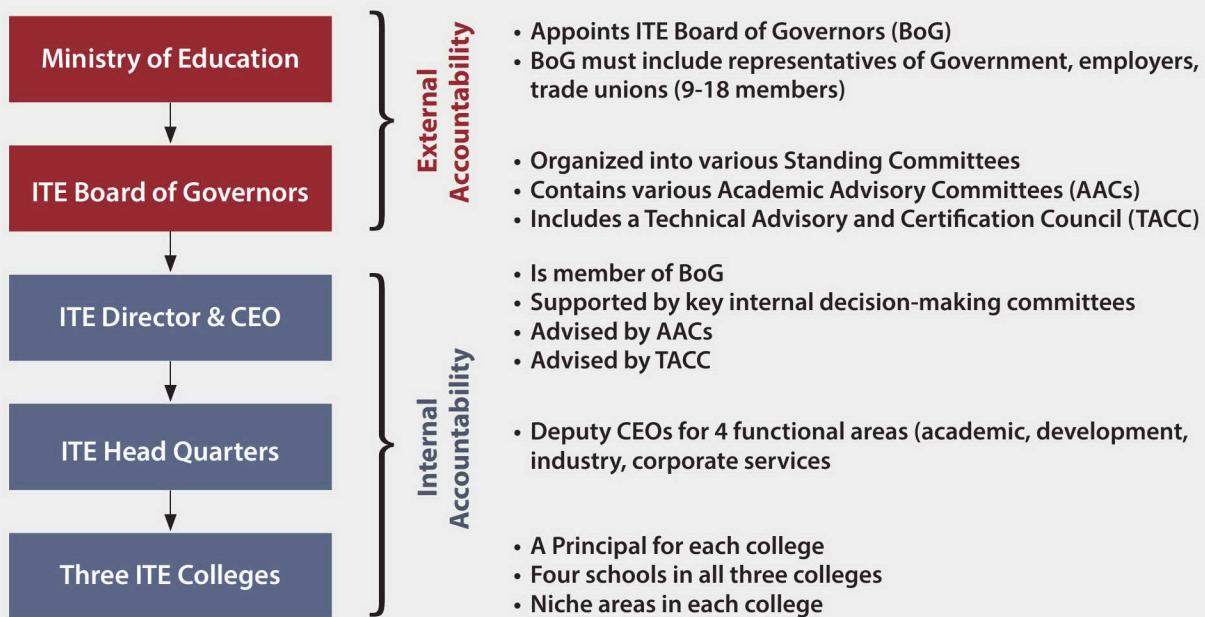
<sup>7</sup> One of the government's priority sectors for promoting economic growth, see Policy Note 2 of this analytical series.

### Box 1. Institute of Technical Education of Singapore

The Institute of Technical Education (ITE) is a statutory board (i.e., parastatal agency) under the Ministry of Education of Singapore, with well-defined functions that include the provision of: (i) full-time pre-employment technical training and education; (ii) continuing education and training for the purposes of upgrading the technical skills of the workforce; (iii) regulation and promotion of industry-based training and education; (iv) regulation of certifications and standards for technical skills; (v) consultancy services and research in technical training and education.

In terms of its relationship with the Ministry of Education, ITE receives annual operating and development budgets from the ministry, based on student headcount. In return it is accountable for meeting annual government targets and educational outcomes that specifically aim to produce market-relevant, entrepreneurial, adaptable graduates for the global economy, together with lifelong learners (to improve employability). The governance structure for ITE is shown in figure B1.1.

Figure B1.1 ITE Governance Structure



A distinguishing factor of ITE as a postsecondary training institution is that it operates as a business entity following a business model. **The Director is also a CEO** who makes strategic long-term plans with detailed implementation blueprints. In addition, Singapore's business excellence framework serves as a benchmark for organizational excellence for the Institute. The institute is **responsive to stakeholders and relevant to the market**. Students and employers are considered customers; the institute practices active listening by receiving feedback from multiple channels and on the basis of this feedback, develops new course offerings.

ITE is both **quality and brand conscious**—it maintains skills standards, grants certifications, and adheres to a quality assurance framework. For example, it has undertaken continuous branding exercises to improve the public perception of an ITE education. The institution is **efficiency-conscious**. Organized according to the slogan, “One ITE, Three Colleges,” the Institute formulates policy, develops curricula, admits students, and conducts quality assurance, among other tasks, at the central level in order to enhance efficiency. However, it operates three colleges, each of which has sufficient autonomy to compete with the others and grow in niche areas. ITE also uses state-of-the-art technology for service delivery (this technology facilitates e-students and e-tutors). ITE is **results-conscious**. It tracks the performance (e.g., employer and student satisfaction surveys) of its three colleges and reports this data through the Annual College Excellence Report.

Through constant review and revision of its policies, Singapore's TVET system has evolved over the last decade to become a nimble, practice-oriented system that is responsive to the needs of industry.

Source: Fredriksen and Tan (2008); Seng (2008).

skills considered to be of highest priority, such as engineering) explains why these programs have not enrolled more students. By the time students reach the tertiary level, it is hard to remedy weak or poor-quality learning in these subjects, thus enrollment remains low. Additionally, there is a lack of career education in basic and secondary school that would highlight the potentials of these programs of study at the tertiary level.

As discussed earlier, reforms are urgently needed to improve the quality of basic education. However, introducing pre-entry courses for universities right away could help rapidly improve the quality of inputs into the tertiary education system. Finally, the GLS Program needs to be re-aligned in order to promote the best students to study priority, higher-order skills.

### **Labor market returns to education**

The increase in the supply of workers with secondary and tertiary education may account for the decreasing returns to secondary education and increasing returns to tertiary education in recent years. The general pattern found in Botswana is very similar to that identified by Keswell and Poswell (2004) in South Africa, where the marginal rate of return is extremely high for tertiary education and very small for lower levels of education.

The last three decades in Botswana have seen significant public investments in education, but the ability of the economy to absorb these skills has lagged, especially because the mining sector—which drives the economy—is capital-intensive. This mismatch has resulted in an escalation of educational qualifications, with highly educated people taking jobs that previously employed workers with lower levels of education. Consistent with this interpretation is the fact that lower and upper secondary graduates are experiencing rising unemployment rates (see Policy Note 2 of this series). At the same time, the high rate of return to tertiary education points to an unmet need of the labor market.

**Table 1. Rates of Returns to Education in Botswana over Time, Using Household Survey Data (percentage)**

	HIES <sup>a</sup> 1992–93	HIES 2002–03
Primary	7	9
Lower secondary	26	15
Upper secondary	36	8
Tertiary	11	24

Source: CSO (1995, 2004).

Note: Household Income and Expenditure Survey.

Although the demand for skilled labor has not kept up with the improved educational level of the work force and has certainly been insufficient to lower the unemployment rate of these groups, the availability of jobs for lower secondary education (LSE) graduates grew only somewhat slower than the supply of these graduates (otherwise the increase in their unemployment rate would have been higher). In other words, relatively fewer students are finishing their educations at the LSE level.

The situation seems more serious with respect to the demand

for upper secondary education (USE) graduates. The USE worker supply appears to have increased substantially faster in recent years than the demand for their skills, resulting in a 5-percentage-point increase in the unemployment rate over a decade, as well as these workers becoming a greater proportion of the unemployed (from 8 to 21 percent over a decade; table 2). These findings raise two immediate concerns. One, it is unclear whether general USE is providing the right skills and learning content useful for employment purposes. Two, it is possible that the education system is becoming stagnant, producing large numbers of secondary graduates without the higher-order skills needed for the country to move towards a knowledge-based economy.

**Table 2. Broad Unemployment of Labor Force by Education Level (percentage)**

	2005/6	1995/6
Never attended	28	36
Primary education	31	36
Lower secondary education	39	37
Upper secondary education	28	24

Source: Labor Force Surveys of 1995/96 and 2005/06 (CSO 1998 and 2008).

Note: “Broad” unemployment includes discouraged workers who are not counted among the unemployed.

Unfortunately, due to data limitations, the returns to TVET education cannot be estimated. The relative demand for such skills has, however, been estimated on the basis of tracer studies of TVET graduates and the Employer and Employee Survey Botswana conducted by the World Bank in collaboration with MoESD (see Policy Note 3 of this series).

### **3. Sectors of Employment Growth**

The private sector in Botswana has increased its share of employment over the last decade. In 1995/96, the major employer was government, which employed 33 percent of the workforce, with the private sector ranking second, with 32 percent. By 2005/06, the private sector had grown to become the dominant sector of the economy, employing 42 percent of the total labor force. Government employment, on the other hand, had declined to 21 percent, making it the third largest employer—after the private sector and subsistence agriculture (which employed 24 percent of the work force) (LFS 1995/96 and 2005/06).

The substantial increase in the share of employment in the formal private sector is a positive development in line with government goals. Similarly, the decrease in public sector workers conforms to governmental objectives. Whether the decrease in the share of the informal sector is a positive trend depends on the other sectors that increased their share of workers as a result, in addition to labor productivity in those sectors. Since the main increase appears to have been in subsistence (or traditional) farming, it appears to be a negative development.

## ***Wages for the skilled and unskilled***

Individuals who are able to find income-generating employment but refuse it tend to have high expectations of their earnings capacity and a household or public safety net that allows them to remain without personal earnings for a longer period of time compared to other workers. This phenomenon partly explains the high number of foreign workers with work permits who are employed in elementary occupations in Botswana, despite a national unemployment rate of 14 percent among workers who never attended school and 26 percent among those with primary education. Another explanation for this finding could be a lack of labor mobility in the country. However, data from the Employer and Employee Survey lends credence to the idea that Batswana have a high reservation wage. For instance, employees who reported a

longer period of unemployment before starting their current job had relatively higher wages (World Bank 2010c).

Elementary occupations in the country appear to be the lowest-paid occupations, followed by subsistence agriculture. A wage occupation index created on the basis of the Employer and Employee Survey Botswana (ESSB) reveals that there is no wage differential across sectors (except for the mining sector, which may be an outlier due to the small number of observations in the data set). Wages differ significantly, however, across occupations, with managers and professionals earning seven and five times more, respectively, than workers in elementary occupations (table 3). The 2010 Botswana employer employees survey (World Bank 2010c) found that the most common positions for which expatriates are recruited are engineers, accountants, and managers, for which skilled Batswana would appear to be in short supply.

**Table 3. Predicted Wages by Industry and Occupational Category**

	2008		2009		2010	
	Wage (in pula)	Index	Wage (in pula)	Index	Wage (in pula)	Index
<b>Industry<sup>a</sup></b>						
Agriculture, hunting, and forestry	48,528	1.11	48,853	1.11	49,020	1.12
Mining and quarrying	176,663	4.04	177,848	4.04	178,082	4.06
Manufacturing	48,510	1.11	48,835	1.11	49,020	1.12
Construction	61,302	1.40	61,713	1.40	61,697	1.40
Wholesale and retail trade	60,058	1.37	60,461	1.37	60,475	1.38
Hotels and restaurants	56,511	1.29	56,890	1.29	56,954	1.30
Transport, storage, and communications	55,980	1.28	56,355	1.28	56,387	1.28
Financial intermediation	73,782	1.69	74,277	1.69	74,607	1.70
Real estate, renting, and business activities	61,818	1.41	62,232	1.41	62,317	1.42
Public administration and defense	46,976	1.08	47,291	1.08	47,098	1.07
Education	43,691	1.00	43,984	1.00	43,914	1.00
Health and social assistance	58,635	1.34	59,028	1.34	59,278	1.35
Other	56,954	1.30	57,526	1.31	57,661	1.31
<b>Occupation<sup>b</sup></b>						
Managers	121,714	7.38	122,529	7.36	123,007	7.39
Professionals	92,627	5.62	93,249	5.60	92,967	5.58
Technicians and associated professionals	61,710	3.74	62,124	3.73	62,317	3.74
Clerical support workers	39,662	2.41	39,928	2.40	39,735	2.39
Service and sales workers	38,487	2.34	38,745	2.33	38,561	2.32
Skilled agricultural, forestry, and fishery workers	35,107	2.13	35,342	2.12	35,596	2.14
Craft and related trades workers	38,547	2.34	38,806	2.33	38,561	2.32
Plant and machine operators and assemblers	39,211	2.38	39,474	2.37	39,735	2.39
Elementary occupations	16,481	1.00	16,647	1.00	16,647	1.00

Source: Author's econometric analysis of EESB data (see World Bank 2010c).

Note: Pula is the national currency of Botswana.

a. Index is occupational wage relative to the average for the education industry.

b. Index is occupational wage relative to the average for elementary occupations.

## 4. Skills in Demand

Data from household and labor force surveys conducted in Botswana show that higher education is in greater demand among employers than other levels of education. The ESSB provided insights into the demand for specific skills, finding that employers found it hardest to recruit craft workers and plant operators. This survey asked employers to list the most important skills requirements for two groups of skilled staff: leaders (i.e., managers and professionals) and other skilled workers (including production, administrative, sales, and technical staff, together with craftsmen). Skills were grouped into one of three skill categories, namely, personal characteristics, core skills, and job-specific skills.<sup>8</sup>

ESSB data shows that for leaders, most of the skills identified in the survey (80 percent) were considered “very important” or “crucial” by a majority of employers, with personal characteristics and cores skills valued in particular. In fact, the five most important skills for leaders were honesty, commitment and hard work, reliability and punctuality, communication, and team work (World Bank 2010c).

Job-related skills were generally valued to a lesser extent. Among job-specific skills, practical knowledge of the job was considered most important, but ranked only 16 out of 30 identified skills. The skills that were *not* considered very important or crucial by a majority of employers were mostly job-specific knowledge related to educational credentials and advanced vocational skills. The most substantial difference between the skills that employers sought in professionals and leaders is that fewer skills very considered important for the former (10 for professionals, compared to 24 for leaders; Ibid.).

Other findings were quite similar for professionals and leaders. Employers mainly valued personal characteristics and core values in their professionals, with the same top five skills identified above considered most important. In addition, honesty, the desire to learn and adaptability, and customer care skills were valued skills for professionals. Again similar to the skills sought in leaders, job-specific skills were considered relatively less important for professionals compared to personal traits and core skills. For example, educational attainment, general and advanced vocational skills, and theoretical job-knowledge were among the least valued skills for this group of workers (Ibid.).

When comparing exporting with non-exporting firms, the most substantial differences revealed by ESSB data show that:

Exporting firms tend to give higher value to the skills of leaders than do nonexporting firms. This was particularly the case for personal characteristics and core skills.

Job-specific skills (especially practical knowledge of the job, the minimum required level of education, and previous experience in a relevant field) are considered more important for professionals in nonexporting than exporting firms.

<sup>8</sup> Personal characteristics were defined as innate traits, such as honesty, commitment, hard work, and punctuality. Core skills were defined as aptitudes required for employment that could be learned over time, either at school or elsewhere. This category included such skills as basic literacy, numeracy, communication, problem solving, and team work. The last category, job-specific skills, was defined as theoretical knowledge, educational attainment, and specific job experience related to particular occupations.

## 5. Diamond Beneficiation as a Niche Area of Growth

As part of the new growth paradigm for Botswana, mineral beneficiation—specifically, diamond beneficiation—was declared a national policy in 2008. The government seeks to use this policy to increase employment and develop skills for the downstream diamond industry, facilitating the sustainability of the industry when diamond mining comes to an end over the next two decades. In the last five years Botswana has made considerable progress in establishing a local cutting and polishing industry as part of the beneficiation strategy, but the success of this new sector depends on the creation of related skills. (See Policy Note 4 for a simulation model that estimates the potential employment creation of the strategy.)

The cutting and polishing industry is still in the development phase and needs a dynamic policy environment to remain relevant at all stages of its development. Policies are specifically needed to create industry-specific skills (and to set clear targets and deadlines), establish technology links between the diamond and innovation hubs, facilitate rough diamond trading, and expand BOTA's accreditation of cutting and polishing programs in sector factories.

This niche area remains very challenging. International experience has shown that many countries have been unable to successfully compete with existing leaders in the diamond cutting and polishing industry, which include Belgium, Israel and now, increasingly, China and India. Botswana has a window of opportunity for a couple of decades, during which it can use being a producer of diamonds to its advantage to establish itself as one of the big names in the industry.

## 6. Conclusions and Policy Recommendations

Economic diversification has been at the heart of Botswana's national development plans for over two decades. The country has introduced a number of policies to address the challenges of this goal, but impact has been limited for a number of reasons. A successful diversification strategy has multiple dimensions, ranging from trade policies to exchange rate policies to financing for the private sector to the skills base needed to attract foreign direct investment, encourage innovation, and adopt and adapt new technology.

A holistic approach to diversification is the key to success. Developing and sustaining the priority sectors supported by the hubs identified in the National Development Report requires skills that are quantitatively and qualitatively superior to those currently available among Botswana's workforce. This Summary Report has condensed the findings of four Policy Notes that identify skill gaps in Botswana that constrain economic competitiveness and growth. The main recommendations of these notes are summarized in table 4.

**Table 4. Summary of Recommendations for Enhancing Skills for Competitiveness and Economic Growth in Botswana**

Policy domain	Current government policies		
	Immediate implementation required	Modification in design recommended	Recommended new interventions
<b>Education</b>	Allocate school resources more equitably	Develop Botswana's Universities as centers of excellence in medicine and technology teaching through viable and sustainable financing, including research and consultancy revenues, donations, and private capital via public-private partnerships	Introduce pre-entry STEM courses in the tertiary sector to improve the quality of learning in higher education
	Develop education policy on the basis of research, using the determinants of educational quality as a guide	Redesign Grants and Loan Sponsorship Program in order to target students for higher-level STEM skills programs at the postgraduate level	Establish an educational research institute under MoESD
	Complete and implement National Qualifications Framework for Botswana	Redefine the existing apprenticeship program of to include specific modules on entrepreneurship, personal skills, and core literacy, numeracy, and communication skills	Establish vertical and horizontal articulation across the academic, technical, and vocational education streams in Botswana, encouraging lifelong learning and skills upgrading
			Introduce joint degrees in business and engineering studies at BIUST to encourage export-oriented businesses
			Develop a critical mass of software developers for the ICT industry by establishing a globally accepted certification for the field in collaboration with the private sector
<b>Labor markets</b>		Phase out income support programs in agriculture and replace them with the provision of agriculture and livestock technology and expertise in order to increase productivity  Modify the work permit policy for low-skilled occupations to ease the inflow of the workers for a limited time period	Rationalize TVET courses across the system to respond to market demand, working with private employers to design curricula and appoint instructors  Introduce short-term skills training and skills upgrading programs for low-skilled workers to help improve their wages and reduce unemployment due to high reservation wages
			Partner with the private sector to introduce training programs for young, unemployed, and discouraged workers, using the Vocational Training Fund to share costs. Training courses should teach technical as well as behavioral skills
			Have BOTA work with private employers to ensure intensive on-the-job training is conducted by certified education providers using funds from the training levy
<b>Diamond beneficiation</b>			Coordinate activities of the diamond and education hubs to attract well-known training institutes in diamond processing and jewelry making to open their doors in Botswana

In addition to implementing these recommendation, success-

ful economic diversification in Botswana will require coordination and collaboration among multiple state organizations,

as the experience of Singapore suggests (box 2).

#### **Box 2. Skills Development System in Singapore**

The credit for Singapore's economic growth is in large part due to the country's human capital. Singapore has consistently ranked among the top countries for the quality of its human resources. The Singapore Skills Development System (SSDS) is a major reason why it has a highly developed economy and skilled workforce. The SSDS is a joint collaboration between the government and the private sector; the reasons for its success are outlined below.

Some of the key institutional players in SSDS are the Ministry of Trade and Industry (MTI), Economic Development Board (EDB), National Manpower Council (NMC), and Ministry of Education (MOE). MTI is in charge of economic development; EDB is responsible for foreign direct investment; NMC examines manpower development in the tertiary education system; and MOE oversees the education system overall. An important lesson learned by SSDS is that the organizations that seek to impact skills development and economic growth should actually be involved in upgrading workforce skills. The system also has clear and open lines of communications between the various organizations, which facilitates the achievement of national goals.

SSDS has been successful in attracting foreign investment by providing investors with business incentives. In exchange for establishing training centers in collaboration with the government, for example, foreign companies are guaranteed the right to hire a proportion of the students trained by these centers. As the program grew, SSDS became involved in setting up training centers funded jointly by foreign governments. Japan, Germany, and France, for example, established training centers specializing in metal machinery, production technology, and electronic technology, respectively.

Singapore's success in transforming itself into a knowledge economy can be attributed to committed, coordinated, sustained leadership and support of SSDS at all levels, governance that ensures effective implementation, and a holistic approach to skills development.

*Source:* Yusuf and Nabeshima (2012).

## References

- BEST (Botswana Evaluation Services Team). 2009. “BEST Final Report: Consultancy Services for the Review of the Grant-Loan Sponsorship Scheme of the Department of Student Placement and Welfare, Ministry of Education and Skills Development, Republic of Botswana.” MoESD, Gaborone.
- Botswana, Republic of. BOTA (Botswana Training Authority). 2010.
- . CSO (Central Statistics Office). 1995. “Household Income and Expenditure Survey (HIES) 1992/93.” CSO, Ministry of Finance and Development Planning (MoFDP), Gaborone, Botswana.
- . CSO. 2004. “HIES 2002/03: Main Report; Vol. I.” CSO, MoFDP, Gaborone, Botswana.
- . CSO. 1998. “1995/96 Labour Force Survey.” CSO, MoFDP, Gaborone, Botswana.
- . CSO. 2008. “2005/06 Labour Force Survey: Dissemination Seminar Summary Report.” CSO, MoFDP, Gaborone, Botswana.
- . CSO. 2011, 2012a. “Education Statistics Report.” CSO, MoFDP, Gaborone.
- . CSO. 2012b. Statistics Botswana website.
- . Presidential Task Group. 1997. “A Long Term Vision for Botswana: Towards Prosperity for All” (Vision 2016). Government Printers, Gaborone, Botswana.
- Economist Intelligence Unit (EIU). 2009. *Botswana Country Profile*. EIU, London.
- Fredriksen, B., and J. P. Tan, eds. 2008. *An African Exploration of the East Asian Education Experience*. Development Practice in Education Series. Washington, DC: World Bank.
- Hanushek, Eric A., and Ludger W. Wößmann. 2007. “Education Quality and Economic Growth.” The World Bank, Washington, DC.
- IEA (International Association for the Evaluation of Educational Achievement). 2008. “TIMSS 2007 International Mathematics Report: Findings from IEA’s Trends in International Mathematics and Science Study at the Fourth and Eighth Grade.” IEA, Lynch School of Education, Boston College.
- Keswell, M., and L. Poswell. 2004. “Returns to Education in South Africa: A Retrospective Sensitivity Analysis of the Available Evidence.” *South African Journal of Economics* 72 (4): 834–60.
- SACMEQ. 2010. “SACMEQ III Project Results: Pupil Achievement Levels in Reading and Mathematics.” Working Document 1. SACMEQ, Paris (IIEP).
- Seng, L. S. 2008. “Vocational Technical Education and Economic Development: The Singapore Experience.” ITE Paper 9. ITE Education Services Pte Ltd., Singapore. In *Towards a Better Future: Education and Training for Economic Development in Singapore since 1965*, ed. S. K. Lee, C. B. Goh, B. Fredriksen, and J. P. Tan, 114–134. Washington, DC: World Bank and National Institute of Education, Nanyang Technological University, Singapore.
- WEF (World Economic Forum), World Bank, and AfDB (African Development Bank). 2011. *The Africa Competitiveness Report 2011*. Geneva: WEF.
- WDI (World Development Indicators) and GDF (Global Development Finance) (database). World Bank, Washington, DC. [http://databank.worldbank.org/data/Views/VariableSelection>SelectVariables.aspx?source=World%20Development%20Indicators%20and%20Global%20Development%20Finance#C\\_B](http://databank.worldbank.org/data/Views/VariableSelection>SelectVariables.aspx?source=World%20Development%20Indicators%20and%20Global%20Development%20Finance#C_B).
- World Bank. 2010. *Innovation Policy: A Guide for Developing Countries*. Washington, DC: World Bank.
- . 2010c “Employer and Employee Survey in Botswana.” World Bank, Washington, DC. Unpublished.
- . 2012 Technical and Vocational Education in South Africa. A Policy Note.
- Yusuf, S. and K. Nabeshima. 2012. Some Small Countries do It Better. Washington, DC: World Bank.





**THE WORLD BANK**

1818 H Street, NW  
Washington, DC 20433 USA  
Telephone: 202-473-1000  
Internet: [www.worldbank.org](http://www.worldbank.org)