2. Present Conditions and Issues Concerning TVET Supply and Demand in Africa

2-1 General Conditions in the African Manufacturing Industry and Labor Market

Africa’s agriculture sector comprises 62.5% (2000 data) of the continent’s economy, which greatly exceeds the 55.4% average given for developing nations. However, agricultural production makes up no more than 17.4% of gross domestic production, meaning that production rates are actually lower in relation to the large size of the agricultural workforce. Also, many African countries are characterized by their heavy dependence on primary commodities exports in foreign exchange stemming from colonial times; 65% of Ethiopia’s total exports and nearly 90% of Burundi’s are reliant on coffee. This exporting of agricultural commodities leads to vulnerabilities broadly affecting trade revenues that depend on the fluctuating international market. At the same time, when looking at Africa as a whole, the portion of agricultural production marked for export is quite low (12.8%) since a majority of agricultural products are kept for domestic consumption, whereas countries that do show high concentrations of agricultural products among their exports are generally those that either have to rely on agriculture due to a lack of other likely export goods, or those that possess economies where exports overall are very small27. In sum, with evidence of limitations on food processing and distribution – 2 means to lend impetus to the export of agricultural commodities – it is thought that by reinforcing coordination between production, distribution, and export, along with technical training pertaining to processing, the furtherance of exports based on existing production capability would be possible.

On the other hand, with the exception of South Africa, most countries in Africa do not even have 10% of their workforce in manufacturing (Table 2-1). In addition, Africa comprises only 0.7% of the world’s production in manufacturing and, furthermore, if we were to exclude South Africa’s turnout, then that number would drop to under 0.3%28. Therefore, as far as the government grasps, the manufacturing industry only makes up a slight part of the nation’s economic activity and thus appears to be only marginal within the scheme of international economics. However, as will be discussed later, Africa’s economy is distinguished by the fact that a large portion of its manufacturing and service industries depend on the informal sector, where neither licensing nor taxation apply, yet whether the informal sector contributes to the productive power of African countries, or the degree to which it can, is unknown.

Macroeconomic indicators in many countries began to deteriorate coinciding with the time structural adjustment policies were introduced in the 1980s up to the 1990s. Table 2-2, which shows macroeconomic indicators for 18 African countries that had implemented structural adjustment, evidences a drop in the real GDP growth rate from a pre-adjustment 3.4% to 2.4% afterwards. On top

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of droughts, other natural disasters, domestic conflicts and general declines in political situations, structural adjustment policies had delivered a heavy blow to the fragile economies of African nations. Since the structural adjustment aimed at tightening the budget to minimize government functionality and reducing trade barriers to facilitate market liberalization, means to protect Africa’s domestic industries, still in their infancy, could not be instilled through policy. Owing to market liberalization, the chances of local markets being washed over by the growing inflow of foreign products (with a
particular increase in Asian imports in recent years) was high and, furthermore, the competition with foreign products compelled domestic producers to resign to lower quality and lower priced production. As can be seen in Table 2-3, the export of manufactured goods from Africa’s mid- to high-level technologies sector\(^{29}\) showed negative growth from 1985 to 1998.

From this data it can be gathered that policy for the development of human resources capable of seeing through current African national trade environments is necessary in order for African countries to establish economic growth strategy – whether that be though processing agricultural produce, substitution of import products, or promotion of exports through the introduction of foreign capital – and it is not very likely that blindly investing in human resource development in the high technologies

\(^{29}\) Classification of technical levels is according to reports from each country’s United Nations Industrial Development Organization (UNIDO) office.
sector will lead to industrial development. Table 2-4 is a regional comparison of the GDP growth rate in African countries from the late 1990s to 2005. While, overall, Africa is continuing to demonstrate low growth, the speed of growth and its relative economic base differs with each country. Also, as can be seen in Table 2-5’s country-by-country breakdown of the percentage of all populations living below poverty line, while some countries with high poverty rates still show a GDP growth of over 5.5% (Mozambique, Rwanda, etc.), some countries such as Zimbabwe, on the other hand, despite negative growth due to the impact of political unrest in recent years, have poverty rates lower than surrounding regions. Also, though South Africa and Nigeria have shown a GDP growth rate of 4% or below (Table 2-4), they still have relatively lower poverty rates compared to other countries in the region.
these 2 countries alone accounted for half of Africa’s sum GDP (i.e. Nigeria at 72 billion dollars, South Africa at 215 billion dollars, and the remainder of Africa at 234 billion)\textsuperscript{30}. Further, half of the Foreign Direct Investment (FDI) in Africa is being invested in the natural resource-rich countries of Nigeria and Sudan (i.e. Nigeria at over 4.4 billion, Sudan at nearly 1.5 billion, and the remainder of Africa at nearly 4.25 billion dollars)\textsuperscript{31}.

Moreover, Africa’s trade partners have long been concentrated in Europe, including the countries of its former colonial powers. This state of conditions has continued through to this day, though intraregional trade in Africa and trade with Asia have been on the rise – albeit by only small degrees (Figure 2-1). Trade with India and China in particular, from among its external partners, has rapidly expanded (Figure 2-2) and the value of exports sent by China to Africa rose from 4 billion dollars in 1998 to nearly 14 billion by 2004. Also, China’s direct investment in Africa was just under 8 million dollars in 2001, but by 2004 it had reached nearly 45 million\textsuperscript{32}. At the same time, South Africa has taken the initiative in intraregional trade and, of particular note, trade among the Southern African Development Community (SADC) has been increasing (Figure 2-3). Seeing as trade partners have been diversifying in this way at present, it is conceivable that conditions are pointing towards a transition hereafter, from the traditional model of ‘vertical’ trade relations, wherein raw material exports are exchanged for the import of manufactured goods, to mutually-dependant intraregional or South-South styles of trade.

Enterprises based in India and China that have been gaining ground in Africa have also been independently building overseas networks whereby Chinese ventures link with other Chinese ventures and, identically Indian ventures link to their Indian counterparts; these networks have integrated themselves inter-regionally more effectively than African businesses, and, by the forward-looking

\textbf{Figure 2-1:} Shifts in Africa’s trade (export & import) classified by region

![Figure 2-1: Shifts in Africa’s trade (export & import) classified by region](image)


\textsuperscript{30} The World Bank (2006b) p.6.
\textsuperscript{31} ibid, p.7.
opinion of some experts, may just act as a catalyst for organically unifying the African region with the global economy\textsuperscript{33}. On the other hand, there are cases of markets for local products being lost as a result of the arrival of cheap, mass-produced goods from Asia, and some believe that advantages in the form of technical ‘spill-overs’ or employment generation, brought by the advent of these businesses, are limited, at least for the moment. It is especially so with recently emergent Chinese corporations, which bring their own executives and laborers and channel profits back to China, unlike Indian and other enterprises which have long established roots in African-settled ethnic-Indian communities\textsuperscript{34}.


\textsuperscript{34} Mochizuki (2006).
Regardless, whether African businesses more effectively strengthen their bases or see their markets taken by cheap Asian goods owing to the competition in domestic markets is largely dependent on policy for fostering industrial development and trade in African countries. As accompaniment to the advance of their business enterprises, Chinese and other Asian governments have invested in ODA for the transfer of technology to business, while also strategically carrying out investment support through Export-Import Banks. In response to this penetration by united Asian governments and businesses into the African economy, the Nigerian government, among others, is said to be pushing for technical transfers in negotiations by making them conditional in exchange for allowing direct investment into its mineral resource mining. In addition, Africa may be thought of by Asian countries as not just a market, but also a potential transfer point where exported goods may be assembled or processed on their way to the European market. If African governments invest in developing an employable, high quality workforce then, under the right investment conditions, such an infusion of intermediary goods would be more than possible. This means that the human resources required for Africa to facilitate direct investment as such would be the women and men laboring at the supporting industries capable of providing parts and materials to meet business demand. It is expected that these personnel, rather than having learned about the newest technologies through higher education, have fundamental knowledge as acquired by completing basic or secondary education, upon which they can absorb and apply new technologies through work.

Here, the authors would like to point out one thing that must not be forgotten when trying to understand the industrial structure of Africa – the overall proportion of Small and Micro-Enterprises (SME) is extremely high. Figure 2-4 is a comparative outline of labor pool formations in African countries divided by modes of employment. With the exception of South Africa and Botswana, where the per capita Gross National Income (GNI) is overwhelmingly high and levels of industrial development befitting middle-income nations are being achieved, self-employment or helping with the family business are the most popular modes of employment in most countries. A large portion of these self-employed individuals, and the small and micro-enterprises belong to the informal sector. The informal sector is a sphere of labor and entrepreneurship where small businesses and individuals can easily take part with a minimum of resources, and the majority in this sector is neither officially registered nor paying taxes. Actual work includes many different things such as retail, manufacture, processing, and repair. Since anyone can easily join, it seems that in Africa 20-30% of all enterprises seen each year are newly established ones, whereas half of those will close down within the subsequent 3 years.

It is difficult to fully grasp the situation since individuals will repeatedly start and cease different businesses and no official registration of these ventures has taken place, but persons employed in the

informal sector’s workforce far exceeds the number of salaried workers in the corporate and government sectors categorically. Among the few countries where the situation of the informal sector was studied, the percentage of the national workforce employed in the informal sector has been estimated at 87% in Ghana, 85.2% in Ethiopia, and 63% in Kenya\textsuperscript{39}. In fact, the situation is even more difficult to assess when considering that a significant number of persons engaged in agriculture and the formal sector also supplement their income with side work in the informal sector.

Since the formal sector itself does not grow when economies stagnate, it is inevitable that the workforce would then flow into the informal sector, and expand it\textsuperscript{40}. For that reason, the informal sector in African countries has been growing rapidly since the 1970s; however, at the same time, in middle-income countries like South Africa the percentage of persons employed in the informal sector has shrunk to as low as 24%, meaning SME have, to a certain degree, come into their own and stabilized along with economic growth. Also, the fact that work in the informal sector is mounting, while a majority of SME are closing just a few years after starting, shows that a portion of SME are

\begin{table}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|}
\hline
 & Cameroon & Ghana & Guinea-Bissau & Madagascar & Tanzania & Uganda & Zimbabwe & Botswana & South Africa \\
\hline
GNI growth rate (2000-2004) & 2.7 & 2.4 & 3.8 & -1.5 & 4.6 & 1.8 & -6.2 & 5.7 & 2.2 \\
\hline
\hline
\end{tabular}
\end{table}

Source: Drafted by the authors from The World Bank (2006b).
maturing and expanding employment. In fact, it is said that about 1% of micro enterprises will grow to become small businesses that employ 10 or more persons\textsuperscript{41}. As one would have seen by now, the gap existent between the upper and lower strata of the informal sector is quite large. While the need to improve earnings for those at the lower strata so as to facilitate their survival and, ultimately, reduce poverty, is dire, those in the upper strata should receive concentrated support for achieving growth while acquiring competitive technical skills from within Sub-Sahara Africa’s labor-intensive industries\textsuperscript{42}. Table 2-6 brings together the support needs of different groups such as these, including their education-related needs as well.

When considering that the informal sector itself will begin to shrink once a certain degree of economic growth has been attained, input given to the upper strata is indeed important as an industrial strategy. On the other hand, support to the lower strata would serve more as a fortification of social security service than as industrial strategy, therefore careful efforts clarifying both aims and target groups is necessary. In sum, from the standpoint of growth-oriented poverty reduction, middle and upper strata support for SME existing at the nexus of industrial development and poverty reduction (Figure 2-5) seems highly appropriate and furthermore, is in great demand among the target population as well.

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\textsuperscript{41} Haan (2002) pp.10-12.

2-2 Debate over the Cultivation of Industrial Human Resources

2-2-1 From an Economic Perspective

Among classical analyses of the relationship between education and economic development, Harbison and Myers’ research is highly representative. Harbison and Myers used 1957-1958 data on secondary and tertiary education enrollment rates for 65 countries as indicators of national skill levels and look into the correlation between educational indicators and income. They came to the conclusion that in affluent industrialized countries, education indicators and the wages individuals received were both high. Since that time, ‘human capital theories’ have come to be broadly applied as theoretical framework for securing suitable education policy when looking to develop human resources for national economic development. Even in recent years, attempts at measuring the economic efficacy of human resource development have been made by reviewing the correlation among years of enrollment at public schools, post-graduation income, and national GDP.

Other than measuring economic efficacy in human resource development by years spent in school, ways to estimate the rate of return by comparing investments in formal schooling with earnings have also been broadly used. For this, public expense invested by the government in the education system and personal expense invested by households for the completion of each student’s education are

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43 Harbison and Myers (1964).
44 For example, see Barro and Lee (1993).
collectively summed at each level of education for comparison with the individual’s post-graduation earnings. According to this estimation, the greater the ratio of post-graduation earnings against private and public investment, the more efficient the education process is. When one assesses the quality of human resources based on the length of their schooling, it is generally assumed that the more time one spends in school, the higher one’s earnings will be; yet, when thinking in terms of rate of return, the suitability of investing is harder to justify the higher that education costs per student climb.

As was explained in Section 1-2, during the 1960s and 1970s, when a majority of former colonies gained their independence, the bulk of support provided to developing countries in the field of education was concentrated in secondary and higher education as well as in post-secondary technical and vocational education. Analyses concerning the correlation between the number of years in school and economic development often acted as the theoretical grounding for this kind of support. Even today the idea that technical and vocational education at the post-secondary level contributes to economic growth is widely held, but at that time this idea was even more dominant. However, upon entering the 1980s, the rate of return analysis came to be more extensively applied as the emphasis in assisting education shifted from vocational to general education, and from tertiary to primary and secondary schools. Research by Psacharopoulos, then a World Bank economist, published in 1988, substantially influenced the international community’s debate on technical and vocational education. Based on data from Tanzania and Colombia, he determined that, when comparing graduates from technical/vocational tracks of upper secondary schools with those from academic tracks, the former do not find work any sooner after graduation, nor do they attain higher earnings, than the latter despite the higher costs of running vocational/technical education programs. Psacharopoulos’s research has been cited extensively ever since as evidence of the marginal relevancy of investing in technical and vocational education. Indeed, investment into equipment necessary for vocational programs includes large sums of costs not found in academic programs. Additionally, since there is a diversity of technical fields, often with practical exercises, student-to-teacher ratios tend to be kept quite low. For these reasons, the per-teacher cost efficiency drops. As such, technical and vocational education generally comes at a higher cost than general education. It would be inefficient for the government to lay too much money into vocational education without aptly grasping labor needs, since otherwise graduates could not be absorbed into the market. For reasons such as this, innumerable cases were given to show how technical and vocational education was not directly connected to employment. On the other hand, there are reports which present cases of high rates of return on technical and vocational courses at secondary schools. Ziderman showed that male graduates from a Turkish technical and vocational school were not only more likely to find employment, but also earned higher wages. From the 1990s, even Psacharopoulos himself has been easing his claims concerning the rate of return on technical and vocational education. According to his analysis of 11 Latin American countries released in 1994, in

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46 For example, Ziderman (1997) p.357; UNESCO (2003b) p.16.
half (6) of the countries looked at, the social returns from investment in vocational courses were higher than those of general courses, while in 7 countries there was no distinguishable difference in individual returns from investment in the former over the latter. In other words, although school-based vocational education has its own limitations (discussed later), whether its rate of return is low or not has not been clearly proven to the degree popularly believed and must be judged on a case-by-case basis. Also, it is necessary to recognize that even Psacharopoulos’s influential research demonstrating the low rate of return from vocational education was derived from comparisons between vocational and general tracks solely at the upper secondary level. As the sharing of roles with the private sector has progressed, education no longer needs to be exclusively school based – thus meaning that Psacharopoulos’s argument has not at all negated the cost performance of the TVET sector as a whole, which is diverse in its ability to include various forms of provisions from non-formal to in-company training.

Human resource theory is premised on the idea that as long as the private and public educational institutions and businesses actively take part in the education and training of industrial human resources, and the training and labor markets are functioning competitively, the income of cultivated personnel will be justly determined by pricing mechanisms of the free market. However, in the industrial labor markets of many developing countries, the value of educated and trained workforces is not aptly determined by this principle of lassez-faire. For example, if an individual’s real income is lower that what could be determined on the free market, then the rate of return on her or his education and training will be appraised at a lower ratio than what it actually should be. In Africa the mismatch of the kinds and levels of skills that are developed through education and training with the skills demanded on the part of businesses and the labor market has caused the current situation where labor forces are not being reasonably appraised. While a great number of governments in Africa are inclined to invest in the newest high technologies education, large-scale enterprises capable of hiring such personnel make up no more than a sliver of the labor market, and furthermore, since these large enterprises often train their workforces on their own, they do not often require any pre-service education at schools. Meanwhile, small and medium sized enterprises do not happen to enjoy education and training services even though the demand for skill development is high. With their fragile financial bases, it is difficult for these enterprises to invest in education and training for their workforce. Also, in Africa, and especially in West Africa, traditional apprenticeship systems are still widely used to educate and train artisans, meaning that there is little market demand for workers who have acquired school-based TVET. When hiring at SME, social networking as fostered through the apprenticeship system is extremely important whereas technology gained through school-based

51 Skill levels are classified according to JICA’s *Assisting Middle-Income Countries in Industrial Human Resource Development*, that is, ‘artisan’ at the single-skilled worker level, ‘trades’ at the middle technical skills level; ‘technician’ at the technical expert level (incl. multi-skilled workers and supervisors), and ‘professional’ at the engineer level (JICA (2005a) p.5).
education and training is not seen as very essential\textsuperscript{52}. Within African society, the social undervaluing of technical and vocational courses owing to strong expectations from academic schooling has also effected drops in graduates’ chances at employment and wages\textsuperscript{53}.

In this way, human resource theories do not account for labor environments where market mechanisms do not fully work. When there has been a mismatch between labor supply and demand in the market and the rate of return from particular TVET operations is low, one should determine the causes of the said mismatch by looking at the TVET curricula, the education system, and links to the market separately. These examples of supply-demand mismatch relate to criticisms against human capital theory. Although this theory operates on the premise that personnel who have been cultivated through education and training will contribute to economic development, critics say that there is insufficient insight into the content of education and training programs, the process of technological accumulation, and exactly how such personnel are to be cultivated\textsuperscript{54}. Therein lies a valid point asserting that, within human capital theory, the process of shaping human resources itself has been absent and untouched; as this relates to the specific content of TVET and is also one principal subject of this report, this process will be addressed separately in the next chapter.

\textbf{2-2-2 From Political and Social Perspectives}

In this way, TVET, as carried out through public educational institutions, has often failed to meet market needs and in many cases its economic advantages cannot be empirically corroborated; even so, the African government has been strongly inclined to invest in secondary and post-secondary levels of public TVET. As part of the international tide towards emphasizing basic education, most of Africa’s less-developed countries allocate over half of their budget to the primary education sub-sector. At the same time, some African governments have been gradually increasing their budget allocations to TVET and tertiary education. For example, in Ethiopia where TVET had made up 0.7\% of the education budget for 1996/7, it had grown to 5.1\% by 2001/02\textsuperscript{55}. In addition, over the same time, the tertiary education budget went from 11\% to 29\%. In Tanzania, the TVET and tertiary education budgets were combined and recorded as one for some fiscal years but the allocations provided to both grew from 15.5\% in 2000/01 to 22\% in 2003/04\textsuperscript{56}. In particular, as has already been said before, many developing countries have assumed that an essential condition for national economic development is catching up with the technical levels of advanced industrial nations by implementing TVET in high-technology related areas at the secondary level and above. However, there are instances where the motives behind promoting TVET, especially at the secondary education level, seem to lie someplace other than

\textsuperscript{52} Fluitman (1992) p.5.
\textsuperscript{53} Verner, (1999).
\textsuperscript{55} World Bank (2001).
\textsuperscript{56} Ibid. (2004).
investment in economic development.

One prime example would be the measures taken in response to youth unemployment. One outgrowth from the expansion of basic education is the fact that increasing numbers of youth fail to move on to tertiary education and remain unemployed after completing basic education. For many aid-dependent countries in Africa, one prerequisite for gaining donor support for the education sector is to mark anywhere from half to over 60% of their education budget to primary education. At the same time, a majority of these same countries have a real desire to increase, even if only slightly, investment into TVET and tertiary education for the sake of industrial development. As a result of the pie being gradually divided based on such considerations, secondary education often does not receive much attention when budget amounts are decided. In a substantial number of African countries, the secondary education budget neither decreases nor increases; it stays stable at low levels. What this means is that while basic education has expanded, secondary education capable of taking in basic school graduates has not; thusly, the number of students enrolling in tertiary education does not change and increasing numbers of youth who have completed basic education, yet cannot continue schooling, are the result. In addition, education inspires in people hopes of advancing, not into agriculture or manual labor, but into white collar work, despite the fact that such employment hardly exists. Thus, there has been an increase in labor migration from the rural areas to the cities, as well as rises in the number of youth who remain unemployed while not taking on work that they are unwilling to do. Figure 2-6 shows the proportion of the unemployed population within the Namibian workforce as classified by age, region and sex. Notably, unemployment is high among urban youth from 15 to 24 years of age. 56.8% of urban residents aged 15 to 19 are unemployed. These high unemployment rates among youth also lead to a sense of social discontent and rising crime rates in the city, among other things. For this reason, technical and vocational education is often used less as a means to meet labor demand, and more as a way to absorb youths from the street into the classroom.

However, some have said that unemployed youth do not comprise the poorest strata and, therefore, providing TVET geared at youth would not necessarily fit with the aim of reducing poverty. Table 2-7 is based on a 1997 survey of the Namibian workforce, and shows levels of education commonly attained, classified by category. From this table, one can see that the unemployed demonstrate a higher level of education compared to the distribution of education levels in the general workforce. In the urban informal sector particularly, it is said that there is a close relationship between one’s education level and earnings, but the poorest must work to make a living and are not poor because there is no work. Rather, in the eyes of the poorest workers, even if TVET was to be offered, their inability to pay the cost of participating would be a detriment, thus it would be desirable to guarantee equal opportunity by introducing a government-sponsored voucher system covering the cost of participation in necessary trainings in order to enhance the technical skills of this laboring class.

As stated earlier, education tends to be seen as a means to entering white collar professions in Africa. As such, it is said that rather than make issue of what one studied in school, the level of education reached has greater influence on one’s employment chances in the labor market. Foster came out with an influential study titled *The Vocational School Fallacy in Development Planning*, based on a survey of the newly-independent Ghana in the 1960s. According to Foster, the principal employer in the formal sector was the government, and what the government wanted was graduates of the general course, and not technical or vocational courses. Therefore, it was the general course schools that played the ‘preparatory vocational’ role, and the technical and vocational courses were not so relevant in preparing a workforce for employment. After structural adjustment, the ratio of government employment in the formal sector dropped sharply. Even so, in many African countries, general courses rather than technical and vocational courses, have better potential as ‘vocational preparatory’ curricula. However, even if public technical and vocational education is not useful as ‘vocational preparation’, it

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60 Foster (1966).
has in a number of cases effectively derailed the enthusiasm of some students for entering tertiary education, thus toning down their aspirations. Also, technical education rooted in local lifestyles often, when implemented, is expected to contribute to mitigating migration to the cities, or eliminating students’ categorical rejection of manual labor so that they will rethink their ambitions.

In the 1980s, in view of the public’s disdain for technical and vocational courses, as well as of the high cost of running them separately from general courses, a large number of African governments integrated technical and vocational subjects into the secondary schooling general curricula via establishing policy, i.e. the vocalization of general courses, to reduce boundaries between vocational and general tracks. However, in recent years a swing back to the academization of secondary schooling has been taking place for the reasons that since a number of elective subjects had to be prepared for vocalization, the rate of return has been low or the vocational subjects taught at schools had been, after all, not sufficiently responsive to social needs.

Numerous other cases also show how, when planning and implementing technical and vocational education for non-economically motivated purposes, governments paid only secondary attention to whether the education provided thereby met trends and needs in the labor market. However, students and households start schooling at an education institution only after determining that it is worth investing both their time and money. Therefore, these institutions, by not grasping labor market conditions, reduce the social trust in their own programs and tempt failure when they continue to offer education that does not succeed in leading to employment. As such, one may say that an essential condition to offering technical and vocational education, regardless of whether the purpose behind it is political or social in nature, is that it meet changes in the labor market.

2-3 Means and Processes for Skills Formation

Fundamental levels of literacy and numeracy are a requisite foundation for industrial human resources. It has even been reported that illiterate persons have remarkably low trainability within technical trainings. Therefore, a solid base for trainability rooted in good quality basic education is an essential condition for good vocational preparation. In less-developed countries, it is easy to fall into the vicious cycle of poor education-poor skills owing to trainability lowered by overall insufficient access to basic education, or graduates who have completed low-quality courses without being able to learn what was intended. On the other hand, basic education cannot provide market-competitive competency skills and so, though it is requisite, it alone is not sufficient. In that case, for skills formation, what sort of training should be established on top of basic education? There is diversity in the demand for industrial personnel as well as in necessary technical levels and work environments and,

as such, there is a diverse range of approaches to skills formation. These approaches include pre-service programs implemented primarily in educational and training institutions, in-service enterprise-based training, or for small and medium sized enterprises with neither the incentive nor the organizational scale to carry out systematic enterprise-based trainings, there are instances of in-service skills upgrade programs at educational and training institutions. Several methods to offering programs exist, such as a dual system where traditional apprenticeship systems are matched with practical exercises, and school-based education. In addition, even over the course of daily work, workers can learn skills by observing peers and masters, as well as by imitation and adaptation, without attending any formalized training. Due to such diversity of training modes, it is difficult to manage or fully understand the actual comprehensive state of TVET with any certainty, but a certain degree of categorization is possible. Herein, the authors would like to present a variety of skills formation methods arranged according to the levels of skills and modes of education and training.

Table 2-8: Characteristics of TVET by mode

<table>
<thead>
<tr>
<th>Mode</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
</table>
| Vocational education and training at government-owned institutions | - Often wide geographic coverage  
- Willingness to invest in capital-intensive skills  
- Often addresses strategic skills needs for national strategies | - Often insulated and unresponsive to market forces, repeating course offerings regardless of employment demand  
- Tends to become obsolete  
- Lack of cost-consciousness resulting in inefficiencies  
- Quality suffers when public budgets are cut |
| Vocational education and training by non-governmental providers | - Major source of skills training in many countries  
- Saves public expenditure that would have to be provided otherwise  
- Nonprofit providers often serve vulnerable and disadvantaged groups  
- High proportion of female enrollment  
- For-profit institutions usually cost-conscious and attentive to market developments and graduate placements | - Wide variation in quality  
- Tends to focus on skills with low investment requirements  
- Training often concentrated in urban areas  
- Fees tend to exclude marginalized groups |
| Traditional apprenticeship | - Pervasive source of skills for informal economy  
- Based on actual occupational tasks performed in employment  
- Serves poorer segments of the population  
- Self-financing and self-regulating  
- Generally cost effective | - Perpetuates existing technologies  
- Training delivery is often poor  
- Lack of standards and quality assurance  
- Skills obtained often incomplete |
| Enterprise-based training | - Self-financing and self-regulating  
- Based on actual occupational tasks performed in employment  
- Matched closely with existing production technology | - Training is selective – most notably in larger firms, for higher skilled occupations and better educated workers  
- Small enterprises are less likely to train |

Source: Johanson and Adams (2004), Table 8.1.
form of TVET. As was also recognizable in JICA’s thematic guidelines, presented in Figure 1-6, there would be 3 roles that the government must fulfill in promoting TVET: 1) systems and organization building, 2) collaboration with the industrial sector, and 3) the provision of education and training. Vocational education and training at government-owned institutions would correspond to 3), yet, as has been noted thus far, the TVET programs implemented directly by the government have not necessarily received positive evaluations. Commonly heard among criticisms concerns the government’s inability to match market needs through TVET. Owing to the fast pace of technological advances, school programs often become outdated after disproportionately large investments in expensive equipment. Also, within its implementation of education and training, the government tends to act in a top-down fashion driven by supplies while making little progress in collaboration or division of labor with the private sector. While the basis of public-private partnership rests on grasping the industrial sector’s human resource needs and ensuring that education is carried out in line with those needs, recent mainstream theories articulate that in the actual provision of education and training as well, the private sector should be involved more proactively wherever it demonstrates higher comparative advantage or capacity within a certain field. It is widely believed that when encouraging private sector participation, the government should keep its own direct involvement to an absolute minimum. The government should limit its direct involvement in training provision to areas which need focused intervention to assure equity, which cannot be achieved by free market mechanisms alone. Otherwise, it would be difficult to secure the governmental resources and commitment to TVET as given within the framework of the sector-wide approach prioritizing basic education. On the other hand, in middle-income countries like Singapore, public vocational education and training institutions have played important roles in developing human resources for industries which were not yet mature but had strategic importance within the existing domestic markets. As such, the role of public training and education institutions can be greater in cases where the government plans national skills formation based on the projection of future labor demands and operates in line with national strategy for industrial development.

Next are vocational education and training by non-governmental providers, which demonstrate wide disparity in quality. It is difficult to comprehensively assess the present state of private training and education institutions in African countries. Yet, according to a UNESCO survey conducted in Senegal, Zambia, Mali, and Ghana, though conditions differ by country, roughly 60-90% of students enrolled in TVET are at private training and educational institutions, meaning that when looking at pre-service TVET, one cannot wholly gather the facts by observing public institutions alone. One commonality observed in all sample countries was the fact that a majority of the students at private institutions had come from the poorer classes. A majority of private training and education institutions are profit-making organizations, which far outnumber institutions run by religious and non-government

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organizations. Depending on the country, the source of income will either come exclusively from students’ course fees or be supplemented by the government's subsidies; however, where institutions rely heavily on intake from course fees, the burden on family budgets is large enough that, on the whole, cases of students dropping out for financial reasons are visibly high. Though there may be variation in the pricing of course fees or the quality of education, in the case of Zambia – where students who were unable to enroll in public training and education institutions generally go to private ones instead – students at private institutions demonstrate lower average scores at the time of admission and graduation exam pass rates are also low. Numerous private institutions also do not meet government registration standards, nor can they be readily assessed, such as those illegally run, newly-established, and recently shut down. Private institutions tend to concentrate on services that require little investment, such as catering, computer skills and office-based services, whereas most training and education in the industrial technologies sector is carried out by public organs. As such, there may be a number of limitations on and problems with private sector-run training and education, but also one can see that, from among the masses of African citizens who have completed only basic education and earn relatively little, the need for vocational education and training is yet great, and many want it even at a cost. Several countries have established voucher systems in order to effectively utilize these institutions and provide equal training opportunities to the poor (see Case Study 1). Also, their governments have been considering the provision of favorable tax treatment and other incentives to private institutions. However, since uniform subsidizing of private institutions may heighten dependence on the government, invite rigidification of training and education curricula, and limit the subjective effort for improvement among these institutions altogether, it is best that governments offer support from the sidelines so that healthy competition in the market is generated and institutions that are capable of flexibly responding to the needs of students and employers will carry on.

Traditional apprenticeship is a skills training system grown from within a number of African societies and it is thought that a vast majority of workers in the informal sector begin work after having gone through such training. According to a survey conducted in Nigeria by Fluitman in 1992, over half of apprentices were youth between 18 and 25, while those over 29 years of age made up fewer than 10%. What is interesting is that the level of education attained by apprentices is not so low and, in fact, many have had more schooling than their masters. For example, in Ibadan, Nigeria, 82% of masters had completed primary school, but 92% of apprentices had done the same, with 33% and 36% of apprentices having gone so far as secondary and tertiary schooling, respectively. In Lome, Togo, 38% of apprentices completed secondary schooling and 6% tertiary. According to Fluitman, in many cases masters give higher educational backgrounds as a condition for selecting apprentices, which discredits

67 In Mali, one-third of the per-student cost is covered by government subsidies, while in Senegal none is subsidized. In the case of Mali, UNESCO has reported that though the government’s support to private institutions enhances the financial stability of these institutions, their ability to respond flexibly to labor demand drops because of the governmental control. UNESCO-IIEP (2002) p.12.
the presumption that youth who cannot go to school take up apprenticeships. Since the apprenticeship system is anchored in family and community lines, the possibility of employment after completion is quite high. In fact, finding work after attending school is so difficult that students would conceivably pursue apprenticeships subsequent to schooling. Also, students not only learn technical skills through apprenticeships, but also how to negotiate with businesses and clients, set prices for products, train new

Case Study 1: Kenya’s Voucher System for SME Training

With regard to SME skills training in Kenya, a training fund was set up along with a Project Coordination Office (PCO), a completely autonomous body established to steer and manage the funding as well as to improve training institutions. First of all, the PCO, announced the purposes for training funds through networks of business consultant companies, NGOs, labor unions and other partner organizations. At the same time, it made them nominate training and education institutions (both public and private) and apprenticeship masters that could implement small and micro-enterprise training. Then, the PCO reviewed the individuals and institutions nominated based on its own criteria and settled on a number of them for the operation of training in each technical field, whereupon capacity development trainings were introduced for trainers who needed to improve their skills.

Once the training providers were ready, the PCO solicited application of its vouchers through the networks of partner organizations. The voucher meant that once a recipient had selected and registered for a desired program from among those on a list offered by training institutions and apprenticeship masters, then a portion of the course fee would be waived while the training provider would also be given a subsidy. In Kenya, the 1st time one enrolls in a course, 90% of the fee is waived and for the 2nd time, 50%; the subsidies given to the training provider vary according to the technical level of the program.

Johanson has given four reasons for the success of Kenya’s voucher system, namely, 1) the presence of peer labor unions for SME, 2) involvement of these labor unions in planning for the training programs, 3) by making the PCO entirely independent of the government, problems caused by bureaucratic rigidity could be avoided and training provision was guided by market mechanisms and 4) by specializing the grant of vouchers for certain fields, skills formation was promoted in the needed areas of the informal sector. One disadvantage was the inefficiency of office work and the enormous amount of time required for transferring funds when subsidizing students or making payments on the course subsidies. However, the vouchers did motivate many to pursue skills learning to such a degree that, after undergoing training by virtue of the 1st voucher, many students moved on to attend other trainings even without waiting for the second voucher, delayed because of administrative reasons. Also, reports state that since the amount of income from course fees differed depending on the quality of the program, competition among training providers was enhanced and the quality of private institutions rose higher than ever before. Reports also note that another success was being able to bring in more old-fashioned and deeply-rooted apprenticeship leaders actively into the training system71.

However, the above is an evaluation by the World Bank, the institution which led the voucher system. When seen from other perspectives, some commentary has criticized that, after all, the system did not act as a catalyst for broadening the training base72.

employees, and other skills that improve their aptitude for organizational operation and the management of business. Figures 2-7 and 2-8 show the proportions of workers that have undergone apprenticeships arranged by technical field. Excluding the three categories of soap-making, fish and meat processing, and restaurants, in all fields over half of employees have gone through the apprenticeship system (Figure 2-7). A majority of employees from the 3 fields listed above appear to have gone through On-the-Job Training (OJT), but those who had been apprentices overwhelmingly responded positively that their experiences as such had been of great use (Figure 2-8). In light of these facts, it would be inaccurate to state that the apprenticeship system is out-dated, and rather its social relevancy is often greater than that of formal trainings. However, in order to effectively apply the
apprenticeship system for industrial development and the improvement of earnings, it is necessary to commit to its strategic integration as part of national human resource development systems while, at the same time, establishing a qualification system standardizing the skill level of both those who have completed apprenticeships and those who have undergone institutional education or training so as to prevent a rift between the 2 sets.

Also, though not included in Table 2-8, from among programs offered for SME and the informal sector in particular, entrepreneur trainings have been gaining attention as of late. As mentioned earlier, demands for training in the informal sector are diverse and in order to reflect them, programs must be designed with a considerable degree of flexibility. As was pointed out in Table 2-6, training in the informal sector is effective when carried out in tandem with micro-financing and other assistance measures. The reason for this is that a large number of the poor cannot afford to directly put what they learn in training into practice. Moreover, many African countries are introducing entrepreneur trainings since, as mentioned earlier, because of the extremely high turnover rate of enterprises in the informal sector, it is believed that even in cases where a business can be started with relative ease, a lack of know-how to stably develop that business has often resulted in the dissolution of entrepreneur work. The World Bank has already been implementing vocational human resource development projects, with over 93% of them incorporating components of skills training in the informal sector – a majority of which include entrepreneur training73. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) is also engaged in this kind of training. Entrepreneur trainings give instruction on how to: start and register a business, set up strategy, handle accounting, develop marketing technique and strategically hire and manage employees. In particular, these programs often provide success stories and examples of possible ventures, as hints for business plans, since a considerable number of people wishing to start a business are hunting for a field and specific kinds of work that they possess aptitude in. Persons who start a business in the informal sector, compared to those who do not, have relatively higher levels of education, and the likelihood of that business becoming established and attaining growth increases with the level of education attained by the individual74. It is said that one’s chances at success are greater when starting a business after undergoing some form of vocational training, like entrepreneur training, rather than going into business directly after completing one’s schooling.

Enterprise-based trainings, compared to the other forms of TVET discussed above, tend to respond to higher levels of skill demands. In many African countries, only a small portion of enterprises in the formal sector are of a scale where there is real incentive to carry out enterprise-based trainings. At the same time, while the levels of skills demanded of employees in these large enterprises are getting higher, the skills themselves are also more divers and specific. Therefore, it is important that an employee acquire particular kinds of knowledge necessary to operate in specific industries or by her or his company’s unique ways of doing things. Tacit knowledge, as it is often called, is difficult to

transmit in conventional forms of education and can be learned mostly on the job. According to a survey by Grierson conducted in Kenya and Zambia, large enterprises did not expect that their workforce had high levels of technical skill learned through formal education before employment, and thus enterprise-based training was implemented to upgrade the workers’ skills after employment. On the other hand, at SME and in the informal sector, investment in employee training does not happen when left simply to market mechanisms, and since skills will not improve without trainings, government intervention is of crucial importance. However, large businesses, despite the fact that they are showing increased interest in skills trainings, expect little of the government and tend to distance themselves from trainings external to the company, or government-headed assistance and systems pertaining to human resource development. Their disinterest in and detachment from measures that the government has been undertaking is growing75.

Generally, the areas of employee training in which the private enterprises have the greatest incentive to invest are knowledge and skills unique to them. To the contrary, for trainings pertaining to more general skills, individuals rather than companies are likely to have stronger incentives to cover the cost, because such trainings will raise employees’ value in the labor market. Different from the company-specific skills, employees become more likely to move from job to job with higher general skills76. Theoretically, an individual’s earnings should increase relative to the higher degree of skills attained. However, this only applies where the labor market itself is entirely free and open. Employees at large enterprises in Africa are supplied with wages far higher than those given to public sector workers of the same educational background. Thus, when considering the fact that in the industrial sector people with highest levels of education are employed at large enterprises, it becomes clear that for these employees the likelihood that motivation to change jobs will be enhanced by upgrading skills is not so high. To the contrary, one can consider that large businesses in Africa have a lot of incentive to hold trainings covering both skills unique to the company and general skills as well since there is a need to comprehensively enhance technical ability within the enterprise as a whole. However, where relations between labor and management are non-competitive, enterprises may make up for training costs by keeping down the markup range on salaries for employees who improve their technical skills77. This is because from an employee’s perspective, continuing at one’s current place of employment will eventually lead to higher wages than changing jobs, which gives businesses considerable power over setting the value of wages. Also, since there is no competition between large enterprises domestically, the investment in in-company trainings tends to be kept at the minimum for enterprises to operate.

In many less-developed African countries, enterprise-based trainings for building high-levels of complex skills and trades workers’ trainings at SME are conducted separately, with little connection between the two. However, in essence, the cultivation of SME should be closely connected with strategies for the promotion of industries and introduction of foreign capital. A vast majority of the

76 Inoki (2003).
large enterprises operating in Africa’s less-developed countries, including the South African capital invested within the Southern Africa region, are foreign to the countries in which they operate. These enterprises are controlled more by policy derived from group enterprises overseas than by policy formed by the government, and in terms of human resources training as well, the training modules employed are often developed by group enterprises while trainers are brought in from other countries.\textsuperscript{78} Being a part of the global chain is extremely advantageous for improving corporate employees’ technical levels. On the other hand, to date, large businesses operating in Africa have not extensively localized production processes and have only procured intermediary goods and parts domestically to a limited degree. Because of this, vertical groupings of African and foreign enterprises, in which foreign enterprises utilize supplies from local supporting industries and invest in enhancing the skills of the local workers, have not taken shape. Therefore, the presence of foreign enterprises has not brought about much of a diffusion of advanced technologies domestically. Many researchers have pointed out that mergers with foreign capital and supplying parts to assembly factories would lead to an increase in the technical level of domestic suppliers, which would then be shared in domestic horizontal networks (i.e. the spillover effect), thereby causing a rise in the overall level of technologies.\textsuperscript{79} However, in Africa, since local supporting industries are not yet fully mature, foreign businesses have only been attracted to spheres such as the extraction of resources (and simple processing) and final assembly for products that will be sold in Africa’s markets. This is the reason why it is said that in order to foster economic development through the introduction of foreign capital, supporting industries must be improved and, in particular, the cultivation of human resources for these industries is absolutely necessary.\textsuperscript{80}

2-4 Skills Formation for Industrial Development

Industrial growth and the development of technical skills are mutually related, and their evolution follows several stages. The first stage begins with the imitation of foreign products. In order to produce copies, one must first be able to understand how the original product is put together and what must be done to make an identical one. Therefore, a certain degree of education is necessary, but complex learned knowledge is not (see stage 1 in Figure 2-9). Before long, once the production of the imitation has met with success, increasing numbers of persons will be copying similar products and an industry will take shape. At this stage, a higher level of education and somewhat more complex technologies will become necessary. Also, products will no longer remain simple imitations, but will also be technically adapted to accommodate need (Stage 2). At stage 3, the industrial structure will deepen, tasks will be differentiated, and specialization takes form. Domestic supporting industries working in parts and other fields will grow on their own accord, and not just by the initiative of foreign capital. At

\textsuperscript{78} Grierson (2002) pp.56-60.
\textsuperscript{80} Ohno (2006a) pp.15-16; Ohno (2006b) pp.10-12.
Figure 2-9: The relationship between human resources and industrial development

<table>
<thead>
<tr>
<th>Level/pattern of industrial development</th>
<th>Human resource characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low level, primarily simple assembly and processing for the domestic market</td>
<td>Education</td>
</tr>
<tr>
<td>- Literacy, simple technologies and management training / in-company training is non-existent except for informal OJT</td>
<td>Technological capabilities</td>
</tr>
<tr>
<td></td>
<td>- Assembly technology; replication of products of simple design; ability to learn mechanical repair; however, technological efficiency is low</td>
</tr>
<tr>
<td>Mid level, production of export goods by light industries linked with domestic low-tech goods</td>
<td></td>
</tr>
<tr>
<td>- Good secondary as well as technical and vocational schools, Management and financial management training</td>
<td></td>
</tr>
<tr>
<td>- Low base of engineering and scientific skills. In-company training mainly by export-oriented enterprises.</td>
<td></td>
</tr>
<tr>
<td>- SME have low skill levels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- World-class assembly, layout, process engineering and maintenance in export-oriented industries.</td>
</tr>
<tr>
<td></td>
<td>- In other industries, acquisition of processing and production technology is at minimal levels.</td>
</tr>
<tr>
<td></td>
<td>- Almost no capacity for design or development</td>
</tr>
<tr>
<td>Industrial structure deepens and becomes stratified, but mainly inward-oriented. Many sectors lack technological capacity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- There may be a problem with quality but a wide range of education as well as technical and vocational training exists</td>
</tr>
<tr>
<td></td>
<td>- The base of engineering expands</td>
</tr>
<tr>
<td></td>
<td>- Trainings within corporations and educational institutions do not fit well with industry, cannot make the leap 1 step forward</td>
</tr>
<tr>
<td></td>
<td>- A small portion of SME can use new technology</td>
</tr>
<tr>
<td>Industrial structure deepens to a higher degree and comes to possess global-level manufacturing industries as well as the technical capacity for independent design.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- High-quality schools and industrial training</td>
</tr>
<tr>
<td></td>
<td>- Presence of management, engineers, and scientists who have received high-quality university education</td>
</tr>
<tr>
<td></td>
<td>- Education and training institutions respond to industry needs with sensitivity</td>
</tr>
<tr>
<td></td>
<td>- Enterprises actively invest in all types of in-company training</td>
</tr>
<tr>
<td></td>
<td>- Enhanced technological levels at SME</td>
</tr>
<tr>
<td></td>
<td>- Ability to analyze and borrow cutting-edge technology</td>
</tr>
<tr>
<td></td>
<td>- Excels in design and development in high technology fields</td>
</tr>
<tr>
<td></td>
<td>- Growing linkages between domestic parts and materials suppliers, export enterprises, and university and research institutions</td>
</tr>
</tbody>
</table>

Source: Drafted by the authors based on Lall (1999) p.20 Figure 4
the fourth stage, independent research and development into technologies can be conducted and subsequent technical innovations make exports of products into the global market possible. At this stage, while human resources with higher levels of research and analytic ability become necessary, domestic businesses face the needs of collaborative work with research institutions to develop new products. This theory of phased growth of technical skill and industry has been proposed by a considerable number of researchers. Generally, it is said that even for countries which have made it as far as Stage 2’s shaping of industries from Stage 1’s imitation, the leap to Stage 3 is not an easy one. When looked at from the perspective of skills formation, the ability to conduct independent research and develop products, along with the strength to commercialize goods from there are not just acquired with the passage of time. Here, some external stimulation or leadership with foresight becomes necessary. Even ASEAN countries that have accomplished more in terms of economic development than their African counterparts is said to have not been able to cross over barriers to Stage 3.

Technicians in Africa may be able to adapt technologies, but they cannot yet develop them. The possibility that industry may endogenously amass and develop cannot be denied. Yet with the exception of one unusual case of a shoe industry in Ethiopia, it is extremely rare that spontaneously amassed industries go so far as sending exports. A majority of African regions are landlocked, meaning that the cost of transportation is very high and, in addition, the supporting industries, as well as the technical savvy of personnel that work at them, are not fully matured. According to the classification in Figure 2-9, most African countries and regions are at Stage 1 and, at best, Stage 2. At these stages, it is important for countries to introduce and maintain foreign capital by improving the quality of trades workers and cultivating reliable supporting industries. This strategy to attract foreign capital should involve implementing, not just industrial human resource development, but a variety of policy measures collaboratively. For example, 1) tax and customs systems attractive to foreign enterprises, 2) a stable political environment and 3) the provision of information on and matching with domestic suppliers, should all be carried out along the same line with human resource development. The focus of policy will change depending on the field of industry to be promoted. For example, in priority industrial sectors, the government may consider extending preferable treatment to foreign enterprises, focused programs of human resource development, and careful assistance to small and medium sized enterprises. Technological spill-over and shared knowledge between foreign and local enterprises can be promoted by encouraging the exchange of personnel between foreign enterprises and domestic suppliers, in addition to the joint operation of training programs. No matter which case is selected, in order to realize these sorts of skills formation and industrial development, it is crucial that the government set realistic ambitions, and work to carry out potentially achievable industrial growth.

81 Otsuka and Sonobe (2006), (2003); Ohno (2006a), (2006b), etc.
83 There are some places where a considerable level of industrial accumulation has taken place, such as Kumasi in Ghana and Nairobi’s Gikomba in Kenya.
strategy through ministerial collaboration based on a strong leadership, above whatever internal conflict of interests may exist.

Case Study 2 presents Singapore’s human resource development strategy applied within industrial policy. It should be illuminative of the strategy that a middle-income country strove to foster for the sake of industrial development, along with the steps that were taken therefor, which would be suggestive to policy-makers in African countries, too.
Case Study 2: Singapore’s Human Resource Development Strategy for Technology-based Industrialization

The Singaporean government placed its efforts into human resource development so as to intensively generate improvement in certain industrial fields. In order to improve high technologies, in particular, university curricula were revised to match industrial policy and the government strictly supervised their quality and content while a great deal of effort was also made to improve on the industrial human resource development system outside of school education as well.

The government established its **Skill Development Fund** in 1979 and at the same time introduced a **Skill Development Fund Levy** collecting 1% of the gross wages given by employers to employees. Revenue from the skills development levy was accumulated as the fund, and partial refunds were given to enterprises that sent low-wage employees to government-approved training courses.

Singapore has 2 national universities and 4 polytechnics. In 1996, 41% of university graduates had obtained their degrees in some sort of technological field. The polytechnics cultivate mid-level technological and management skills, with a focus on engineering. This corresponds to the government’s strategy aimed at industrial development based on technology accumulation and high value-added manufacturing industries. Education and training institutions collaborated closely with industry in developing curricula and executing training practices. Many institutions implemented skills improvement programs for blue collar workers that had completed high school, and in 1996, 6,000 people took part in full-time training, 17,000 people in part-time training, and 29,000 people in continued learning training.

The **Vocational & Industrial Training Board**, established in 1979, is an agency embracing all vocational education and training, and it has authorized the **skills certification** of 112,000 people (9% of the workforce) to date. This same board has planned, evaluated, and controlled every kind of training such as full-time, part-time, long-term, short-term, formal, non-formal, apprenticeship, and business trainings, among others. Also, it has established a training center in collaboration with foreign enterprises (from Japan, France, India, Germany, Holland), which has promoted the transfer of manufacturing technology. Furthermore, it has jointly implemented technical trainings with foreign governments (e.g. Japan, Germany, France) based on their support.

In 1995, reflecting the government’s high level of commitment, trainings were diffused to the point that, in total, 1 training site was available for every 3 laborers. Also, assistance for training provided to low-wage laborers through the skills development levy succeeded in sharply raising the upper limits of the target group’s earnings. Even the training programs, which at first only managed to make an impact on large enterprises, shortly became utilisable by SME as well. The **Development Consultancy Scheme** was established, wherein SME can obtain subsidies for receiving short-term consulting relating to administration, industrial technology, business development, and personnel.

The **Training Voucher Scheme** takes over for costs incurred by small businesses to train employees, and the **Training Leave Scheme** provides enterprises that allow employees to attend training with aid that covers a portion of the employee’s hourly wage (up to 20 dollars) and the entire cost of the course fees.

The Vocational & Industrial Training Board customarily seeks the opinion of leading enterprises as to whether new technological needs exist and, when necessary, training programs are implemented to match the certain skills needed. For example, in 1998, new programs developed in this way included those covering computer integrated circuit manufacturing technology, precision engineering, high-definition digital media manufacturing, and computer networks. In addition, the same board started an **Overseas Human Resource Program** from 1991 which supports enterprises based in Singapore in inviting technical experts from overseas. The number of technical experts brought to Singapore in 1997 under this program totaled roughly 2,500, and the number of skilled laborers totaled 10,400.

In Singapore, the ratio of specialists and skilled laborers is steadily growing as per the government’s strategy (from 15.7% in 1990 to 23.1% in 1995), but in estimates by the Department of Trade and Industry, should current economic growth continue, there is a possibility that industrial human resources may still be lacking.

2-5 The Government's Role in Effective Human Resources Development

As has been discussed, the greatest part played by the government in TVET should be in designing systems and regulations, all while collaborating with industry and the private training sector, in addition to keeping direct implementation of trainings to a minimum. Also, in reality, government-run education and training institutions are limited in what they can directly contribute to human resource development in consideration of current government budget allocations to TVET in most African countries, as well as the capacity of vocational education and training institutions. In order to preserve a balance with basic education, the government's role in relation to TVET must be made clear, and any overextensive policy would face disapproval from various parts of the government and donor community.

First, information on the workforce must be gathered for estimating labor needs and forming human resource development policy based on an understanding of current conditions. It is difficult to get a good grasp on the informal sector, as already mentioned, and many governments do not have much of a fair understanding of conditions inside it. Since collecting detailed information on the informal sector would take far too much work, and conditions change so often, it would not be realistic to try to gather numerical data to the same exhaustive degree as is done with the formal sector. At the present time, a majority of countries derive their estimates of labor demand based on data from the formal sector, which comprises only 10-30% of the workforce; as a result, industrial human resource policy attaches too much importance to the formal sector, is out of line with reality and, from the perspective of poverty reduction as well, has little relevance. Governments must collect data on the informal sector and SME, including qualitative information, so that the policy will be formulated in response to the reality.

Next, policy relating to the hiring and cultivation of personnel must be prepared, in relation to which exact technical skills standards and qualifications systems have to be determined. Employment and human resources policy, as was mentioned, cannot be geared to just the education sector, but must be prioritized within industrial policy. Such legal framework will oblige actors to collaborate across sectors and bridge the vertical divide between government ministries and agencies under the common purpose of human resource development. The important reasons for difficulty faced in TVET are, 1) the fact that it spans the domain of numerous ministries while the core ministry in charge is not made clear, preventing functional collaboration and 2) approaches to TVET differ with each concerned ministry and 3) while in some fields, several ministries and agencies operate overlapping programs other fields may be left unattended. A number of countries are working to avoid problems in operations by establishing independent bodies for the management of vocational human resource development, and designating high-ranking officials from each related ministry to act in that managing body's steering committee. However, bodies for managing and coordinating vocational human resource development cannot fulfill what is expected of them unless they maintain independent revenue sources and autonomy. Analysts attribute the success of Kenya's voucher system, as introduced in Case Study 1,
to the fact that the project coordination office acted as a private organization independent from all

government agencies, and was also fully entrusted with the administration of training funds. In order

for these independent coordination and management bodies to function, all related agencies85 ought to

come together with the vocational human resource development activities they implement and hammer

out the most effective and efficient ways to divide the tasks. It is not enough to collaborate passively

and proactive efforts should be made to divide tasks along the lines of shared principles all under the

guidance of policy at the supra-ministerial level. For this purpose, the presence of a strong leadership

along with vocational human resource development policy based on analyses broad in scope would

generally be seen as critical.

In addition, it would be necessary to unify the technical skills certification and qualification

standards. In Africa, each ministry has its own standards for technical skills that are, again, divided into

so many categories that often neither employees nor employers can rightly comprehend what each skills

qualification inherently means or what the value of possessing it would be. As such, since holding

domestic qualification for certain skills poses little advantage in employment, it is not rare for persons

to pursue technical skills qualifications from British and other international institutions86. In regard to

this, by standardizing a skills qualification system that clearly designates what skills personnel possess,

the matching of laborers to employers would be facilitated. At the same time the standard qualification

system would enable the assessment of education and training institutions based on their performance,

such as by how many students acquire which levels of qualification, rather than simply investing based

on the number of courses provided87. In Africa, several countries have begun to establish independent

organizations for the conferment of qualifications and establish a national qualification framework88.

However, since settling the qualification and measurement criteria requires patience from both the

education providers and industry itself, in many cases the whole process gets confused. Also, different

agencies have each of their existing qualification systems, developed via their own unique process and

consideration, which means that they tend to resist standardization with other bodies. Here, as well, it is

imperative that agencies demonstrate a strong conscious will to act cooperatively for the sake of a

common purpose beyond past circumstance and agency interests.

Also, the idea of Competency-Based Training (CBT) is being broadly introduced with close

relation to the national qualification framework. This is an approach of training which was developed

by reflecting on past mistakes in running supply-driven TVET programs and ignoring market needs;

CBT attempts to implement trainings for the solid acquisition of skills demanded on the market and

grant certification to those who have acquired such skills. Industry, along with education and training

85 The Ministries of Education, Labor and Employment, Industry, Agriculture, Local Governance, and Women’s Affairs, are

among the government ministries that have jurisdiction over training and education institutions in each field and thus establish

their own qualification standards with relation to vocational human resources cultivation respectively.


88 In 3 countries visited for this study, Ghana, Uganda, and Malawi, policy courses for national qualification frameworks are

currently in transition, although the degrees of change vary.
institutions, is involved in drafting training programs and trainees are assessed as they reach the skills level aimed for within each stage of the programs. Also, CBT is managed as a dual system, placing strong emphasis on practice, wherein theoretical learning at education and training institutions is combined with practical training within enterprises. However, the factors which compose ‘competency’ change according to situation, and also as technologies advance. Therefore, it is not easy to standardize ‘competency’ itself. Also, in order to effectively link instruction in the classroom with practice, the instructor must sufficiently understand the concept of CBT and possess enough flexibility to handle individual cases appropriately. Recognizing that success in education reform greatly depends on the responsive capabilities of teachers, which is more difficult than merely carrying out the designated curriculum, it is expected that support for teachers will be also provided. On the other hand, enterprises do not expect much from school-based pre-service training. In consideration of the fact that high trainability (skills of comprehension, analytic ability, fundamental academic base, basis to learn new knowledge and skills) is regarded as more important, it would not be effective to put too much time and energy into merely setting qualification standards for CBT. It is possible to move ahead without having the qualification standards fully settled; thus, it should be adequate to proceed with reforming the qualifications system while strengthening linkages to industry, and working to make trainings appropriate to actual demand.

Up to this point, the authors have iterated the crucial importance of collaboration with the private sector repeatedly. First, it is necessary to have an open dialogue with enterprises, i.e. employers, in order to understand the demand for labor and formulate a curriculum based thereon. Also, the government’s collaboration and division of tasks with the private sector as a provider of education and training is crucial. As has already been shown, private institutions surpass public institutions by their sheer number of schools and enrollees in their formal education and training, which serve masses of the poor population. Also, large enterprises often train their employees in their own capacity. Further, the apprenticeship system and non-formal education also play important roles in technical and vocational education and training. In ways such as these, the portion of education and training programs that can be run by the government in this sector is small to begin with, and thus collaboration between industry and private education and training organizations is essential. For that reason, the role that the government plays in preparing the all-encompassing framework, i.e. qualifications systems and policy, is absolutely vital. Furthermore, strategic public financing have proven to be effective in utilizing private institutions, such as by providing aid for initial costs incurred when institutions with a financially weak base set up new programs, or by providing incentive for the implementation of trainings in priority fields. On the other hand, just as with enterprise-based trainings, market mechanisms function sufficiently even without government involvement where the private sector is motivated to carry out independent education and training programs, such as those for wealthy clients able to pay course fees. In those cases, to have the government directly implement trainings and educational programs would not only fail to be cost-effective, but it would also injure the functioning ability of the private market. It is advisable that the government pulls some weight at the stage of
setting up programs and tries not to cover all areas, thereby allowing business to take up the responsibility of training as it augments economic growth. Moreover, since competencies in demand change from minute to minute, the relevancy of pre-service TVET for longer time periods is difficult to be maintained. Instead, it is believed that the need for focused short-term training provided for persons already working is on the rise, meaning that education and training institutions must also change their programs along with market needs.

Herein, the authors would like to introduce oft-utilized financial schemes for supporting the role of the private sector in human resource development. One such item is training funds. These are funds specially geared for the purpose of vocational human resource development and do not belong to any specific ministry or organization; in most cases in Africa, these include funds provided by aid agencies and those collected from enterprises placed together in 1 account. These funds act as a flexible resource that can be used for a variety of expenditures such as: a) for providing incentive to businesses and institutions that implement technical education and training, b) for implementation of trainings for the informal sector and other disadvantaged segments of society that past trainings were unable to reach, c) for vouchers for poor workers unable to raise money to pay the cost of participating in such courses on their own, and of course, d) for publicly sponsored education and trainings, among others. By establishing independent institutions to manage these funds, vocational human resources development, a problematic entity that presented vertically-divided government administrations with many a dilemma and often failed to function well, can be carried out with better mobility. Also, business contributions made to funds generate a consciousness and commitment among those in industry, and this can contribute to the enhancement of collaborations between institutions and industry. According to World Bank analysis, so far, countries which have already introduced the training funds have seen positive results. However, according to several recent reports, it is best to let contributions from aid agencies and enterprises bypass the Ministry of Finance, because, in many cases, those which pass through are diverted as the agencies all vie for a piece of the pie.

Contributions made by enterprises that act as a source for training funds are in many cases collected as training taxes, from a certain portion of a business’s sum payroll. Relative to this, it is also possible to establish a system of tax exemption or subsidy for enterprises that wish to train their employees. A tax exemption/subsidy system would reduce training taxes or refund a portion of training costs in the case that a business offers trainings for its employees, or has employees attend outside trainings, via training funds. Also, when the expense burden of employee training has grown too large for smaller-sized enterprises, there are also means to promote employee trainings by extending grants larger than the amount paid in training taxes by the company. However, in Africa the latter is not often applied as the paperwork required is quite troublesome. The voucher system was covered in detail in section 2-3, so it will not be discussed at length here, but it is worth recalling once more the fact that it

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is an effective means of assuring equity in vocational education and training.

Training funds and training taxes, when working well, lead to both the promotion of investment into employee training by business as well as the diversification of financial bases for vocational human resource development. At the same time, such common training funds will make the appropriation of resources possible in fields which do not have strong financial bases and where market mechanisms alone do not generate training. The kind of activities that the government can implement for this sake would include: allocation of vouchers to certain groups of people, or implementation of trainings in the informal sector. However, as mentioned before, there is the chance that the government may divert funds. Also, should the system fail to pick up on market demand and reach out small businesses and places that cannot otherwise be reached, it may result in a loss of public support for the whole system of human resource development92.

Table 2-9 illustrates roles that the government plays in TVET as well as the means to fulfilling those roles and the strengths and weaknesses posed by them. These means are being tried in many countries in Africa, and clearly there is a need to look into which are most appropriate in each country’s context, while also taking the experiences of other countries into consideration.

Table 2-9: Comparison of policy objectives and means to achieve them, based on cases in Africa

<table>
<thead>
<tr>
<th>Policy objective</th>
<th>Means</th>
<th>Strengths(S) and Weaknesses(W)</th>
<th>Sub-Saharan African country examples</th>
</tr>
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</table>
| Raising additional or alternative funding for vocational education and training | Earmarking training taxes (usually based on company payroll) | - Possible to attain a steady supply of funding for training of the nation’s human resources (S)  
- The employer may shift the onus of special-purpose taxes to laborers by lowering wages (W)  
- Over-concentration of funds in central administrative agencies may generate residual funds and inefficiencies (W)  
- Should national finances become strained, the government may put special-purpose taxes for resource development together with general tax revenues (W)  
- Special-purpose tax revenues may be diverted to purposes other than trainings (W) | Tanzania                           |
| Co-financing (matching funds)                                                   | Administers education and training institutes with pressure to acquire revenue (S) |                                                                                               | Kenya                               |
| Cost-sharing (particularly, trainee fees)                                       | Participants, as direct beneficiaries of the training, justifiably share the cost of human resource development (S)  
- The poor may not be able to procure the opportunity for training if target-specific subsidies and scholarships are not offered (W)  
- Should national finances become strained, the government may put special-purpose taxes for resource development together with general tax revenues (W) |                                                                 |                                     |

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| Deferred training fees (government secured or subsidized loans) | - If persons who face difficulty paying are protected by student loans, then course fees may be raised or other means to cost-sharing may similarly be promoted (S)  
- Records management was lax in many of the Sub-Saharan countries where student loans were introduced, thus preventing fair performance of the system (W) | Tanzania  
Botswana |
| Revenue generation by training providers | - Facilities may be used to their maximum potential via loans, etc. (S) | Botswana |
| Production-for-profit/training-with-production | - End results of the training may become even more reflective of market needs (S)  
- The objective of the training may be taken lightly, causing a drop in its quality and/or quantity (W)  
- More resources may be steered towards making goods rather than the training as a whole (W)  
- Earnings from sales may not be utilized for the training objective (W) | Botswana |
| Promotion of education and training by private education and training institutions | - The national human resource development system may be expanded without increasing public expenditures (S)  
- Private education and training institutions tend to overly concentrate on technological fields where demand is high and investment can be kept low, thus it is possible that public institutions get trapped in providing training for only the fields that require high investment, and the mutual accommodation of technical costs becomes impossible (W) | Madagascar |
| Donor aid (grants, loans) | - Funds may result in specializing in a training field not suited to the conditions of that particular country (W) | Madagascar |
| Promoting enterprise-based training (formal sector) | Financial incentive; business income tax concessions | - A refined corporate tax system covering the wide range of enterprises is necessary (W)  
- Expenses are required for maintaining the system, causing a loss in public earnings (W)  
- Businesses of the scope subject to the advantage of tax exemption alone are few in number, meaning few businesses will take part (W)  
- If efforts are not made to cultivate human resources, businesses may fail to increase the number of in-company trainings, even while receiving exemption (W) | Mauritius |
| Subsidies/grants from government or national training funds | - The burden on public finance increases (W)  
- If efforts are not made to cultivate human resources, businesses may fail to increase the number of in-company trainings, even while receiving exemption (W) | Madagascar |
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| Levy-grant systems; training cost reimbursement, training levy exemption, training cost redistribution | - In-company trainings may come to be held more systematically and schematically (S)  
- Depending on the training needs, there is a possibility that enterprises (especially small enterprises) may not benefit from this system, resulting in discontent (W)  
- If efforts are not made to cultivate human resources, businesses may fail to increase the number of in-company trainings, even while receiving exemption (W) |                                                                                                                   | Cote d’Ivoire  
Mauritius  
Nigeria |
| Establishment of industrial training boards                                      | - Trainings are promoted and advisory services can be offered (S)  
- Unless it has genuine authority, autonomy, and the participation of related parties, the body becomes a mere shell of what it should be (W) |                                                                                                                   | Kenya  
Nigeria |
| Training quota system (obligates a certain portion of employees to be trained)  | - When great differences exist in the demand for trainings according to enterprise or sector, the system may have the opposite effect (W)  
- Enterprises may elect to pay the penalty fee and not abide by the system rather than fulfill allocations (W) |                                                                                                                   |                                                                                      |
| Modernizing reform of the apprenticeship system                                  |                                                                                                                   |                                                                                                                   | South Africa |
| Legislation: Protection of investments into employee training                    |                                                                                                                   |                                                                                                                   |                                                                                      |
| Improving the effectiveness and efficiency of public education and training institutions | Output-based funding of training institutions                      | - Standards for the impartial and objective allocation of funds are introduced (S)  
- Demand-driven trainings are promoted (S)                                                                                                                                                                                      | South Africa  
Cote d’Ivoire  
Senegal |
| Competitive bidding for funding by education and training institutions            | - Public expenditures on human resources training are reduced by competition (S)                                                                                                              |                                                                                                                   |                                                                                      |
| Decentralization/institutional autonomy                                           | - Training needs can be uncovered and handled through local initiative (S)  
- Authority for budgetary allocation is decentralized allowing for trainings to be properly arranged as driven by demand (S)  
- If decentralization progresses too far, coordination centered on the training system becomes impossible (W)  
- If appropriate capacity building is not carried out, regional education and training institutions may have weak management (W) |                                                                                                                   | Madagascar  
Mauritius  
Tanzania |
<p>| Contracts with education and training institutions in response to training needs  | - It is possible to respond to certain groups’ demands for skills improvement (S)                                 |                                                                                                                   |                                                                                      |</p>
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</table>
| Effective allocation of national training resources  | Establishing national training authorities      | - Success will not be attained unless sufficient resources and the necessary technical support is obtained ($W$)  
- Unless it has genuine authority, autonomy, and the participation of related parties, the body becomes a mere shell of what it should be ($W$) |                                      |
|                                                       | Partnerships: participation of stakeholders     | - Principal groups with vested interests will independently be involved in the management and administration of national funds for training through their substantial involvement in the management committee ($S$) |                                      |
| Moving towards flexible, market-responsive training provision | Promotion of education and training by the private sector | - Private education and training institutions tend to overly concentrate on technological fields where demand is high and investment can be kept low, thus it is possible that public institutions get trapped in providing training for only the fields that require high investment, and the mutual accommodation of technical costs becomes impossible ($W$) |                                      |
|                                                       | Outcomes-based funding for education and training institutions | - Serves as a strong economic incentive to avoid supply-driven trainings ($S$)                     |                                      |
|                                                       | Contracts with education and training institutions in response to training needs | - It is possible to respond to demand voiced by certain groups for skills improvement ($S$)      | South Africa                        |
|                                                       | Decentralization/institutional autonomy          | - Training needs can be uncovered and handled through local initiative ($S$)  
- Authority for budgetary allocation is decentralized allowing for proper trainings arranged by demand ($S$)  
- If decentralization progresses too far, coordination centered on the training system becomes impossible ($W$)  
- If appropriate capacity building is not carried out, regional education and training institutions may have weak management ($W$) | Kenya                                |
|                                                       | Voucher system                                  | - Promotes choice among consumers/beneficiaries ($S$)  
- Creates conscious will (effective demand) on the part of beneficiaries to invest in trainings ($S$) | Kenya                                |
| Equity: training for minorities and disadvantaged groups | Economic assistance to disadvantaged groups     |                                                                                                |                                      |
|                                                       | Scholarships in line with certain standards     |                                                                                                |                                      |
|                                                       | Vouchers in line with certain standards         | - Promotes choice among consumers/beneficiaries ($S$)  
- Creates conscious will (effective demand) on the part of beneficiaries to invest in trainings ($S$) |                                      |
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| Equity: To train and re-train the unemployed               | Special allocations from training funds, particularly when financed by payroll levies | - Training taxes collected from employers in the formal sector can be given for training minorities and certain groups (S)  
- Going against the principle that advantages exist for those who pay special taxes, formal sector enterprises may object (W) | South Africa |
| Equity: To respond to the needs of disadvantaged regions   | Contracts with education and training institutions in response to training needs | - It is possible to respond to certain groups’ demands for skills improvement (S)              |                                     |
| Improving trainings for the informal sector and self-employment | Allocation of training funds to disadvantaged regions                      | - Should the allocation of training funds to certain regions influence political pressures out of local interests, objectives may become self-serving (W) | Tanzania |
|                                                            | Establish regional training boards                                      | - It is difficult to maintain balance in regional autonomy and central coordination (W)         | Tanzania Madagascar                 |
| Attracting foreign physical investment                     | Voucher system                                                         | - Promotes choice among consumers/beneficiaries (S)                                          | Kenya                               |
|                                                            | Subsidized training for foreign companies which establish new, local production facilities | - Creates conscious will (effective demand) on the part of beneficiaries to invest in trainings (S) |                                     |