A comparative study of education and development in Cambodia and Uganda from their civil wars to the present

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CHAPTER V
EDUCATIONAL OUTCOMES: TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING AND HIGHER EDUCATION

It is the division of labour (through education) that a society can prosper and be sustained. Adam Smith, 'The wealth of nations'

V.1 Introduction
Education reforms in Cambodia and Uganda, aiming to contribute to the development of their countries, not only focus on expanding the access and raising the quality of education in terms of literacy and numeracy skills, as discussed in Chapters III and IV, but also the provision of skilled labour. This role was reinforced in their national development plans, in which education was considered the key to promoting private-led economic growth, especially in the industrial sector, and to reduce poverty through productivity improvement in rural areas. To achieve these objectives, a balance across a range of skilled workers is needed.

A balance here does not mean equal treatment among different levels of education and training institutes, but rather that education responds to the needs of the respective labour markets and levels of economic development. In the context of developing countries such as Cambodia and Uganda, as discussed in the theoretical framework in Chapter I, there is a prioritized need for a large labour force with practical skills (technical and vocational), followed by a highly skilled workforce in science, engineering, manufacturing, construction, and technology. Being unable to educate the population results in shortages of relevant skilled labour and a waste of effort and resources.

In Cambodia and Uganda, this diverse pool of skilled labour is trained at different levels of education and training institutes. Therefore, this chapter will examine and compare how different levels of education and training institutes in Cambodia and Uganda provide a balance of diverse skilled labour to respond to local labour market needs across different levels of economic development. This chapter will be divided into four sections. The first section will examine the structure of the local labour market and economy and its implications for needed skilled labour. The second section will examine the practical skill provision in terms of technical and vocational
training and factors that affect such provision. The third section will examine the situation of higher educational provision in science, engineering, manufacturing, construction, and technology, and factors that affect such provision. The final section is the concluding remarks.

V.2 Structure of the Ugandan and Cambodian labour markets and economies: Implications for skill requirements

Cambodia and Uganda are situated in quite different geographical settings. While Cambodia has a coastline with a large central plain and is an average of 360 meters above sea level, Uganda is a landlocked country situated on the great African plateau at an average of 1200 meters above sea level. However, they are both considered rich in unexplored and unexploited mineral resources, including significant deposits of petroleum, and they are considered to be countries blessed with fertile soil for agriculture.

Despite the difference in population size and ethnic composition (the population in Cambodia is about 14 million and in Uganda is about 30 million, and Cambodia is predominantly one ethnic group — Khmer — which accounts for about 90 percent of the population, while Uganda is a multi-ethnic country in which more than 10 ethnic groups have more or less an equal share of the total population), the majority of the two countries' populations are relatively young, and therefore have a high labour-force participation rate.67 Between 2006-2009, the youth labour force participation rate in Cambodia and Uganda was 79 percent and 85 percent respectively. Further, the majorities of their populations reside in rural areas and are involved mainly in agriculture (as seen in Table 5.1). Their employment status also shares a similar pattern in which the percentage of unpaid family workers is very high, accounting for about 41 percent of the total employed workers.

67 The labor force participation rate is the proportion of the population aged 15 and older that is economically active.
Although the Cambodian economic structure is moving away from agriculture towards the industry sector, its industry is still small, employing only 12.3 percent of the total labour force. Further, industry has a narrow base dominated by low tech industries such as the garment sub-sector that employs almost 80 percent of the labour force in the industry sector. In Uganda, during the last decades, there has been little change in economic structure. The size of the industry sector is very small, employing only 4.2 percent of the total labour force in 2006, and construction employed the majority of the labour force in the industry sector.

During the last decades, the service sectors in Uganda and Cambodia have grown, but still employ roughly over 20 percent of the total labour force. In Uganda, the growth is mainly due to the increase in the number of civil servants, especially among teachers, a product of the implementation of UPE and the proliferation of the number of districts. Between 2002 and 2008, the number of civil servants in Uganda increased by 34.31 percent, from 204,182 to 274,237. The increase in public service workers is not in line with public administrative reforms and also is contrary to its economic policies, which considered the private sector as the main engine of growth. However, the service sector growth in Cambodia is mainly the result of the improvement in
tourist-related businesses. The proportion of paid employees in hotels and restaurants and in social, community, and personal services rose about three-fold (from 1.2 percent to 3.9 percent, and from 6.6 percent to 17 percent, respectively) while those employed in civil service declined (World Bank, 2007a, p. 50).

Therefore, policies aimed at linking education and training to the needs of the local labour market and economy in both countries must address the dualistic nature of their economies. On the one hand, there is a rapidly growing urban economy — an emergence of low-tech industry and expanding service sectors, albeit with a narrow base. On the other hand, there is a large rural economy dominated by the agriculture sector, which needs improvement and modernization, as the majority of the agriculture labour force lives at the subsistence level. This economic structure signifies that there is a low demand for skilled workers, especially those with high skills.

However, certain types of skills are necessary to the economies of the two countries. As discussed in the theoretical framework in Chapter I, for developing countries such as Cambodia and Uganda at the early stages of development where agricultural is predominant and industry is still in its infancy, but compounded by the increasing importance of technological innovation and adaptation in economic structural transformation and development processes, the skilled labour most needed includes a large mid-skilled labour force in the technical and vocational fields and a small highly-skilled labour force in science, engineering, manufacturing, construction, and technology with higher education backgrounds rather than general secondary educations, and humanities, art, social sciences, and business with higher education backgrounds (World Bank, 2008b, p. 20). Therefore, the following section will examine the provision of these skilled workers in Cambodia and Uganda.

V.3 Technical and vocational skills formation in Cambodia and Uganda
Immediately after the end of their civil wars, studies on the roles of education in the development of Cambodia and Uganda have similarly concluded that the entire education systems are unable to produce sufficient skilled labour to meet the needs of labour markets and complete the task of rehabilitating and reconstructing these two
devastated countries. First, their general education curricula lack a focus on technical and vocational skills. In Uganda, the task of general education was intended to prepare students for higher education to take up managerial positions, especially in the government sector. Therefore, the system purposely promoted academic subjects rather than technical and vocational skills. Those who were unable to continue their higher education were therefore not able to actively participate in economic activities and remained largely underemployed or unemployed, as they had not acquired any marketable or productive skills (Development Consultants International Limited, 2001, p. 4). In Cambodia, additional tasks were added to the general education curriculum during the 1980s and early 1990s to indoctrinate students with socialist-communist ideology, which are no longer relevant for the situation after the transition to a democratic ideology and a market economy.

Second, the technical and vocational education and training institutes in Uganda and Cambodia, which annually produce only about 5,000 and 2,000 graduates respectively, cannot satisfy the need for skilled labour (MoES, 1990; ADB, 1997). Based on this analysis, the studies recommend that for education to better contribute to development, education must equip students with vocational and technical skills. The government of both countries planned to adopt this policy. Immediately, in the late 1980s and early 1990s in Uganda and Cambodia respectively, taskforces were set up to develop new curriculums and strategies to improve the TVET sub-sector.

In this sense, formal technical and vocational skill formation in both countries — a process where young people are prepared to enter the labour market — can be acquired through two channels. The first is through general education, as technical and vocational skills are mainstreamed into the general education curriculum, and, second, more preferred by policy makers in both countries, is through the technical and vocational route in specialized training institutes, as seen in Figure 5.1.

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In Uganda, as discussed in Chapter II, the low expenditure on education in general, and the inability of government to shift its historical emphasis and heavy investment in higher education immediately after the end of the civil war, hindered the reform process to improve technical and vocational skill provisions in general education. Only the primary school curriculum was reviewed, and this work proceeded very slowly. It took more than a decade before the new curriculum was introduced in the early 2000s. Consequently, classroom practice still followed the old curriculum and continued to produce graduates with little vocational or technical skills to improve their living standards as well as the economy as a whole.

The introduction of a sector-wide approach in Uganda in 1998 and the increase of budget to the education sector as presented in Chapter II brought about opportunities for change. In the early 2000s, the new Ugandan primary curriculum, which included

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**Figure 5.1 Ugandan and Cambodian Education System**

Ugandan Education Cambodia Education System

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**V.3.1 Skill provision through general education**

In Uganda, as discussed in Chapter II, the low expenditure on education in general, and the inability of government to shift its historical emphasis and heavy investment in higher education immediately after the end of the civil war, hindered the reform process to improve technical and vocational skill provisions in general education. Only the primary school curriculum was reviewed, and this work proceeded very slowly. It took more than a decade before the new curriculum was introduced in the early 2000s. Consequently, classroom practice still followed the old curriculum and continued to produce graduates with little vocational or technical skills to improve their living standards as well as the economy as a whole.

The introduction of a sector-wide approach in Uganda in 1998 and the increase of budget to the education sector as presented in Chapter II brought about opportunities for change. In the early 2000s, the new Ugandan primary curriculum, which included
'Integrated Production Skills', was introduced; however, the new curriculum has never been put into practice in schools. Consequently, the traditional emphasis on academic subjects still dominates Ugandan classrooms. Rather than trying to analyse why this new curriculum was not properly implemented, the MoES, with support from the donor community, introduced another new curriculum called 'thematic curriculum' for primary schools in 2007 and in 2009, and a new secondary school curriculum was also introduced. The new curriculums claimed to include local life skills and skill improvement, which the MoES believes are central to reducing poverty and speeding up the development and industrialization of the country by creating more employability for the graduates and making them more productive.

Although it is too early to evaluate the impact of the new curriculums, there is widespread recognition that practical/vocational education still does not receive priority attention in classroom practice (Uganda National Commission for African Peer Review Mechanism, 2007; Komakech, 2009). A recent assessment found that the core issues in teaching technical and vocational skills are not a problem of curriculum design, but lie in the inability to implement the reform, as they never took into account the structural realities that hinder proper implementation (Altinyelken, 2010).

In Uganda, one of the main reasons to introduce the new curriculums was to reduce the number of subjects and thus the cost of printing textbooks and teaching materials, rather than in terms of content, even though new curriculums cover many of the same areas as the previous ones. The rationale is to make textbooks and teaching materials more available in the schools so as to improve the quality of teaching. However, as discussed in Chapter IV, there is still a significant shortage of textbooks and teaching materials. Further, teacher training programs have not adjusted to these new curriculums; and in-service trainings to familiarize teachers with these new curriculums are almost non-existence. This is compounded by the fact that there are no departments or individuals with specific line management responsibilities for launching the new curriculums and monitoring their implementation (Penny, 2008).

Consequently, teachers do not have the capacity to teach and are not under pressure to teach the practical skills promoted in the new curriculums. A study by Chisholm and Leyendecker (2008) reveals that Ugandan classroom practices still 'revolve around a traditional model of curriculum ... and instruction rather than one based on the development of meaning, inquiry-based teaching and practical applications of science to real life, all seen as missing from teachers' pedagogical strategies, rendering teaching and learning mainly "theoretical"' (p. 197). Experienced Ugandan educators also note that Ugandan students are loaded with useless knowledge, a lack of ability to apply knowledge, and no critical and creative thinking, reasoning or innovation (Komakech, 2009). This is evident by the fact that while 66, 58 and 60 percent of students who participated in a national survey achieved conceptual understanding in, respectively, numeracy, geometry and statistics, only 29, 2 and 11 percent respectively can apply that conceptual understanding (MoES, 1999).

However, the most important reason why fact and theory teaching and learning are practiced in the classroom is because teaching and learning processes are geared towards passing national examinations. It is within this context that Greaney and Kellaghan (1995, p. 3) note that public examinations have a negative effect on teaching practical skills as teachers teach what will be examined — placing too much emphasis on facts, leaving out many other topics, including skills, attitudes, understanding, and the capacity to apply knowledge to daily life and the world of work. Nor do these facts usually relate to local reality. For example, one question on the Uganda primary national examination asked, 'Through which organization do farmers in Denmark market their produce?'

Teachers also express the same perception: 'You teach about the development of agriculture in Western countries, but do not teach how to do agriculture in Uganda, to be specific for Jinja district, how to fish in Lake Victory' (personal conversation, 27 July - 2 August 2009). A recent World Bank study argued that 'A departure from the currently dominating rote learning in African classrooms to the provision of higher skills and competencies requires a departure from current assessment practices. If the implementation of assessment practices and instrument lags behind the curriculum
reform, the relevant skill in the new curriculum has little or no chance to make it into curriculum' (World Bank, 2008a, p. 62).

In contrast to Uganda, in Cambodia immediately after the end of the civil war, the new general education curriculum was introduced in the mid-1990s; however, it did not focus on technical and vocational skill formation but instead on literacy and numeracy, following recommendations made by the World Bank and the Asian Development Bank. They argued that strengthening the national economy could be most rapidly achieved by investing in education and training that provided immediate return through short course trainings in TVET (ADB, 1996; World Bank, 1994). However, many students dropped out before completing their basic education, as discussed in Chapter III; therefore, they were not eligible to enroll in TVET institutes. Further, the coverage of TVET was limited to only a few urban areas and geared toward the formal and modern industry sectors, which did not correspond to the rural and informal economy.

In response to this, Cambodia considered diversifying and deepening its low human resource base as a central strategy to promote new and sustainable sources of economic growth and improvement in living standards. These are core goals in their many development plans, including poverty eradication plans and national development plans, as well as education strategy plans. Consequently, a strategy to tailor the general education curriculum to necessary local skills was adopted in the early 2000s through the introduction of the new basic curriculum, which includes a local life skill program.

To achieve the objectives of the reforms requires not only financial resources, but also the capacity to understand and implement the reforms. Unfortunately, the Cambodian government has neither the budget nor the human resources to implement the program. Instead, it identifies the program as an opportunity for parents, local communities, and NGOs to cooperate and work together to provide training in specific skills that have a particular relevance to their local economy. However, the objective of making the program contribute to the development of the local community has not materialized for two reasons. First, there is a lack of funding as
poor communities were unable to mobilize resources to implement the program. Second, although some schools can mobilize resources to implement the program, they have not been able to provide appropriate skills for community development.

A field visit revealed that local life skill programs never go beyond traditional skills. Keng (2009) argues that in Cambodia the foremost constraint on handling education reform effectively is the lack of capacity at both the individual and the institutional levels. In this case, on the individual level, as presented in Chapter IV, school directors have low formal qualifications, which hinders their capacity to plan and analyse the types of basic life skills that their communities need; and on the institutional level, teacher training institutes are unable to train local life skill teachers, so schools have difficulty finding such teachers.

The lack of appropriate basic life skill programs is compounded by the fact that the MoEYS places priority on national standards and uniformity as seen in article 23 of the Education Law: 'The ministry in charge of education shall clearly define the programs of study for general education which are compulsory for all educational establishments in the Kingdom of Cambodia'. Schools are expected to adhere strictly to both the school calendar and national curriculum, which do not reflect each local community's reality. Teachers and educational specialists with experience in rural and remote communities question the relevance and value of the existing curriculum for many pupils (Middleborg, 2005). This is because the curriculum was developed without sufficient technical expertise and wide consultation.

A long-term expatriate working on education in Cambodia notes that 'We are supposed to have skilled professionals to get the professional things done, but in Cambodia no one with a degree in curriculum writing is participating in the curriculum development' (interview, 7 August 2008). Further, teachers are not included in the process of curriculum development. They have little or no access or input despite their vast classroom experience. They are seen as implementers of the

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70 Fieldwork research in Cambodia from August 2008 to March 2009.
teaching program rather than as professionals who can analyse, interpret, and make reasoned judgments as to how and what to teach (Knight and MacLeod, 2004).

Although general education in both countries fails to promote basic technical and vocational skills, they are relatively successful in producing candidates for TVET institutes, which both countries have also attempted to expand. The next section will examine the provision of TVET in specialized institutes in Cambodia and Uganda.

V.3.2 Skill provision through specialized institute
In Uganda, despite the calls for expansion of TVET in the 1989 education review commission report and the 1992 EWP, nothing changed substantially, especially in terms of budget allocation. As discussed in Chapter II, much of the budget for post-primary education is allocated to secondary and higher education. In addition to low budget allocations, the TVET sub-sector never received the amount that was officially allocated to it; the reduction was as high as 47.3 percent in 1997 (MoES, 1999). The lack of funds hindered the ability of the government to employ sufficient staff to improve the situation and expand its coverage and programmes. In the early 1990s, every TVET institute lacked instructors; in some extreme cases up to 40 percent of instructor positions were open. In the department of TVET at the National Curriculum Development Center, which was responsible for reviewing and developing curriculum to address the needs for skilled labour, seven staff positions were open out of nine established posts in 1995 (MoES, 1990; Uganda Polytechnics Kyambogo and Uganda Manufacturers Associations, 1995). Consequently, TVET institutes continued to teach an outdated curriculum that no longer satisfied the needs of the contemporary labour market and economy and its coverage is very low.

In contrast to Uganda, technical and vocational skills in Cambodia were given priority both by donors and the government. In the early 1990s, donors and the Cambodian government invested in short courses in TVET to respond to the need for immediate skilled labour. This led to the rehabilitation of provincial training centers and the National Training Boards was established — made up of government officials, training providers (public and private), and employers — to design policy in order to align training and education to the labor market needs. Although this reform
contributed to an increase in enrollment, the capacity to enroll new students was limited, totaling only about 10,000 positions (ADB, 2004b, p. 3).

V.4 Cause of low coverage of TVET

Despite the different policies' emphases, there are similar constraints that both countries faced in expanding their coverage of TVET during this period. First, due to the overall low expenditure on education during the 1990s, as discussed in Chapter II, both countries faced financial shortages to expand the coverage and provide a more diverse skilled labour pool because of expensive machinery and equipment for training workshops. This was compounded by the fragmentation of the TVET sub-sector. In Uganda, there is no systematic policy and planning for the TVET sub-sector as there is no coordination agency, and technical and vocational training institutes are directly supervised and under the responsibilities of different specialized ministries (Semwogerere, 2010). As is the case in Uganda, in Cambodia TVET institutes are organized and run under the authority of more than 10 different ministries, while the MoEYS serves as coordinator. All of these ministries have limited financial resources and few capable staff.

As a result, department-based TVET institutions in each ministry only served the interests of their mother ministries or a small industrial sector. Therefore, these department-based TVET programs could not respond to the needs of the labour market. This may also be a result of the lack of participation by employers in policy making (Knight and MacLeon, 2004). Although the government has committed itself to a wide consultation process in policy formulation with other stakeholders, this consultation has occurred mostly between government officers, donors, and to some extent NGOs, but with limited participation from the private sector (MoEYS and Education Sector Working Group, 2005; Talemwa, 2010b). This results in alienation between the graduates from training institutes and the world of work and needs of the labour market.

Second, most of the TVET institutes — public and private — are concentrated only in urban areas and, therefore, do not cater to the majority of the population in rural areas. Although private providers in TVET in both countries have increased rapidly, they
operate on a small scale, lack capital, and have difficulty in accessing credit. Therefore, those providers are not able to expand their coverage or provide diverse courses because of expensive workshop machinery, equipment, and teaching materials. Further, it is too risky for the private sector to expand their coverage because market information is incomplete. Investors in the early 1990s and even recently looked at short-term benefits, mostly investing in natural resources and not in productive sectors with long-term goals. In many cases, the investment plans were not even realized. This problem is compounded by the fact that a significant proportion of children did not enroll in school and many dropped out even before completing basic education (as presented in Chapter III). They are not eligible to enroll, as TVET institutes require basic formal schooling. Consequently, many young people enter the labour market without sufficient skills to improve their living standards and contribute to economic growth.

The low coverage of TVET is not only attributable to a lack of capacity on the part of private and public providers, but more importantly attributable to the inability of both governments (although to varying degrees) to create supportive policies and mechanisms and to promote equal value between TVET and the academic stream. The director of the Cambodian National Polytechnic Institute argues, 'Cambodia's industrialization vision and process do not go hand in hand with the development of its skilled labour and this is the reason why Cambodian industrialization is lagging behind its neighboring countries' (Barber and Cheng 2010). Addressing this problem, Susanna Coghlan and Sandra D'Amico, directors at two different human resource agencies who work to recruit graduates for the private sector, note that the Cambodian education system fails to prioritize vocational training over higher learning to better match skills to labour market needs and to provide skilled labour that can diversify the country's economic base and move to the next stage of industrialization (Green, 2009). And to a lesser degree, upper-secondary education was prioritized over TVET.

In Cambodia, despite the shortage of skilled labour and the fact that there are no TVET centers at the district level, the government has no plans to create such centres. The focus is rather that every district should at least have one upper secondary school. In two provinces where special economic zones were created, the government
supports the creation of a university in each province rather than strengthen TVET. At
the macro level, analysis of 11 public higher education institutes that were part of the
Priority Action Program in 2001 reveals that 27 percent provide courses related to
vocational and technical training, but get only 9 percent of the total budget. This is
because government support is awarded not in terms of their specialized functions, but
in terms of the enrollment numbers. Out of the total enrollment of nearly 8000
students in these institutes, only about 9 percent are enrolled in TVET institutes
(MoEYS, 2001).

In Uganda, because of the drop of priority in higher education in the late 1990s, as
discussed earlier, and the outcry for a skilled workforce, in 1998 the TVET system
was restructured. The responsibility for overseeing the activities of the TVET
institutes was transferred from various ministries to the MoES to reduce the
fragmentation and provide a common objective: 'To prepare adequate skilled
manpower that is necessary for higher agricultural productivity, diversification of the
economy, and industrialization of the production system' (Namuli, 2001). In addition
to the structural change, a stimulating framework, providing the appropriate legal and
regulatory framework and capacity-building programs were implemented with
support from donors such as GTZ and JICA. Private providers were not only
encouraged, but also strengthened through a pilot project on 'Promotion of
employment oriented vocational training' supported by GTZ (Wirak, 2003, p. 5).

Although TVET enjoys some direct bilateral aid from GTZ and JICA to cover critical
areas of investment, this assistance is insignificant compared to the total amount of
external funding for secondary and higher education (Berry et al., 2003). This
hampered the course delivery reform and the expansion of TVET. At the same time,
the encouragement for public-private partnership as a strategy for enhancing the
quality as well as the expansion of TVET was not quite successful. The private sector
was still unable to access credit, therefore could not offer diversified skills because of
the expensive physical infrastructure of TVET. Further, the majority of TVET
provided similar courses related to formal employment, which overproduced
graduates in these areas as the labour market and economy could not absorb them as
the size of the industry and service sectors are still small. Consequently, TVET does
not respond to the huge informal and rural economy of Uganda. Therefore, the problem of skill shortages remains unsolved.

V.5 Cambodia has a slightly wider coverage of TVET than Uganda

In response to this situation, in 2005, the Ugandan government introduced a policy to develop technical farm schools and community polytechnic schools for primary school graduates in each sub-county. However, there are a limited number of graduates from these schools. First, this policy lacks sufficient funds for its implementation. Second, many children dropped out before finishing primary school; consequently, they are ineligible to enter these schools. Further, for those who passed primary school examinations, the majority preferred to enter secondary school rather than enter farm and community polytechnic schools. The reason for their choices is that students who entered these TVET schools are considered less capable and academically deficient compared to those who continued on to secondary school. In addition, when they enroll in these TVET schools, they have to pay school fees, while the government introduced free secondary education in 2006, which gave more incentive for them to pursue academic educations.

Consequently, although, there is an increase of enrollment in TVET from 14,077 in 2000 to 29,441 in 2008 (MoES, 2006a; 2008b), this enrollment is still modest, because it represents only 0.3 percent of the total labour force and 5 percent of the new entrant labour force annually. There has even been a sign of a decrease recently, particularly since the introduction of universal secondary education. For example, out of nearly 450,000 primary graduates, only 960 graduates enrolled in vocational institutes in 2011, a drop from 3720 in 2010 (Ssenkarirwa et al., 2011).

In Cambodia, the TVET reform has accelerated since 2005 when the new ministry, the Ministry of Labour and Vocational Training (MoLVT), was created and took over responsibility from the MoEYS to coordinate the TVET sub-sector, and the role of the National Training Board was strengthened with support from donors, especially from ADB and South Korea. The reform led to a dramatic increase in enrollment from roughly 10,000 during the late 1990s to 90,000 in 2007 (ADB, 2008b). The enrollment represents a small percentage — only 1.1 percent of the total labour force
because of its historically low enrollment in TVET. However, it represents a significant percentage, 30 percent, of the new entrant labour force annually. This pattern of development in Cambodia seems to follow the East Asian experience, although it came at a later stage and at a lower quality and narrower scope. For example, in Singapore, at the early stage of its development, the number of graduates in technical and vocational institutes quickly increased at 10 fold within three years. Such an upward swing has continued from 6313 in 1997 to 12,901 in 2000, and reaching 25,000 in 2007 (Seng, 2008, p. 10).

V.6. Factors that led Cambodia to perform slightly better than Uganda

There are several reasons that contribute to the difference in the TVET sub-sectors in Cambodia and Uganda since 2000. First, in Uganda, within the central government, besides the structural changes in 1998, no other major reform has taken place. This is reflected in the fact that of the 35 research studies addressing strategic intervention in the education sector between 1999 and 2003, only one deals with TVET (Eilor, 2004). Further, despite the outcry over a lack of skilled labour and the recognition of its critical role in promoting the economic growth of a country, the TVET department has no power in budget planning. An interview with a senior officer at the TVET department at MoES revealed that the only reason given by MoES in every meeting for not increasing budget allocation is that the TVET sub-sector is an expensive investment that the government cannot afford and that cost-sharing should be introduced. However, according to this informant, it is not only a matter of budget constraints, but also the way in which the budget is allocated across the board (interview, 14 August 2009). Since 1998, TVET received only 3-4 percent of the total public expenditure on education compared to over 10 percent for secondary and higher education (for more detail see Chapter II).

Unlike Uganda, which after the restructuring made no serious commitments in terms of budget allocation, Cambodia saw an increase in budget support for TVET made both by donors and the government. ADB increased its support to the newly established ministry MoLVT from US$10 million in 2005 to $25 million in 2010. Further, the Korean and Cambodian governments invested hundreds of millions of dollars to create national polytechnic institutes where modern equipment was
installed. The Cambodian government also increased its annual budget for MoLVT from US$600,000 in 2005 to $7 million in 2007, of which 65 percent is devoted to training institutes. This commitment allows the newly established ministry to coordinate with private providers to create more diverse programs and institutes (ADB, 2008a; Chan, 2008).

Second, although both governments favor secondary and higher education over TVET, the Ugandan government’s policies have a stronger bias against TVET as compared to Cambodia's policies, resulting in lower enrollments in TVET in absolute terms and as a percentage of secondary and higher education. The enrollment in TVET in Cambodia is 34 and 66 percent of secondary and higher education, while in Uganda it is much lower at 3 and 19 percent respectively, as seen in Table 5.2.

Table 5.2 Enrollment numbers by education levels in Cambodia and Uganda

<table>
<thead>
<tr>
<th></th>
<th>TVET</th>
<th>Secondary education</th>
<th>Higher education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>90,000</td>
<td>260,965</td>
<td>135,000</td>
</tr>
<tr>
<td>Uganda</td>
<td>29,441</td>
<td>954,328</td>
<td>156,397</td>
</tr>
</tbody>
</table>

Source: MoES, 2008b; EMIS, 2007-08; ADB, 2008a; You, 2009

In Uganda, Liang (2002) argues that the TVET sub-sector suffers from its residual role in an elite academic system. Historically, there is a negative attitude towards TVET as it was considered to be for those who did not meet academic standards. However, the current bias against TVET in Uganda is not only a historical product, but reinforced by political factors and leadership vision. Government policy even discourages people from enrolling in TVET.

In addition to low budget support for TVET, the Ugandan government introduced a training levy in public TVET institutes, farm schools, and community polytechnics.

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71 Secondary school enrollment in Cambodia refers to only upper secondary school, while in Uganda it refers to both lower and upper secondary school. This is because while Cambodia defines nine years of schooling (primary and lower secondary) as basic education, Uganda defines primary education as basic education; therefore, graduates are eligible to enroll in TVET institutes. In Cambodia only after lower secondary education are students eligible to enroll in TVET institutes (as seen in Figure 2).
schools, with the expectation of helping to resolve financial difficulties experienced by these institutes, while secondary education is provided free. Actually, local people would like the government to support TVET rather than universal secondary education (Uganda National Commission for African Peer Review Mechanism, 2007, p. 395). They argue that although universal secondary education helps them send their children to school, as they do not have to pay school fees, they do not see any benefits as most of the graduates cannot find jobs because of the lack of practical/vocational skills in universal secondary education, as discussed above. However, the government still continues to allocate a high percentage of the education budget to secondary education. The budget allocation in the education sector in Uganda actually does not result from strategic situational analysis, but was used to fulfill political promises made during the presidential election in 2006 (for more details see Chapter II).

The budget allocated to higher education is also used to realize leadership's visions rather than to address the actual needs of the local labour market and the structure of the whole economy. The Ugandan government has a strong desire to invest in higher education as a means to compete with advanced industrial nations, even though its chances for introducing private foreign capital and developing high tech industries is not very high (for more details see Chapter VI). This is also reflected in the recent shift of the Ugandan government away from polytechnic to academic universities during the restructuration of the TVET sub-sector.

An interview with a director of one of the technical colleges revealed that during the process of the merging of Kyambogo's polytechnic institute with other technical and vocational training centers in the late 1990s, everyone hoped that a strong national polytechnic university would appear, but it turned out that a traditional university, Kyambogo University, was created in 2001 and has become the second largest public university (interview, 24 August 2009). This political goal and leadership vision reinforced negative images of TVET and positive images of academic education. This is compounded by the fact that once TVET graduates were hired, they were paid less than white-collar workers, especially in comparison with wages paid by the government and with those who have higher academic educations (Liang, 2002; UBOS, 2006b; 2008). This leads Ugandan parents and youth to perceive that the
TVET program offers inferior opportunities. This system encourages people to compete with each other for white-collar jobs, rather than complement each other in the labour market.

In contrast, in Cambodia the MoLVT launched an awareness program to change young people's and their parents' views about TVET. At the same time, an economic incentive encouraged Cambodian students to enroll in TVET. Unlike their Ugandan counterparts, the TVET graduates are paid lower than white-collar workers and the average government officers, and Cambodian TVET graduates are paid higher than white-collar workers and average government officers, and there is no significant wage difference between TVET and higher education graduates (NIS, 2010a).

Third, vocational and technical training in Uganda is long (two to three years), while in Cambodia most courses range from three months to one year. Although Cambodia offers some two-year associate degrees, the enrollment is still low compared to short training courses (ESAURP, 1991; D'Amico, 2009). The reason why TVET in Uganda is longer than in Cambodia is because of its vision for development. In Uganda, TVET is geared toward formal employment: 'Modernization rather than problem solving was the preferred and widespread method of education delivery' (NCHE, 2006, p. 19). This does not correspond to the structure of the economy as the percentage of formal wage employment is low and agriculture employs the majority of the labour force, as presented above, which requires low level skills that can be offered in short courses.

Finally, the striking difference between the countries is that the newly established ministry, the MoLVT, in Cambodia has not attempted to take over all TVET institutes that are run by different ministries. An interview with a senior staff member at the MoLVT indicates that the MoLVT recognizes its lack of expertise at supervising specialized training institutes and, therefore, it wants to strengthen only its coordination role (interview, 12 January 2010). A senior policy maker at the MoLVT

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72 For example, my salary as a lecturer at the Royal University of Phnom Penh, with a Master’s degree is even lower than low skilled workers with certificates in TVET who work in the Electricity du Cambodge.
envisions his ministry as, ‘an orchestra leader working to get all the partners in the orchestra to use the same music and play together’ (Pich, 2008). This situation allows the TVET institutes to not only operate normally, but also to improve steadily. In contrast, Uganda transferred responsibility for all TVET institutes that were managed by different ministries to the MoES. Although from a management perspective the transfer of all institutes to one ministry allows for positive coordination, TVET in Uganda did not benefit from this transfer as it did not have the capacity to perform these new responsibilities because the MoES lacks staff and expertise (Liang, 2002, p. 35). After more than a decade of restructuring the TVET sub-sector, the MoES is still not able to fill all the vacant posts. By 2009, out of the 20 approved staff at the department of TVET seven posts remained vacant, and out of the seven approved staff positions at the directorate of industrial training all of them were still vacant (MoES, 2009). Because of this lack of staff, Liang (2002) noted that senior managers are pre-occupied with day-to-day management and have little time or capacity to deal with their main functional areas of responsibility: policy, planning and quality control.

This is compounded by the fact that at the macro level, after more than 10 years of restructuring, specialized ministries still seek to transfer the TVET institutes back to their respective ministry through political intervention. In 2008, President Museveni ordered the MoES to return the medical college to the Ministry of Health, but the MoES protested (Kagolo, 2009b). Consequently, the TVET institutes work without any supervision. A local advisor on TVET issues noted, ‘When these institutes seek assistance from specialized ministries, staff at specialized ministry now says: you are not under my supervision, but under the MoES, therefore, you should go to MoES. But when these institutes turn to the MoES, the MoES has neither technical capacity nor the staff to assist these institutions, to say nothing about budget’ (personal conversation, 14 August 2009). This situation is not conducive for TVET institutes to operate effectively, let alone improve.

Actually, Cambodia could expand its coverage given its priority on TVET sub-sector, if all the efforts to deliver TVET were consolidated. However, efforts to deliver TVET are fragmented. In the same year as the creation of the MoLVT, the MoEYS
launched a new curriculum policy for upper secondary schools that included elective vocational training in grades 11 and 12. Recently another new department, the Vocational Orientation Department, was established. This department is reflects that Cambodia is at least trying to retain some resources and responsibilities, rather than transfer them all to the MoLVT or attract new resources to implement the new curriculum and program. The resource competition intensified during the sector working group meeting. A senior government officer at MoLVT noted, During the education sector working group meeting, the task of advocating for more support on TVET to provide relevant training to youth so that they can be (fully) employed after graduation is very hard. First, we need to advocate with donors as they are mostly focused on basic education and, second, to advocate with MoEYS, so that we are not seen by our colleges as trying to steal away their existing resources (interview, 12 January 2010). This competition results not only in fragmentation of effort, but also a waste of resources because of high transaction costs.

What caused this fragmentation? Since late 2000, as the Cambodian People's Party consolidated power during the end of coalition governments, which had involved conflicts over resource allocation among political parties, one hoped for better resource allocation to execute development projects more effectively and efficiently. However, the reality was disappointing. At the time, the fighting was not between political parties, but the ruling Cambodian People's Party's members worked for their own interests, resulting in the fragmentation of efforts to deliver development projects, including the TVET sub-sector. This was not only among Cambodian officials, but also within the donor community. The reforms in Cambodia in general, and in the education sector in particular, were not all initiated by the Cambodian government; they were dominated by donors and foreign advisors because of Cambodia's high aid dependence, as discussed in Chapters III and VI.

73 There are overlapped and duplicated responsibilities and tasks among government institutions led by the Council of Ministers and specialized ministries, such as the Petroleum Authority with the Ministry of Industry, Mining and Energy, the Tonle Sap Authority with the Ministry of Agriculture, Forestry and Fisheries, the Ministry of Environment, the Ministry of Water and Metrology, and the Apsara Authority with the Ministry of Culture and Fine Arts.
Donors/advisors were fighting for their own 'market' in Cambodian reform. MacCargo (2005) notes that in Cambodia, international and national development agencies were competing against one another on the ground to carve out niche sectors, as well as sub-sectors for their own projects and programs. This was evidenced by the presence of foreign advisors in almost every project and a high proportion of aid funds for technical assistance. Of the total reported expenditure of US$265 million, 12.7 percent was paid to nearly 750 international staff to support the implementation of programs. If an account is taken of program expenditures not covered by the responses to the questionnaires, it can be estimated that expenditures for international personnel could be as high as 19.5-27.34 percent (Siddiqui et al., 2004, p. iii). A study about aid effectiveness reveals that Cambodia almost invariably does not refuse external offers of technical assistance personnel, including those that might be suspected of being unnecessary or dysfunctional (Land and Morgan, 2008, p. XI).

According to the study, this acceptance resulted from both the ministry and central levels. At the ministry level, two reasons are found. First, the ministry lacked the capacity to negotiate effectively with donors, and, second, the ministry displayed a willingness to accept any programmes and projects in order to secure resource flow, thus benefiting the ministry and its staff in terms of possible salary supplements, operational costs, and office equipment. At the central level, the government was concerned about the risk of international isolation and lost development funds if it were to say 'no'. Further, the Cambodian government was not in a position to impose discipline and a coherent direction on the behaviour of the technical assistants, which resulted in donor-led control of projects and programmes and a growing fragmentation of development interventions (Land and Morgan, 2008, pp. 18-19) approved by its own specialized ministry.

Although this might result from a lack of coordination among donors and the lack of institutional integration in terms of shared common development goals, this fragmentation resulted from the weak state. The weak state was not only a consequence of the subordination of formal structures to informal networks among the ruling party, Cambodian People's Party (CPP), but also a matter of pursuing personal interests. Hughes and Conway (2004) note that 'Such networks should not be
perceived as working consistently in the support of the CPP. Rather, they often conflict, as different individuals and groups within CPP and the state attempted to exploit different kinds of opportunities’ (p. 23). This is compounded by the fact that the ruling elites intentionally co-opt the clients in various ministries in order to exchange loyalty and political support with the ultimate goal of maintaining themselves in power.

V.7 Higher education in Cambodia and Uganda

Before the late 1990s, higher education in both countries was predominantly provided by the state. Although Uganda put more emphasis on higher education than Cambodia, their coverage was very low. Annually, the Cambodian and Ugandan governments provided scholarships to approximately 4,000 and 2,000 students, respectively. The landscape of higher education in both countries was transformed completely in the late 1990s when privatization reform was introduced that included allowing private higher education institutes to be established and self-sponsored students to enroll in public higher education institutes. Since then, the number of higher education institutes in Cambodia and Uganda has increased rapidly, especially the private institutes, reaching 77 and 169 respectively in 2008. This contributed to the increased enrollment in higher education in Cambodia and Uganda from fewer than 10,000 and 30,000 in the early 1990s to more than 130,000 and 156,000 in 2008, respectively (MoES, 2008c; You, 2009).

Actually, in both countries there is widespread skepticism about the role of higher education as many university graduates are either unemployed or underemployed (for more details see Chapter VI). This situation underscores that higher education provisions in both countries have not responded to the need for local labour markets for specific jobs. Both countries are generating many university graduates that are unsuited to fill the large demand for vocational and technical occupations (Mullins, 2010). For example, in Cambodia, even within the limited enrollment in Information Technology (IT), in 2009 only 62 percent of IT graduates found employment in the sector, and as a result of over-supply this figure is expected to drop to 33 percent in 2010 (CIST, 2009). During fieldwork in Uganda, I noted that many university graduates have a very difficult time finding jobs, and some of them who could not
afford to stay unemployed went back to school for training in specific vocational and technical careers. In the end, they found jobs.

This is not only a matter of limited jobs in the labour market, but also reflects the higher education supply in both countries that tends to favor the service sector at the expense of the productive sectors such as agriculture and industry; consequently, schools are not able to provide graduates to meet labour market needs (Kasozi, 2003; Chet, 2009). For example, while there is high unemployment among IT graduates, IT institutes are not able to fill the needs of the IT labour market for programme developers and graphic designers (CIST, 2009). In Uganda, Kasozi (2003) and Liang (2004) also stress this concern, arguing that among the major challenges for educational reform in higher education is the problem of designing curricula that are appropriate and relevant to Ugandan development needs. This concern is also shared by graduates. Kirumira and Bateganya (2003) note, ‘The breakdown of weakness identified by graduates shows that curriculum issues are in fact of greatest concern … nearly one-third of all weakness related directly to the lack of relevance of undergraduate degree programmes, which are widely regarded as being too theoretical with not enough job-related practical training’ (p. 41). As a result, the gap between educational preparation and actual employment opportunities is widening.

Further, the enrollment in the four disciplines⁷⁴ (science and engineering, manufacturing and construction, health and welfare, and agriculture) that are considered the core for economic development in Cambodia and Uganda is very low at 26.64 and 16.42 percent compared to enrollment in humanities and arts, social sciences and business, which is 73.36 and 83.58 percent respectively. The overwhelming enrollment in these disciplines indicates that the system lacks diversification and may be serving a limited clientele and objectives, mainly for government employment and white-collar jobs (Liang, 2004, p. 30).

Specifically, where agriculture is so crucial to their economies in terms of its contribution to GDP and the labour force it employs (for more details see Chapter VI),

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⁷⁴ These disciplines are classified by UNESCO in its statistical data base. It has been adopted since it is best suited for comparative purposes, as the national data classification is not comparable.
between 2001 and 2004 the enrollment in agriculture of total enrollment in higher education in Cambodia increased only from 3.3 to 3.8 percent, while in Uganda enrollment even declined from 2.87 to 1.58 percent,\textsuperscript{75} despite a report that the highest employment rate is found among agriculture graduates (Kirumira and Bategunya, 2003). In Cambodia, even a critical discipline in agriculture was no longer provided. A Cambodian researcher notes that the agricultural university that had provided courses on irrigation engineering discontinued those courses 10 years earlier and since then no such courses have been available, despite the government calling itself an 'irrigation government' that promotes irrigation investment and construction for the improvement of agriculture.\textsuperscript{76}

This pattern of development in higher education in both countries does not follow the successful experiences of East Asian countries. For example, in Singapore, just within a decade, the highly skilled workforce in research scientists and engineers grew more than threefold, from 3,361 in 1987 to 11,302 in 1997 (Seng, 2008, p. 60). This is a result of Singaporean policy makers who share a strong and clear vision of creating an education system for the development of the country. The Singaporean education minister argues that, 'Singapore will be poorer if everyone inspires to and gets only academic qualifications but nobody knows how to fix a TV set, a machine tool or a process plant. We need a world-class workforce with a wide variety of knowledge of skills to achieve a world-class standard of living' (Koo, 1999, p. 95). Consequently, admission into tertiary institutions is merit-based and the central goal is to build a needs-based pool of Singaporeans with a mix of education and skills rather than a supply-driven and bloated higher education system (Koo, 1999, p. 72).

During a research tour in East Asia, African education policy maker Mamadou Ndoye (2008) remarked that 'education planning is rarely integrated into national development planning and rarely fosters approaches apt to develop endogenous potentials. In this respect, higher education and research are rarely equal to their

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\textsuperscript{76} Cambodia’s ethnic Vietnamese cross the border to go to school. campro@googlegroups.com, 7 October 2008.
mission of producing and disseminating relevant information and competencies in the African contexts’ (p. 71). This conclusion also holds true in the case of Cambodia and Uganda where such strategic vision and planning are absent. In Cambodia, only a quantitative target was set in its education plan to increase the enrollment from 25,000 in 2004-05 to 90,000 by 2010, which was more than successful as the actual enrollment reached more than 130,000 in 2008.

In Cambodia, this lack of vision is reflected in the absence of strategic planning at the largest public university, the Royal University of Phnom Penh, since it reopened in the 1980s until recently. In 2008, the process to adopt a new vision, mission, and goals was implemented by including all relevant stakeholders within the institution, but the private sector was still ignored in the planning process despite the fact that it is the biggest employer of graduates. David Ford (2006) argues that the lack of strategic vision and planning is a result of politicizing higher education institutes. He writes that an 'indication of how politicized the sector has become is the recent appointment of senior positions in the ministry and public higher education institutions according to a power-sharing formula between ruling parties that had little reference to competence and expanded an already bloated and ineffective civil service bureaucracy'. In addition to this, there is also a political battle over reform legitimacy. In the early 2000s, MoEYS, led by a FUNCINPEC Minister, proposed higher education reform, the creation of an Accreditation Committee, with support from donors, but this plan was rejected by the government. Later, an Accreditation Committee of Cambodia was established, not under the MoEYS, but under the Council of Ministers, led by a CPP Minister. The Council of Ministers amended the draft, adding no technical aspects but staff recruitment specifications that are crucial to build political support and provide jobs for ruling party clients.

In Uganda, there is a lack of institutions responsible for coordinating the higher education sector. Despite the fact that higher education institutes have mushroomed since the late 1990s, the Ugandan National Council for Higher Education was just established in 2004, and still has a limited capacity in terms of both human and financial resources to carry out its tasks. Consequently, contrary to the Singaporean experience presented earlier, higher education in Cambodia and Uganda is influenced
not by strategic vision and planning, but by their supply-driven education services. In Cambodia, out of 77 higher education institutes, only a few offer courses in science and engineering, manufacturing and construction, health and social services, and agriculture (MoEYS, 2008b). In Uganda, among 1774 programmes offered in more than 160 institutes, only 22 percent are in the fields of science, engineering and technology, compared to 78 percent in arts and humanities (NCHE, 2006). Further, they are limited only to utilization, with limited research and development activity.

Several similar reasons contribute to this lack of diversified courses in both countries. First, in Cambodia and Uganda, private providers look at educational provision as a business rather than a public good. There is a risk as such commercialization in most private institutes has tended to focus on the perceived earning capacity resulting from the course in the short-term — those who graduate from these courses are sought after by donor agencies and a small private sector service and are normally paid well by them — to benefit individuals at the expense of those that might contribute to national development in the long-term. The model they adopted is one that maximizes profit, so access is usually open to all those who have completed high school and can afford the fees (O’Brien, 2004, p. 10). For example, in Cambodia, 50 percent of employment in IT is in support jobs, which means that half the jobs require practical skills, not a bachelor's degree; but it appears that few people opt to take the shorter, more efficient, and ultimately cheaper route of technician training (CIST, 2009). Lancaster (2009) argues that it 'could be that students are encouraged by education institutions to study for longer so they pay more. ... As a result of making ill-informed decisions it appears students are wasting their time and money' (p. 30).

Second, most private higher education institutes operate on a small scale with limited capital. They also have difficulty in securing loans. Consequently, their survival and expansion depend solely on fee-generating income, and this forces them to follow the education market to attract students rather than to research and offer what the economy or labour market needs in terms of skills (interview, 13 October 2008). In Uganda, the programs offered are duplicated. The departments create programs solely to attract students so as to earn money (Karamagi, 2004). Further, the majority of the higher education institutes' revenue is spent on administrative costs; therefore, they
are not able to diversify their programs, especially in science, engineering, 
manufacturing, construction and technology because of the expensive equipment and 
materials required for laboratories, research, and development activity.

Third, this also results from the inability of the government to upgrade university 
entrance standards. The bottom line for entry into a university is seemingly no longer 
about 'academic capability', but rather 'financial capacity' (Matsamurakiapi, 2009). 
Consequently, the government was unable to channel secondary education graduates 
to enroll in TVET, which has been badly needed for the economy to function 
effectively and efficiently, but instead produced specialized unemployed and 
underemployed university graduates. This is the opposite of the Singaporean 
experience that planned not to waste scarce resources while maintaining quality by 
developing a mechanism to matriculate high-quality students, including a merit-based 
admissions policy to higher education so that many students can enter TVET. 
Singapore also has ensured a balance between 50 percent science-based and 50 
percent art and humanities since the early 1980s (Goh and Tan, 2008).

This strategy has been adopted in France since the early 20th century. In their study on 
the relations between education, economic growth, and the role of the state in France 
between 1825 and 1975, Hage et al. (1988) noted that

    Each school was designed to meet a very specific human resource need, such as 
foremen for mines, chefs, watchmakers, hotel managers, accountants, and bank 
clers. Similar efforts took place in agriculture. As an indication of how tightly 
economic and educational policies were linked, low-interest agricultural loans 
were restricted to holders of agricultural degrees, the assumption being that only 
educated farmers could use the money effectively. (p. 827)

The situation caused by lack of planning in Cambodia and Uganda is compounded by 
a lack of corrective directive action by the government. Chet (2009) argues that public 
universities try to compete with the private sector in the fields of humanities, art, 
social sciences, and business, but forget to invest in what the private sector cannot do, 
such as science, engineering, technology, manufacturing, construction, and 
agriculture. Further, in Cambodia, despite the outcry for more scientists, engineers
and technicians, and skilled agricultural workers, the vice rector of one public university notes that the government provided an equal number of scholarships across all disciplines at one of the newly established universities (interview, 17 October 2008). Personal conversations with staff at the higher education department of the MoEYS indicate that the MoEYS is aware of the issue of the oversupply of graduates in certain areas and the lack of graduates in others, but the MoEYS is waiting for donors to approach (personal conversation 7 October 2008). The delay is a result of a specialized ministry not empowered to initiate new policy or is afraid to initiate new policy if there is no support from donors and top leaders. Consequently, a specialized ministry usually carries out only routine work.

In this sense, the poor state of science, engineering, manufacturing, construction, and technology partly results from donors' behavior in education intervention. The majority of support from donors to higher education since the early 1990s goes to non-science related disciplines, and thus is limited not only to the availability of highly skilled labour in these fields, but also does not help to increase the instructors in these fields who can provide training in local institutes. Actually, during the 1980s Cambodian students studied in the communist bloc. Most of them took courses in the hard sciences as the government planned to build a strong socialist economy, but this trend changed in the 1990s.

A spokeswoman for the Russian embassy claimed the hard sciences have given way to softer disciplines such as management, politics, and psychology. And the government does not have a policy to encourage students what to study, nor do the host scholarship countries dictate to the students; otherwise they might prefer to go elsewhere (Barton, 2008). The shift made by Russia is following competition by other Western governments, especially the United States of America and the European Union whose main objective is to challenge and remove the socialist ideology and planned economy. Only a few donor countries such as Japan, France, and recently South Korea provide scholarships for hard science, but the number is limited. The Cambodian government is also responsible for the shift from hard sciences to softer disciplines. Cambodia is characterized as a beggar country that receives whatever

\footnote{In Cambodia, Prime Minister Hun Sen became involved in every new initiative, ranging from local traffic issues to national vision and international issues.}
other countries offer without strategically formulating its demands based on the country's need. For example, despite the recognition that Cambodia had significant deposits of petroleum long ago, there is no strategic plan to educate petroleum engineers, and the recent attempt to explore and exploit this resource faces difficulty because of the lack of skilled workers.

In Uganda, in trying to fix the situation the government refocused its priority on higher education. This is reflected in the increase of budget allocated to higher education from 3.5 percent of the total government public expenditure on education in 2002-2003 to 11.7 percent in 2006-2007, as discussed in Chapter II. During this period, three other public universities were established funded by the government, leading to a total of 5 public universities in Uganda. This policy change reflects some efforts by the government to make higher education more responsive to the labour market and economic needs. In 2005, the Ugandan government implemented the policy of shifting its sponsorship in public universities by allocating 3,000 slots, which is 75 percent of its total scholarships for science-related subjects and another 25 percent, which are 1,000 slots for art and humanities. The policy noted Korea and Japan had taken science seriously after the end of World War II, and was the main education policy that contributed to the success of developing their countries.

Although this is a positive step, there is a question concerning the Ugandan government's ability to actualize this policy. Although, the government increased the budget for higher education, much of the budget goes to administrative rather than program investment. Although a donor such as the World Bank provides loans to Uganda, the limit of US$30 million is insufficient to promote science. Collins and Rhoads (2008) ask if US$30 million really helps Uganda keep pace with advances in university science and technology. Further, 3,000 slots for sciences-related subjects is very small, and unlikely to alter the situation compared to the total enrollment of

78 Collins and Rhoads (2008) ask this question because they do not see how US$30 million can significantly contribute to the betterment of science and technology. They give an example that a single university in the United States, Johns Hopkins University, received US$612 million in one year alone (2005) from the National Institues of Health, and Stanford University spent over US$600 million on research for one year, while their own university, UCLA, spent over US$800 million.
over 150,000 students. Furthermore, there are not enough qualified science graduates from secondary schools; consequently, public universities have to reduce the entry point (requirement) for public-sponsored students in the field of science. This is because the Ugandan government does not provide substantial support for science at lower levels. Therefore, it does not have a strong foundation. This raises the issue of the quality of higher education that may not contribute to the overall development of the country as intended. It is within this context that a Ugandan scholar argues, 'Relevant or irrelevant to graduate employability, however, university training cannot do anything about this. … If it is wrong for a university to produce as many humanities graduates, therefore, the secondary schools are blamable since it is here that students are predisposed thus' (Ssempebwa, 2008).

To some extent this is also true in the case of Cambodia. Jerry Walter argues that the new curriculum in the early 2000s had no relevance to Cambodia's needs. He writes, 'With a complete lack of genuinely trained and competent engineers in Cambodia, there is surely a vital need for an immediate upgrading of teaching mathematics and science to provide the essential fundamentals for engineering studies' (Walter, 2002). Recently, a new secondary school curriculum in Cambodia was introduced, which put more emphasis on strengthening mathematics and science. In this sense, Cambodia is attempting to build a strong foundation in mathematics and science before it attempts to reform higher education, while Uganda reforms its higher education without building a strong foundation of mathematics and science in general education.

Although higher education in both countries was not able to produce relevant graduates, the situation in Uganda seems to be direr than in Cambodia. The Ugandan government misallocates public resources more than Cambodia, as reflected in its higher public expenditure per tertiary student as a percentage of GDP at 178 percent, compared to Cambodia which is only 43.7 percent. The higher spending on higher education in Uganda is for to two reasons. First, as presented above, the Ugandan leadership vision is geared towards modernization that focuses on higher education, despite the fact that it lacks appropriate infrastructure to utilize highly skilled workers.

This is also reflected in the recent Ugandan national development plan 2010-2011-2014-15, which has an ambitious vision and favors higher education, despite the fact that its economy is still predominantly agricultural and its historical record of FDI on high-tech is low. The development plans attempt to improve the country's competitiveness to the levels associated with middle-income countries through promoting science and technology, innovation and ICT as measured in terms of share of exports with high-technology content in the total sum of exports. The recent Cambodian national development 2009-2014 vision is more consistent with its economic evolution and may be achievable if it is properly implemented. The plan is designed to establish competitiveness in regional and world markets by focusing on agriculture aimed at rice exports and an assembly industry, which requires an investment in TVET rather than higher education.

Second, in Uganda, due to its reputation as a center for higher education, there are those who advocate revitalizing higher education in order to become a center of excellence, either within East Africa or Africa as a whole and beyond. However, this project results in brain-drain rather than helping the country. Mamdani (1993) writes,

> In our single-minded pursuit to create centres of learning and research of international standing, we had nurtured researchers and educators who had little capacity to work in surrounding communities but who could move to any institution in any industrialized country, and serve any privileged community around the globe with comparative ease. In our failure to contextualize standards and excellence to the needs of our own people, to ground the very process and agenda of learning and research in our conditions, we ended up creating an intelligentsia with little stamina for the very process of development whose vanguard we claimed to be. Like birds who cross oceans when the weather turns adverse, we had little depth and grounding, but maximum reach and mobility’. (p. 15)

The higher spending on higher education in Uganda more so than Cambodia, however, does not produce more graduates in disciplines that are more crucial for economic development. In fact, the enrollment in the four disciplines (science and engineering, manufacturing and construction, agriculture, and health and welfare)
considered to be the core for national economic development in Uganda is only at 16.42 percent, even lower than Cambodia at 26.64. This is because Cambodian higher education institutions are more specialized (for example, the Cambodia Institute of Technology, Royal University of Agriculture, University of Medical Science, and National Polytechnic Institute). Such specialization created fewer duplicated programs compared to the traditional university (one university that consists of a variety of schools and faculties) in Uganda that provided more duplicated programs, as discussed earlier.

V.8 Concluding remarks
This chapter has demonstrated that educational provisions in both Cambodia and Uganda, although to different degrees, do not respond to the needs of the local labour market and economy. This is because they are not able to produce a balance of diverse skilled labour. Consequently, there are shortages of skilled labour in technical and vocational jobs and shortages of highly skilled labour in fields such as science, engineering, manufacturing and construction, technology, agriculture and health.

The lack of technically and vocationally skilled labour is not only a matter of financial constraint — although poor countries such as Cambodia and Uganda with their recent strategic histories and marginal investments in education during the last two decades still need more resources — but is also an inability to give priority to TVET in terms of budget allocation and the fragmentation of efforts to deliver TVET. There is unclear responsibility among different government agencies to deliver TVET. This situation leads to a waste of both effort and resources. Further, although general education is important, to be able to adopt modern technology and mechanized agriculture and promote industrialization process, technical and vocational skills are required but have not been supported by the Cambodian and Ugandan general education curriculum. Despite their attempts to mainstream technical and vocational skills into their general education curriculum, both Cambodia and Uganda fail to do so as the reform in both countries does not take into account the structural problems that hinder their implementation. These include both financial resources and capacity at the individual as well as the institutional levels, and, most importantly, the national
examination system forces schools to teach what is examined, usually fact memorization rather than skill application.

It is important to note that while there is a shortage of a skilled workforce in TVET and highly skilled labour in fields such as science, engineering, technology, agriculture, and health, in both countries there are high rates of specialized underemployed and unemployed graduates. This is because both countries are actually generating far more university graduates in the field of humanities, arts, social sciences, and especially business who are unsuited to meet the needs of the local labour market and economy. There are at least three reasons that contribute to this phenomenon. First, in order to promote science, engineering, manufacturing, construction, technology, agriculture, and health, students need to have a strong foundation in mathematics and basic science, which basic education in both countries was unable to provide. Second, due to privatization, which leads to the commercialization of education service, public higher education institutes in both countries are competing with the private sector for private self-sponsored students to enroll in their institutes only in the fields of humanities, arts, social sciences, and business, and, therefore, neglect to invest in other critical areas such as science, engineering, manufacturing, construction, technology, agriculture, and health. Finally, both countries are not able to upgrade university entrance standards in order to guide students to enroll in TVET.

However, Cambodia has, generally speaking, a slightly better technical and vocational skilled workforce compared to Uganda's. Although different policy priorities and resource availabilities appear to influence this different outcome, the efforts to improve TVET are not only limited to policy priorities and resource availability, but also are due to other factors such as cultural aspiration, economic incentives, and, most importantly, management and coordination. Further, this is also reflected in the fact that higher education in Uganda produces less relevant skilled workers compared to Cambodia, despite its higher percentage of public expenditure and better policy design of higher education. This is because Cambodian higher education institutions are more specialized, therefore provide less duplicated programs compared to the traditional university in Uganda that provides more duplicated programs.