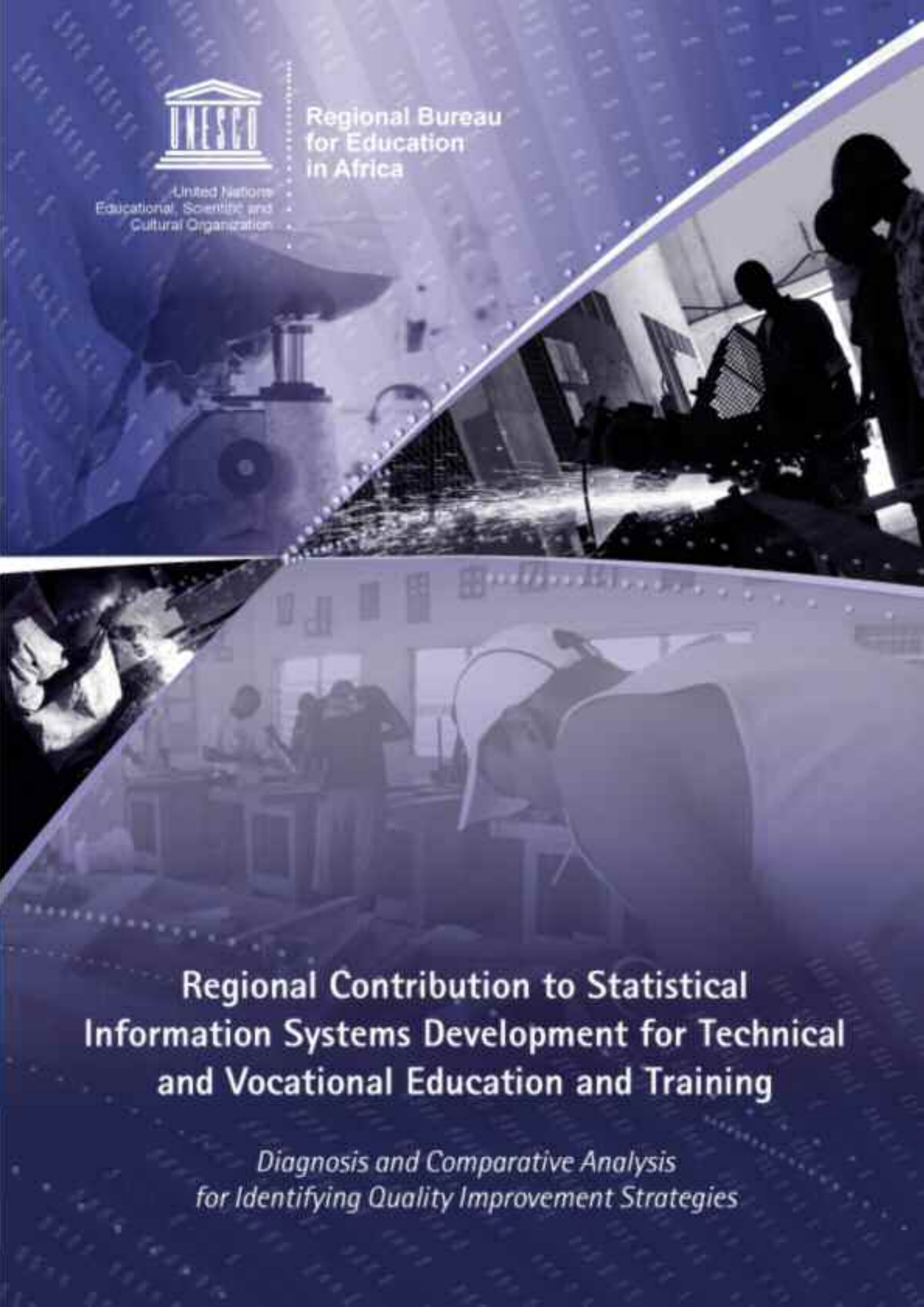

United Nations
Educational, Scientific and
Cultural Organization

Regional Bureau
for Education
in Africa

Regional Contribution to Statistical Information Systems Development for Technical and Vocational Education and Training

Diagnosis and Comparative Analysis for Identifying Quality Improvement Strategies

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United Nations Educational, Scientific and Cultural Organization

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- Promoting, through its activities, the ideals of UNESCO of building peace, democracy and human rights through the sharing and utilization of knowledge and particularly by ensuring that education, science, culture and communication are placed on the top of the development agenda of African Member States;
- Systematically developing a regional overview of major trends of UNESCO's areas of competence (Education, Science, Culture and Communication);
- Feeding the results of such systematic studies and regional overviews into UNESCO's Medium Term, and biennial programmes;
- Reflecting its in-depth knowledge of the needs of African Member States in the development and execution of its own regular and extra-budgetary activities and in its response to specific emergencies;
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FOREWORD

After some years of negligence, the international community agreed to recognize the elemental role of Technical and Vocational Education and Training (TVET) in achieving the objectives that it had set itself, as attested by the important position given to TVET by the African Union in its 2006-2015 Plan of Action of the Second Education Decade for Africa, and by the focus given to it at the last Biennial meeting of the Association for the Development of Education in Africa (ADEA) in Maputo, in 2008.

In the TVET sector, which has now become a priority on all national and international agendas, the improved quality of Education Management Information Systems corresponds to both a primordial and general need for governments desirous of improved managing and directing of the education sector, including the TVET sub-sector.

In addition, specific reference to statistical data quality can be found:

- In the last Oslo Declaration following the eighth meeting of the High Level Group on Education for All, in December 2008;
- At the regional level these strategic aspects, as well as the relevance of the TVET sub-sector, are both embedded in the seven priority objectives of the African Union's Plan of Action of the Second Decade of Education;
- At UNESCO's strategic level, the TVET theme is clearly explained as one of the three aspects for global priority action in UNESCO Executive Council document N° 181 EX/8;
- At the regional level in Sub-Saharan Africa, the improvement of Statistical Information Systems (SIS) constitutes one of the core aspects of the TVET framework of action in SSA, thereby guiding forthcoming UNESCO biennial programmes.

This is why UNESCO has expressly stated its desire to program and implement activities in these fields. Through a holistic and inter-sectoral approach, these activities supplement those already initiated previously by the TVET section, in close relationship with the other units responsible for education in all its forms and at all levels (formal, non-formal, higher, etc.), but also in collaboration with the Regional Branch of the UNESCO Institute of Statistics (UIS), and sectoral analyses of the Education Sector Analysis Unit (Pôle de Dakar).

Content is based primarily on diagnoses carried out in different countries by UIS, summarized and analyzed with a view to providing a regional overview of the present situation, thereby making it possible to identify and support the governments of Sub-Saharan African countries in their approaches to SIS for TVET quality improvement.

In line with UNESCO's mandate of supporting governments in relevant policy development, BREDA, through this publication, offers its collaborative participation in methodological and strategic analysis, of increasing interest to other key development actors.

Ann Therese NDONG-JATTA
Director, UNESCO's Regional Office for Education in Africa (BREDA)

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LIST OF ACRONYMS

ADEA	Association for the Development of Education in Africa
AFRISTAT	Economic and Statistical Observatory for Sub-Saharan Africa
BEPC	First Cycle Secondary Studies Certificate
BREDA	UNESCO Regional Office for Education in Africa
CAR	Central African Republic
CEC	European Qualification Framework
CEMAC	Central African Economic and Monetary Community
CONFEMEN	Conference of Ministers of Education in French-Speaking Countries
DIAL	Institutional Development and Long Term Analyses / Développement institutionnel et analyses à long terme)
DQAF	Data Quality Assessment Framework
DRC	Democratic Republic of Congo
EFA	Education For All
FDA	French Development Agency
GDP	Gross Domestic Product
ILO	International Labour Office
ILO	International Labour Organization
INSEE	National Institute for Statistics and Economic Studies
IMF	International Monetary Fund
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
NFE	Non-Formal Education
NFE-MIS	Non-Formal Education Management Information System
NGO	Non Governmental Organization
NIS/ INS	National Institute of Statistics/Institut national des statistiques
OECD	Organization for Economic Cooperation and Development
SADC	Southern Africa Development Community
SIS	Statistical Information System
TVET	Technical and Vocational Education and Training
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNEVOC	UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training
UIS	UNESCO Institute for Statistics
UNO	United Nations Organization
WAEMU	West African Economic and Monetary Union

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SUMMARY

It is apparent that for some time now, there has been a general mobilization on the part of African countries to position the TVET sub-sector at the centre of development policy. This renewed consideration for TVET may be explained by the fact that in most African countries, primary school enrolments are on the increase and therefore, urgent provision must be made for these children's future. Yet, general secondary education does not have enough enrollment space, nor does it provide any guarantees for employment when schooling is completed. Therefore, to avoid social explosion, the only way out of this situation is to redefine novel TVET strategies for better youth access into the world of work.

Designing an efficient TVET system is therefore at the core of TVET development strategies and policies. The established system should take into account all aspects that confer its specific character on TVET. The new TVET system should indeed take into account the multi-sectoral aspects (TVET coming under the auspices of several ministries) and the multi-faceted aspects (basic training, in-service training, cooperative forms of training) of TVET. It should also consider the formal, non-formal, and informal aspects of TVET.

As is generally the case with any policy, statistics are an indispensable tool for the evaluation and improved management of the entire TVET architecture. Yet, in most African countries, TVET data is often lacking, and where it exists, there is often room for improvement in quality.

The purpose of this report is to provide a TVET SIS situational analysis using UIS diagnoses carried out in various African countries in order to identify dysfunctions and subsequently propose strategies to improve TVET SIS management, with a view to achieving better data availability and reliability.

1 Current TVET SIS situation at the secondary and the higher education levels

TVET SIS diagnosis have shown that Sub-Saharan African countries are at varying levels of development in educational statistical data production processes in general, and TVET in particular. There are three major groups of countries:

- In the first group of countries (Burkina Faso, Cameroon, Ethiopia, Ghana, Madagascar, Uganda) SIS is functional with decentralization ongoing, except for Madagascar where the system is totally decentralized, and Ethiopia where there are prospects for data collection in the informal sector. The data itself comes from annual educational censuses.
- In the second group of countries (Chad, Guinea, Mauritania, Niger) the SIS is embryonic and data collection ad hoc. However, it is observed that in Niger, a TVET ministry has recently been created and has succeeded in producing its first statistical TVET directory.
- In the third group of countries (Cote d'Ivoire, Nigeria, Sierra Leone, The united republic of tanzania), there is no SIS for TVET; data is simply collected on Excel.

Generally, Sub-Saharan African countries face similar difficulties managing their education and training systems. In effect, in all the countries the diagnoses identified

- ✓ Major institutional, organizational and legislative shortcomings;
- ✓ Poor quality for some of the TVET data;
- ✓ Lack of physical and computer equipment indispensable for a well-managed SIS;
- ✓ Quantitative and qualitative weaknesses in human resources;
- ✓ Insufficient financial resources mobilized at the national level to support statistical production;
- ✓ Non-exhaustive datasets;
- ✓ A collection tool that does not cover TVET sub-sector information requirements, particularly with regard to matching training to employment opportunities for improved vocational integration.

Following the SIS situational analysis, UIS proceeds to assess the quality of data produced by countries using the DQAF matrix. This quality assessment framework identifies SIS strengths and weaknesses in the education sector in general, and TVET in particular.

TVET Data Quality Assessment Using DQAF

		Cameroon	Cote d'ivoire	Guinea	Mauritania	Niger
0	**Prerequisite for Quality**	12.5%	20.0%	22.2%	53.0%	22.0%
1	Integrity	57.0%	42.9%	37.5%	47.0%	31.0%
2	**Methodological rigour**	25.0%	0.0%	17.65%	60.0%	29.0%
3	**Accuracy and reliability :** raw data and statistical techniques are correct and the statistical outputs provide a sufficiently realistic overall picture.	27.0%	9.1%	29.41%	48.0%	24.0%
4	**Functionality :** statistics are relevant, up to date, consistent and subjected to a preliminary review policy	22.0%	0.0%	11.11%	50.0%	22.0%
5	**Accessibility :** users readily access data and meta-data, and receive adequate assistance	25.0%	12.5%	0.0%	27.0%	21.0%
	Overall evaluation	--	14.1%	20.0%	48.0%	24.0%

This table shows that for TVET sub-sector data quality in these five African countries, there is minimum observance of internationally recognized guidelines and practices. Indicators produced from these data should therefore be interpreted with great care.

For NFE, TVET SIS diagnosis was based on NFE-MIS implementation experience in Senegal. The first NFE-MIS implementation phase covered five regions (Dakar, Saint-Louis, Tambacounda, Thies and Ziguinchor) and took place from January 2007 to March 2009. Several outputs were obtained, namely:

- ✓ A simple methodology for implementing a Non-Formal Education Management Information System (NFE-MIS);
- ✓ A NFE conceptual framework and a set of data collection validation tools;
- ✓ An appropriate list of NFE indicators;
- ✓ An appropriate technical mechanism and well-trained national and regional technical teams.

2 What formal TVET data and indicators?

Formal/non-formal/informal TVET data is not readily available. However, for formal TVET, some statistics are produced either by the countries themselves through the sub-sector ministries, or by institutions like UIS and AFRISTAT, amongst others.

Internationally, UIS is the main institution providing education statistics on an annual basis. For many countries, formal TVET data from UIS pertains to vocational programme enrolments by ISCE, age and gender levels. However, it is worth acknowledging that UIS data on TVET is rudimentary and only partially responds to sub-sector information requirements, especially for developing countries.

From an analysis of UIS TVET data available at the secondary level in sub-Saharan African countries, the following conclusions can be drawn:

- A widening data gap in West Africa where by the 56% non-availability rate in 2003 rose to 68% in 2006. The WAEMU zone is no exception, with deterioration in data availability. The 49% non-availability rate in 2003 went up to 73% in 2006.
- The situation is more alarming in Central Africa, with a non-availability rate of 85%, in 2006, compared to 69% in 2003. The same applies to the CEMAC (Central African Economic and Monetary Community) zone, with a non-availability data rate of 87%, in 2006.
- A less alarming situation prevails in East Africa: the non-availability rate rose from 61% to 66%, between 2003 and 2006. The picture in Southern Africa is, on the other hand, unstable: the non-availability rate of 71% in 2003 dropped to 65% in 2005, and subsequently registered a 79% upswing, in 2006. There is even less data to be found in the SADC zone. The 76% non-availability rate in 2003, rose sharply to 82%, in 2006.

At the higher education levels, we note a deteriorating state of data availability in the SADC zone, with a 63% non-availability rate in 2003, rising to 75% in 2006. Less data is available from the WAEMU zone but there is a sharp improvement. The non-availability rate plummeted from 93% to 78% between 2003 and 2006. As for the CEMAC zone, data is virtually non-available in most of the countries.

Most Sub-Saharan African countries lack data on higher TVET, or at least lack a data collecting system on higher education that makes the distinction between general higher education and technical and vocational higher education.

3 What strategies to improve TVET for SIS management?

To satisfy TVET actor and user information needs, an integrated, stable and efficient SIS must be established for this sub-sector. System design should follow a participatory and user needs-based approach, guided by:

1. A TVET system diagnosis of assembly, processing, archiving, and information flows. Then field surveys should be organized where additional information may be required to fill gaps;
2. A diagnostic analysis for highlighting constraints that may impede effective TVET systems management;
3. TVET sectoral policy definition, an important phase in the formulation of objectives. It is through the process of defining objectives that it will be possible to construct some indicators;
4. Budget preparation for periodic surveys and specific studies to be carried out, requiring adequate human, material and logistic resources;
5. A monitoring and evaluation activity aimed at gathering the required information on the conduct of operations, with a view to effective and efficient TVET sub-sector management;

.

6. The definition of a permanent and operational framework for consultation amongst TVET actors;
7. A labour market analysis that primarily consists of gathering the most relevant information possible on labour requirements, both at the qualitative and quantitative level, and evaluating it in order to better match supply with demand;
8. An assessment of training needs whereby all labour functions (trades and occupations) exercised in the countries that need vocational and technical training are identified, as well as the main skills, in order to regroup them or, on the contrary, to separate them, with a view to preparing study programmes or curricula.

4 What strategies for improved data availability and reliability?

To maximize opportunities for obtaining as much information on TVET as possible, the ISCED standard needs to be reviewed to better adapt to TVET, and comparative data tables on all occupations should be prepared. This makes international comparisons easier.

Effective TVET data collection should not be restricted to the education sector alone. It should be extended to all TVET programmes lodged in other ministries. These programmes should have ISCED classification, as do training activities managed by education ministries. It should also be possible to collect data at the level of informal training facilities.

Since the TVET system is designed to respond to labour market needs, labour market data needs to be collected. This will make it possible to assess how well training matches employment.

At the end of this report, a list of indicators for TVET is proposed. This list is not finite. Depending on countries and needs, some of these indicators may be adopted, while others may be specifically designed.

1 INTRODUCTION

1.1 Study Framework

"There has been impressive economic growth in Technical and Vocational Education and Training (TVET) in some countries, whereas it has failed to meet expectations in others. Phenomena such as globalization and the major problems associated with youth unemployment have sparked renewed interest on the part of African governments in TVET policies and practices "as an important part of the development plan of action". [1]

At the World Education Forum held in Dakar in 2000, six major objectives making up the Dakar framework of action for EFA were defined. One of these objectives is to **"ensure that the learning needs of all young people and adults are met through equitable access to appropriate life-skills and programmes (Objective 3)"**. Evidently, since it offers knowledge and skills acquisition programmes to youth and adults, TVET is an essential element of these objectives, and it is therefore critical that through EFA access to TVET is guaranteed in all countries throughout the world. However, in many countries, especially developing countries, some individuals wishing to acquire knowledge and skills are excluded from TVET for various reasons.

Effective TVET systems development is therefore at the very core of educational reforms and investments within the framework of policies that, for efficiency, are based on accurate and detailed information.

At the national level, many countries have begun to set up some TVET coordination and planning structures based on statistical data analysis and labour market forecasts, and on ensuring that there is complementarity between education and employment policies. However, national TVET statistics are not often available and even when available, they are often of poor quality. Besides, even if these data can meet national needs in terms of information, they are barely useable for cross-country comparisons. Moreover, data on non-formal and informal TVET are not easily available. The problem that arises is that learning activities in these sectors cannot be quantified by employing the usual methods.

And yet, countries can only develop an efficient TVET system if they make the effort to have some reliable statistics from the sub-sector. Indeed, the statistics make it possible to evaluate various aspects of the financing, operation and performance of training institutions, as well as the agencies responsible for the definition of TVET policies.

This study, conducted by the UNESCO Regional Office for Education in Africa (UNESCO-BREDA), comes in response to the growing demand of national policymakers and donors to have at their disposal some reliable statistics on TVET, so that they can measure how far they have gone and thus adopt correct initiatives for sub-sector development.

[1] "Education and Technical and Vocational Training: a return to the plan of action for development" UNESCO-UNEVOC, 2008

1.2 Methodology and structure of the study

The study is based on several thematic approaches:

a) A documentary review of the most recent analyses on TVET that have made it possible to examine TVET in all its forms and aspects;

b) An analysis of various education and training Statistical Information Systems (SIS) assessments, using UIS diagnoses of the educational statistics chain of production carried out in different African States, and validated by these countries;

c) UNESCO Institute of Statistics' (UIS) research on TVET data and indicators in sub-Saharan African countries that has made it possible to undertake a thorough analysis of statistical availability per region, and per country.

This report is aimed at assessing the present state of TVET statistical resources in sub-Saharan African countries, and envisaging modalities and strategies to improve them for development purposes.

I) In the first part, a definition of the scope of TVET is followed by an overview of available SIS on the basis of the diagnoses carried out by UIS in African countries, in order to identify functionality;

II) Secondly, solutions for TVET statistical data collection systems improvement are presented, in line with country situations, as well as some indicators necessary for a detailed and useful description.

2

CONCEPT AND DEFINITION OF THE SCOPE OF TVET

TVET is complex and has several facets. Several parameters come into play, some of which are:

- TVET may come under the attributes of several ministries thus making it multi-sectoral in nature;
- Theoretical and practical learning may constitute important TVET building blocks. TVET makes specialized knowledge and skills acquisition possible in schools, specialized training centres, and in the workplace;
- TVET may be available at secondary, post-secondary and higher education levels;
- TVET may include basic training for beginners as well as training throughout the professional life of productive workers. It can also open doors to post-secondary and higher education;
- TVET may be a part of the formal education system, but may also be offered in an informal manner at work or through non formal methods.

2.1 What is TVET?

"Technical and Vocational Education and Training", or TVET, is an expression that refers to an entire range of relevant learning experiences in the world of work that may also take place in a variety of learning contexts (educational institutions, working places, etc.)

Indeed, TVET includes learning aimed at developing skills in the practice of certain trades, as well as learning aimed at preparing for entry into the labour market in general. In both cases, learning may be geared towards direct access to the labour market or lay the foundation for access to higher education and training with joining specific trades in view.

UNESCO through the revised recommendation on technical and vocational education (2001), defines the expression **"technical and vocational education"** as *"those aspects of the educational process involving - in addition to general education - the study of technologies and related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life".*

More recently [2], UNESCO BREDA established, with the support of the African Union's Plan of Action for the Second Education Decade (2006-2015), a framework of action to promote TVET reform in Sub-Saharan Africa. This TVET action framework *"applies to all forms and aspects of education that are technical and vocational in nature, provided either in educational institutions or under their authority, by public authorities, the private sector or through other forms of organized education, formal or non-formal, aiming to ensure that all members of the community have access to the pathways of lifelong learning".*

[2] UNESCO-BREDA, Framework for Action in TVET, February 2009.

The TVET action framework focuses on informal vocational learning outcomes in the sense of their contributions to a lifelong education and training process.

Thus, when applying TVET as a concept, the framework of action encompasses the broadest range of options that can be designed. The table below gives a picture of the different TVET options.

Table 1

Different ranges of TVET options according to UNESCO BREDA

		Scope of TVET: From	To
1	Educational level	Basic/post-primary/post-basic	Post-secondary
2	Learners	Initial training of youth	Further training of adults
3	Type	Formal	Non-formal, informal
4	Specialization	Blacksmith, farmer, cook	Secretary, accountant, nurse, IT technician, engineer
5	Educational objective	Individual and social development, life skills	Employability, occupational capabilities
6	Place of learning	Schools, training institutions	Workplace, home
7	Delivery patterns	Teacher-driven classroom delivery, apprenticeship	Open and distance learning, self-learning
8	Provider and facilitator	Ministry of education, other government ministry or agency, local community	Private sector, employers, NGOs, religious
9	Monitoring	Government	Private (or none)

Source: UNESCO BREDA, , Framework for Action in TVET, February 2009

This illustration is not meant to provoke a debate on terminology but rather illustrate TVET being used in its broadest sense. This broad and holistic concept of TVET is also reflected in UNESCO's statistical study on participation in TVET. Although the data in that study refer to formal education only, the challenge remains that "all forms of TVET" are involved: **"education and training; formal education, non-formal education and informal learning, public and private sector or community provision".**

The UNESCO BREDA TVET framework aims at a holistic perspective of TVET, thus overcoming not only the historical segregation between **"vocational education"** and **"vocational training"** but also totally comprising the entire scope of formal, non-formal and informal vocational learning as well as technological education.

2.2 A non-consensual understanding of the fields to be observed...

TVET covers, on the one hand, formal education that is "organized"; learning formally certified through an award or other form of recognition. It also includes non-formal education and informal learning. The table below gives us viewpoints from three recent sources on the issue of TVET coverage and shows that minor variations notwithstanding, there is a basic consensus about the definition of formal education as the type of learning activity that takes place in conventional centres of learning. For other types of education, there is no consensus about their terminology.

Table 2

Overview of the different interpretations of "formal", "non-formal" and "informal" as they apply to education and learning.

Source of information	Formal education	Non-formal education	Informal learning
Green, Oketch, Preston, November 2004	" 'Organized' and 'intentional' learning whose outcomes are accredited."	"Results from organised activities within or outside the workplace which involve significant learning but is not accredited."	"That which occurs 'unintentionally' or as a by-product of other activities. OECD (2003), Beyond Rhetoric: Adult Learning, Policies and Practice, OECD, Paris. New classifications of learning activities are currently being developed for the EU Adult Education Survey and these will form a good companion to ISCED definitions for informal and non-formal learning, especially for the developed world."
Tight, 2002	"Formal learning is that provided by the education and training system set up or sponsored by the state, for those express purposes." (Groombridge, 1983, p. 6)	"Any organised, systematic, educational activity, carried on outside the framework of the formal system, to provide selected types of learning to particular subgroups in the population, adults as well as children. Thus defined non-formal education includes, for example, agricultural extension and farmer training programmes, adult literacy programmes, occupational skill training given outside the formal system, youth clubs with substantial educational purposes, and various community programmes of instruction in health, nutrition, family planning, cooperatives, and the like." (Coombs and Ahmed 1974, p. 8). "Education for which none of the learners is enrolled or registered." (OECD 1977, p. 11)	"The life-long process by which every individual acquires and accumulated knowledge, skills, attitudes and insights from daily experiences and exposure to the environment – at home, at work, at play: from the example and attitudes of family and friends; from travel, reading newspapers and books; or by listening to the radio or viewing films or television. Generally, informal education is unorganised, unsystematic and even unintentional at times, yet it accounts for the great bulk of any person's total lifetime learning, - including that of even a highly 'schooled' person. "(Coombs and Ahmed 1974, p. 8)
Eurostat, December 2004	"Education provided in the system of schools, colleges, universities and other formal educational institutions that normally constitutes a continuous 'ladder' of full-time education for children and young people, generally beginning at age five to seven and continuing up to 20 or 25 years old. In some countries, the upper parts of this 'ladder' are organized programmes of joint employment and part-time participation in the regular school and university system: such programmes have come to be known as the 'dual system' or equivalent terms in these countries."	"Any organised and sustained educational activities that do not correspond exactly to the above definition of formal education. Non-formal education may therefore take place both within and outside educational institutions, and cater to persons of all ages. Depending on country contexts, it may cover educational programmes to impart adult literacy, basic education for out-of-school children, life-skills, work-skills, and general culture. Non-formal education programmes do not necessarily follow the 'ladder' system, and may have a differing duration."	..." 'intentional but it is less organised and less structured .... and may include for example learning events (activities) that occur in the family, in the work place, and in the daily life of every person, on a self-directed, family-directed or socially directed basis'. As defined in the report of the Eurostat TF/MLLL (paragraph 32, page 12). The UNESCO manual for statistics on non-formal education (page 6) reads 'Informal learning is generally intentional, but unorganised and unstructured learning events that occur in the family, the work-place, and in the daily life of every person, on a self-directed, family-directed, or socially-directed basis.' "

Source: Participation in formal TVET programmes worldwide: An initial statistical study, UNESCO 2006.

2.3 Various and varied forms

Generally, TVET also includes initial vocational training that youth undergo prior to entering the labour market, continuous vocational training for adults in employment or during periods when they are economically inactive, and cooperative forms of training (the training period is divided up amongst the school or the training centre and the place of business).

Initial training in TVET primarily corresponds to technical and vocational education provided in conventional formal training facilities. This form of TVET is the best organized and the most structured. It generally comes under the auspices of the ministry of education or under several other, more specific, ministries.

Continuous training generally consists of doing some refresher or retraining courses aimed at updating one's knowledge or acquiring additional knowledge or technical and vocational capabilities, for example:

- Short training courses on business management and organization for small and medium scale enterprise promoters;
- Short training courses geared towards self-employment for any person sufficiently qualified and desirous of doing a micro-enterprise creation project;
- Reconversion training that enables productive workers already with gainful employment to acquire some practical skills and knowledge necessary for any new employment different from their initial training.

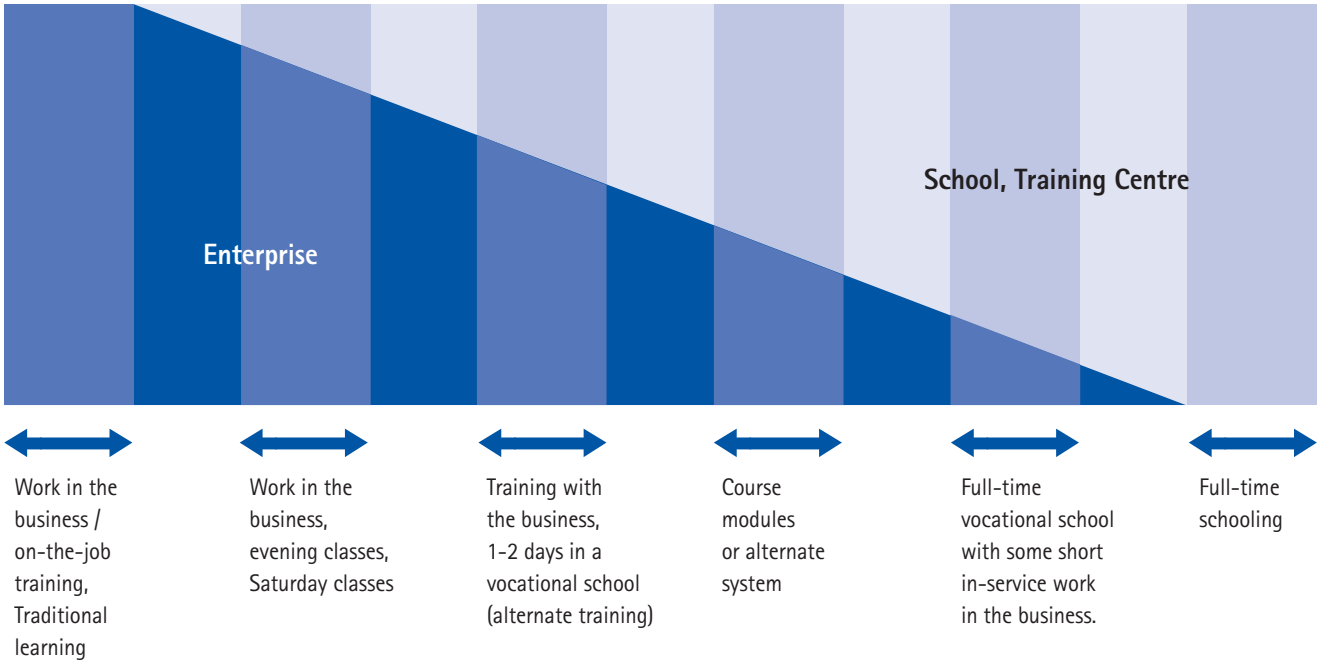
This form of TVET is provided in institutions under the authority of TVET line ministries, but also by other institutions under the supervision of other ministries, or by private agencies. Nowadays, there is a high demand for in-service training, especially with the emergence of economic activities relating to New Information and Communication Technologies (NICTs). However, in spite of the considerable number of continuous training centres, the absence of training coordination at the private sector level makes it difficult to evaluate total supply and available information about these training activities is limited or confined to activities implemented within formal frameworks.

Cooperatives forms of training [3] are useful because training tasks and costs tend to be shared amongst two or more organizations and places of training (vocational schools, enterprises, training centres, workshops, etc.). In contrast to conventional training offered in vocational schools, cooperative-type training implies that businesses participate in programme preparation. Learners acquire practical experience within an enterprise and in training centres that can admit them. The outline below shows us that there is a whole range of examples for cooperative types of training and that alternating or dual training is one of them.

[3] This terminology relating to types of TVET was used by CONFEMEN in one of its analytical and orientation documents "The integration of the youth in productive life through vocational and technical training", 1999.

Diagram 1

Range of cooperative types of training: schooling, training centres and the enterprise.



Source: "Youth integration into active life through vocational and technical training", CONFEMEN, 1999

In Sub-Saharan Africa, TVET is dominated by the first type of cooperative training (see above Diagram) with learning exclusively on the job. In most cases, this type of cooperative training is offered in informal structures.

Two types of non-formal or informal training can be identified from surveys conducted in different African countries: traditional learning and the different forms of on-the-job learning or self-training.

1) Traditional learning is developed mainly in the Sub-Saharan countries of West Africa (Benin, Mali, Mauritania, Niger, Senegal, Togo, etc.). In traditional learning, two systems coexist:

– The coastal-type learning system (Benin, Togo, etc.), both very structured and standardized. Indeed, this is a vocational training mode that occurs at a very precise moment in time; it consists of a phase in the life of the individual, at the end of schooling and at the start of productive life. Both entry into and exit from this type of learning are very pronounced, to the point of being ritualized. Fees are paid to learn with the learner awarded a certificate upon completion; it is a real passport into socio-professional life. Finally, the learning rules are extremely precise and clearly determine relationships between the learner and the boss, as well as their respective tasks.

– The Sahelian-type learning system (Burkina Faso, Mali, Niger, etc.) is more flexible and more "open". There is no specific point of entry into this type of learning that can occur at any point in the individual's life. Neither does it serve as a phase and as such, cannot be mistaken for the institutionalized learning typical of the coastal type. Similarly, exit may occur without any precise achievements. Neither does it guarantee entry into professional life. The relationships between learners and bosses also, in terms of learning, seem less "standardized" or, to put it more appropriately, subject to social norms that govern relationships between individuals in all sectors of life, and not just at work.

[4] FDA has conducted some studies on the informal sector in seven African countries: Angola, South Africa, Benin, Cameroon, Ethiopia, Morocco and Senegal with a view to the preparation and publication of its synoptic publication "Vocational training in the informal sector".

Traditional learning is currently developing rapidly [5] and is taking on a dualistic practical/theory type alternative and a pedagogical dynamic that reorganizes the rhythm and modes of acquisition of the learners.

2) On-the-job training or self-training (learning by doing, learning by repeating and imitating) is mainly practiced in such occupations as trade and building, but also in all domestic or rural-oriented activities. This type of training is most prevalent in the informal sector.

[5] In Benin, traditional learning is currently moving towards a dual training structure in which youth will acquire a level of qualification recognised by the formal training system.

3

SIS SITUATIONAL ANALYSIS RELATING TO EDUCATION AND TRAINING

Before tackling the SIS situational analysis, a definition of the concept of an information system is required, whilst underscoring its importance in education planning in general, and TVET planning in particular.

3.1 The notion of an information system and importance of SIS for TVET

There is no standard or classical definition of an information system, but the notion may be examined from various complementary viewpoints:

A) Seen as the end-product, the information systems are a "Sub-system of an organization that provides the decision-maker and the stakeholder with the inputs required to function" [6]. This definition underscores the mission of the two principal poles of any organization: the decision-making pole responsible for the definition of strategic objectives and choices, and the operational pole with the mission of achieving the objectives established in the preceding pole.

B) Seen as activities generated, the information system may be defined as the collection, storage, processing and dissemination of information. Some authors add, the act of listening to all these activities reflecting, in fact, an attitude that considers any information likely to be put to use within the educational framework. It therefore includes non-structured and non-formal information.

C) From the organizational viewpoint, the information system may be defined as the interconnected set of anything that serves to inform members of an organization [7] . It is a definition that has the merit of mentioning, albeit implicitly, the recipients of the information and the underlying organizational dimension of any Information System. Indeed in education, as in any complex organization, information content and its mode of dissemination vary according to the recipients.

D) From the technical viewpoint, the information system is defined these days as a computerized database. It is a very reductionist definition although it has the advantage of highlighting the role of the computer as a tool that has become indispensable in light of the current complexity of the educational system.

Any system, any organization, of whatever type, should produce information for the purpose of being informed and informing others about their state, their operations, and their outputs. Without data, no system can function rationally and as a result, no operational decision can be taken. This is a basic rule that education and training cannot ignore, hence the importance of putting in place a SIS that is adapted to the specific case of TVET.

Indeed, managing educational system in general, and the TVET sub-system in particular, generates enormous and diverse types of information. For proper use, this information should be assembled, processed, analyzed and disseminated at different levels of use. These levels of use range from the small pupil to the policymaker, through teachers, researchers, the general public and other institutions operating in the education field. The types of information required by each level vary according to each of their centres of interest.

[6] J.L. Moigne quoted in "Education in Africa: the Challenge of Excellence" by K. Sylla, Paris, 2005.

[7] Jacques Melese in « Systemic Approach to Organizations » quoted by K. Sylla "Education in Africa: the Challenge of Excellence", Paris 2005.

The planning, management and steering of the education and training system, given its complexity and size, require a sound knowledge and information base. The central character of the Information System in the field of education can be illustrated by a number of examples. We shall mention only two of them:

I) It is not possible to define an educational policy or undertake a new reform without collecting various types of information in order to assess the reform's relevance using simulation and forecasting studies.

II) Payroll management in a huge system such as education and training cannot be done without using a database.

Information is indispensable, amongst other things, for:

- ✓ Preparing decisions and defining policies;
- ✓ Administrative management activities;
- ✓ Assessing schooling outcomes;
- ✓ Communication amongst educational system actors;
- ✓ Simulation and forecast studies;
- ✓ Producing indicators;
- ✓ Educational micro-planning;
- ✓ Comparative studies;
- ✓ Meeting user needs;
- ✓ ...

A well-functioning SIS is indispensable for sound TVET systems diagnosis. In fact, to be efficient, TVET systems should be based on accurate and exact diagnosis. Diagnosis is an essential stage in TVET planning, because it allows for a situational analysis of the situation prevailing in this sub-sector and problem identification through a detailed and critical analysis, for the purposes of problem-solving. In other words, the diagnosis allows for needs identification for which TVET, by defining new strategies, is supposed to provide some answers or solutions [8]. The diagnosis will lead to a definition of more sound objectives to better direct TVET SIS.

3.2 What diagnosis for formal TVET SIS?

UIS has prepared and continues to prepare [9] an in-depth diagnosis of all their educational statistics production lines in African countries. The aim of these diagnoses is to help countries strengthen their statistical information systems by establishing systems that are capable of producing relevant, reliable statistical data, in a timely manner, through technical, institutional and human capacity building. Setting up such an SIS is a complex and lengthy process, calling for a substantial amount of funds to be mobilized.

3.2.1 At the secondary level

Within the framework of this study, the diagnoses conducted by UIS have made it possible to undertake a situational analysis of TVET SIS' at the secondary level. The table below provides a list of African countries that have benefited from a diagnosis of their educational system to date.

[8] L. Carrizo et al, 2003 p.1, quoted by Sylla, op. cit.

[9] Diagnosis of Lesotho, Swaziland, South Africa, Zambia and Mozambique nearing completion.

Table 3

List of African countries that have benefited from a diagnosis of their educational system within the UIS statistical capacity development framework and the interest they have shown in TVET.

Sub-region	Country	Implementation Year	TVET Sub-sector
West Africa	Burkina Faso	January 2008	+
	Cote d'Ivoire [10]	March and May 2009	++
	Ghana	September 2004	+
	Guinea	November 2003	+
	Mauritania	June 2005	+
	Niger	July 2004	+
	Nigeria	September 2005	-
	Sierra Leone	2004	+
Central Africa	Cameroon [11]	May and November 2008	++
	CAR [12]	October 2005	--
	Chad	2006	--
	DRC [13]	March 2009	++
Southern Africa and East Africa	Ethiopia	August 2004	++
	Madagascar	2008-2009	++
	Uganda	November 2004	++
	Tanzania	August 2004	+

-- is virtually not mentioned in the diagnostic report
- mentioned infrequently in the diagnostic report
+ mentioned as a cross-cutting issue in the diagnostic report
++ was the subject of an entire section in the diagnostic report

This synoptic and analytical table reveals the varying degrees of interest shown in the TVET sub-sector by these diagnoses. The most recent diagnoses show much more interest in TVET which has lead to a better situational analysis of this sub-sector. This is the case, for example, with the diagnosis prepared in Madagascar giving us good insight into TVET development in that country. This recent interest in TVET was also observed through the workshops organized by UNESCO-BREDA and UIS in Cameroon on "the TVET statistics production framework" and in Côte d'Ivoire on "the validation of TVET statistical collection tools and statistical indicators".

[10] UNESCO-BREDA supported a national workshop on the validation of TVET statistical tools and indicators, ENSEA, 24-26 March, 2009, Abidjan, Cote d'Ivoire. Also in Cote d'Ivoire from 3 to 16 May, an inter-ministerial mission for a diagnosis of the statistical production system of the Education/Training sector was undertaken within the framework of the UNESCO Cap EFA project.

[11] Diagnostic Report in May 2008 and Workshop in November 2008 on the Statistics production framework of the Ministry of Employment and Vocational Training (MINEFOP), within the framework of the Accelerated Statistical Programme (ASP) Cameroon, DECD/PARIS 21.

[12] Incomplete diagnosis making an analysis of SIS impossible.

[13] Incomplete diagnosis making an analysis of SIS impossible.

It is worth noting that the volume and detail of the diagnoses prepared by UIS vary from one country to another due, inter alia, to funds provided, the implementation period, the framework within which they were conducted, and the availability and cooperation of educational institutions.

In most of the countries where the diagnoses were carried out, the education system is managed by one single ministry, because strictly speaking, there is no specific ministry that handles TVET issues. It is only in Cote d'Ivoire, Guinea, Niger, United Republic of Tanzania and to a lesser extent, Burkina Faso and Cameroon that such a ministry exists. [14]

3.2.1.1 What do these diagnoses reveal?

It emerges from the UIS diagnoses that countries are not at the same stage of development for the educational statistical data production processes in general, and TVET in particular. Indeed, three major groups of countries stand out (Diagram 2):

Diagram 2

State of SIS' education and training in African countries that have benefited from a diagnosis

- SIS in place - Systematic data collection - System decentralization ongoing - Efforts to improve TVET statistics production	→	- Burkina Faso - Cameroon - Ethiopia - Ghana - Madagascar - Uganda
- Embryonic SIS - Ad hoc or specific data collection - Efforts to improve TVET statistics production	→	- Guinea - Mauritania - Niger - Chad
- Non-existent SIS for the TVET sub-sector - Data collected simply entered into Excel - Efforts to improve TVET statistics production	→	- Cote d'Ivoire - Nigeria - Sierra Leone - Tanzania

1) In the first group (Burkina Faso, Cameroon, etc.), SIS is in place and functioning, data is collected annually from the educational census, and SIS is undergoing decentralization. A notable exception is Madagascar where SIS is fully decentralized.

2) As regards the second group, an embryonic SIS is in place, with data collection on an ad hoc basis. For Niger, a vocational and technical training ministry has recently been created. Indeed, this ministry is aspiring to supply some statistical data on TVET and, in 2008, produced a first statistical directory based on the collection of data from 2006-2007.

3) For the third group of countries, we note non-existing SIS for TVET; collected data is simply on Excel.

It should be noted that in all the countries, there are efforts to improve TVET statistical production.

[14] Recent creation of a Vocational and Technical Training Ministry in Niger. In Burkina Faso and Cameroon, technical education is managed by the Ministry of Secondary and Higher Education and Scientific Research and the Ministry of Secondary Education, respectively, whereas vocational training is managed by the Ministry of Employment and the Ministry of Employment and Vocational Training, respectively.

3.2.1.2 ... And what analysis do we make of them?

Generally, Sub-Saharan African countries face the same difficulties in their educational systems management. The diagnoses have identified considerable deficiencies in most of the countries with regard to the institutional, organizational and legislative frameworks. The little TVET data that is produced is of poor quality. We note serious shortcomings in collecting, processing, and publishing TVET statistics, as well as some grave deficiencies in the physical and computer equipment required for the smooth management of the information systems, not to mention the glaring human resource weaknesses and the low level of financial resources mobilized at the national level to support statistical production.

However, country analysis (**see. Annex I: Table A.1; Annex II: Table B.1; Annex III: Table C.1; Annex IV: Table D.1**) shows that Sub-Saharan Africa countries are at different stages of development in the TVET sub-sector. West Africa countries reveal more profound weaknesses in managing and steering the TVET sub-system. In Central, East and Southern African countries, more efforts are made to ensure that the SIS for TVET is guided smoothly.

3.2.2 At the higher education level

This part of the report refers to the study conducted by UIS on **"The Issue of Tertiary Education Statistics in West and Central Africa Countries "**[15]. In this study, according to diagnoses carried out by UIS in West and Central African countries, it emerges that for primary education and general secondary education on the whole, the statistical system produces "acceptable" data in terms of quality [16] , but this does not apply to higher education.

Ministries of Higher Education and Scientific Research are generally disassociated from those managing pre-university levels, except for a few countries (Ghana and Mauritania). Depending on the institutional and organizational architecture, these ministerial departments generally have a planning department or a statistical department in charge of statistical operations that can serve as a basis for improving the sub-sector's production of statistics.

Most of the countries where an SIS diagnosis has been carried out do not routinely collect data at the higher education level. The rare exceptions are Burkina Faso, Cameroon, Ghana and to a lesser extent, Guinea and Niger. It is worth noting that even countries that collect data at the higher education level face many limits:

- There is no harmonized nomenclature for the study components;
- Information or data collected does not cover all user needs at the national and international level, especially when it comes to aspects of quality and external efficiency;
- UIS international standards, particularly ISCED [17], are not taken into account;
- Human resources assigned to statistical operations are quantitatively and qualitatively insufficient;
- The logistics required for the smooth running of the SIS are virtually non-existent;
- A lack of confidentiality in information collection, linked to difficulties in dispatching questionnaires from the regions to the central levels;
- A lack of awareness-raising amongst higher education institutions;
- Collection is not always exhaustive;
- The SIS is not decentralized;
- The absence of an institutional and legislative framework, which leads to a lack of collaboration between numerous data production actors;
- A considerable delay in publishing statistical directories, and the limited number of publication sources;
- In terms of content, collection instruments do not make it possible to completely cover all statistical data requirements for effective support to decision-making.

[15] *"The Issue of Higher Education Statistics in West and Central African Countries", UNESCO-BREDA and UIS, 2009*

[16] The data quality analysis from the matrix jointly by prepared by IMF, the WB and UIS gives results that are generally below average.

[17] International Standard Classification of Education

Table A.2: Annex I and Table B.2 Annex II give a summary of the state of TVET SIS at the higher education level for the West and Central Africa countries studied.

3.2.3 TVET Data Quality (DQAF) [18]

After the diagnosis stage, UIS assesses the quality of data produced by the education and training system. This evaluation is based on a matrix jointly prepared by the World Bank, UIS and IMF. It takes into account six principal dimensions deemed relevant for assessing statistical data quality. That dimensions are:

- Pre-conditions for quality
- Integrity
- Methodological relevance
- Accuracy and reliability
- Functionality
- Accessibility

This quality assessment framework makes it possible to identify the strengths and weaknesses of the education sector SIS in general and TVET in particular.

The table below gives us insight into TVET data quality in some of the countries studied. For the other countries not featured in the table, there was a broad analysis of educational data quality without any disaggregation by sub-sector whereas this should be done since education sub-sectors are not at the same stage of development in terms of management and orientation. To avoid compromising the analysis, we have deemed it useful, for this part of the report, to only show countries that have done a TVET sub-sector data quality assessment.

[18] Data Quality Assessment Framework

Table 4

Assessment of the general quality of TVET data in the different countries studied.

	Cameroon [19]	Cote d'ivoire	Guinea	Mauritania [20]	Niger
0. Pre-conditions for quality	**12.5%**	**20.0%**	**22.2%**	**53.0%**	**22.0%**
0.1. Legal and institutional environment	--	50.0%	80.0%	70.0%	40.0%
0.2. Resources	--	0.0%	0.0%	47.0%	13.0%
0.3. Awareness-raising about quality: organizational focus on quality	--	0.0%	0.0%	45.0%	10.0%
1. Integrity	**57.0%**	**42.9%**	**37.5%**	**47.0%**	**31.0%**
1.1. Professionalism	--	75.0%	66.67%	56.0%	44.0%
1.2. Transparency	--	0.0%	0.0%	50.0%	10.0%
1.3. Ethics	--	0.0%	0.0%	0.0%	0.0%
2. Methodological rigour	**25.0%**	**0.0%**	**17.65%**	**60.0%**	**29.0%**
2.1. Concepts and definitions used correspond to the standard statistical framework	--	0.0%	8.33%	67.0%	33.0%
2.2. Scope	--	0.0%	41.67%	63.0%	25.0%
2.3. Classification/sectorisation	--	0.0%	0.0%	50.0%	0.0%
2.4. Bases of registration	--	0.0%	0.0%	50.0%	50.0%
3. Accuracy and reliability: the raw data and statistical techniques are correct and the statistical products give a sufficiently complete picture of reality	**27.0%**	**9.1%**	**29.41%**	**48.0%**	**24.0%**
3.1. Data sources	--	0.0%	20.0%	23.0%	10.0%
3.2. Statistical techniques	--	0.0%	0.0%	63.0%	63.0%
3.3. Assessment and validation of raw data	--	0.0%	66.67%	67.0%	0.0%
3.4. Assessment and validation of intermediate data and statistical products	--	33.3%	66.67%	50.0%	17.0%
3.5. Examinations and reviews	--	0.0%	0.0%	50.0%	25.0%
4. Functionality: the statistics are relevant, updated, consistent and subjected to a preliminary review policy	**22.0%**	**0.0%**	**11.11%**	**50.0%**	**22.0%**
4.1. Relevance: the statistics cover some relevant fields (user consultations)	--	0.0%	0.0%	50.0%	13.0%
4.2. Topicality and frequency: observance of deadlines for statistical results					
4.3. Consistency	--	0.0%	0.0%	50.0%	0.0%
4.4. Review policies and practices: data review is periodical and follows a regular and transparent procedure	--	0.0%	28.57%	64.0%	43.0%
	--	0.0%	0.0%	25.0%	13.0%
5. Accessibility: users have easy access to data and metadata, and adequate assistance is provided to them.	**25.0%**	**12.5%**	**0.0%**	**27.0%**	**21.0%**
5.1. Data accessibility	--	20.0%	0.0%	33.0%	25.0%
5.2. Metadata accessibility	--	0.0%	0.0%	20.0%	20.0%
5.3. Assistance to users	--	0.0%	0.0%	25.0%	17.0%
Overall assessment	**--**	**14.1%**	**20.0%**	**48.0%**	**24.0%**

The low scores registered by TVET illustrate present SIS difficulties in this sub-sector. This level of education only just meets international data quality guidelines and practices. As a result, indicators produced from these data should be interpreted with a great deal of care.

[19] The scores obtained are for vocational training.

[20] The scores obtained pertain to general and technical secondary education. Available data did not permit quality assessment of the technical secondary on its own.

3.3 Statistical Information Systems and non-formal TVET what diagnosis?

It has been a long time since updated and reliable data to plan and conduct an adapted educational policy has been wanting. Yet, Non-Formal Education (NFE), and its technical and vocational component in particular, continues to suffer from large information gaps.

Given the absence of a consistent cross-sectoral conceptual framework and/or policy framework, NFE is often erroneously seen as being restricted to programmes of equivalence, to aspects of adult education/continuous training, or to "marginalized" target groups or groups with "special needs". There is not much recourse given to the potentially useful interfaces between formal education systems and other approaches to basic education.

This deficiency produces the following results:

- National or external education sector funding is inequitable, insufficient, and tends to favour formal education to the detriment of NFE. As a result, monitoring mechanisms at the disposal of NFE officials are inadequate or non-existent at all levels.
- Monitoring and evaluation frameworks that do exist are either limited to an NFE-specific programme and do not take into consideration related sector-wide initiatives, or these mechanisms exclude civil society.

Potential consequences are the scarcity of NFE data and the absence of indicators that are practical and adapted to supply and demand leads to a serious absence of coordination within administrative hierarchies, between sectors and between governments and non-governmental organizations (NGOs).

From this lack of data stems confusion at the NFE conceptual level and a vicious cycle sets in.

Desirous of filling information gaps at the NFE level, UNESCO's Literacy and Non Formal Education section of the Basic Education Division, in close collaboration with UIS, has published an "Information System for Non-Formal Education Manual (MIS-NFE)" aimed at helping developing countries establish a solid information base for NFE, for systematic planning and monitoring purposes.

The methodology used to implement MIS-NFE includes an NFE conceptual framework, prototypes of data collection tools, as well as some guidelines to prepare NFE indicators and data analysis. MIS-NFE methodology design presupposes that: NFE is cross-sectoral and takes place within and between different development sectors (for example, agriculture, community or rural development, education, natural resource management, health etc.); it is planned and implemented by various governmental and non-governmental agencies working as partners; it addresses a large range of children, youth and adults coming from different economic and social backgrounds who did not have the opportunity to take advantage of basic formal education, or who have dropped out.

The MIS-NFE manual does not aim to impose a definition or a fixed concept of NFE. In fact the manual is context-specific and should be defined by each country. Consequently, the MIS-NFE implementation methodology itself is flexible and should be contextualized according to the specificities of each country. This is why guidelines and practical tools are provided for the adaptation process and capacity development.

The reason for setting up an MIS-NFE is to provide national policymakers and planners with reliable, relevant, and updated data for informed decision-making. They could better plan and implement NFE, and also monitor and evaluate its development. NFE figures and statistics also play an important role providing information to various organizing institutions, researchers, participants, and the general public.

The purpose of MIS-NFE is to supply information to NFE programme operators like government agencies, non-governmental organizations, community organizations, and local education offices so that they can better monitor, manage, and evaluate their activities. Similarly, NFE data can help mobilize and coordinate efforts to organize or sustain specific NFE activities and link up NFE institutions and programmes by serving as networks for sharing resources and experiences. The objective is therefore to improve existing NFE programme coordination between NFE operators and officials. MIS-NFE also provides basic data about learners. This information is useful for studying how knowledge and skills acquired by learners are used and the impact they have on their quality of life. Finally, information about available MIS-NFE opportunities generated by NFE may, when it is disseminated widely amongst the general public and potential learners, help to arouse interest and encourage participation in NFE programmes.

African countries that have initiated the process of establishing MIS-NFE are, among others, Morocco, Niger, Uganda, Senegal [21], and United Republic of Tanzania.

In Senegal, the first phase of establishing the MIS-NFE covered five regions (Dakar, Saint-Louis, Tambacounda, Thies and Ziguinchor) and extended from January 2007 to March 2009. It led to several results:

- A simple methodology for implementing an MIS-NFE;
- An NFE conceptual framework and a series of validated data collection tools;
- A list of appropriate NFE indicators;
- An adapted technical tool and well-trained national and regional technical teams.

After piloting MIS-NFE in the above-mentioned regions, and Given the results the MIS-NFE pilot generated in terms of organizational set-up and availability of some strategic information, Senegal is now in the process of rolling-out to six other regions (Diourbel, Fatick, Kaolack, Kolda, Louga and Matam), with World Bank support and within the framework of the Ten-Year Education and Training Plan (PDEF).

With the exception of the three newly-created regions (Kaffrine, Kédougou and Sedhiou), coverage across the national territory and the supply of regular, objective information to the different NFE sub-sector actors and partners will soon be possible.

[21] The results of the first phase and the launching of the second phase for Senegal were the subject of a workshop held on 23-24-25 June 2009.

4

AVAILABILITY OF DATA AND INDICATORS FOR FORMAL TVET

Formal/non formal/informal TVET data is not readily available. However, some TVET statistics are produced either by the countries themselves through the ministries responsible for this sub-sector, or by institutions such as UIS and AFRISTAT, among others.

The national statistics on formal TVET, even where they do exist often vary in quality. These data, even if they are capable of responding to country needs in terms of information can rarely be used for inter-country comparisons.

At the international level, UIS is the principal institution that provides annual statistics on education. For many countries, formal TVET data within UIS is on enrolments in public vocational programmes, broken down by ISCED level, age and gender. However, it should be acknowledged that enrolments in formal TVET programmes constitute only a minute part of total participation in TVET, particularly in developing countries.

4.1 Nature of data and indicators

Current statistical data and indicators within UIS on education in general, and TEVT in particular, are accessible on the UIS website . Each year, UIS also publishes data on education in the form of a "Global Education Digest". UIS-published data are collected by the different States respecting appropriate methodologies thereby guaranteeing reliability and international comparability.

The main beneficiaries of UIS activities are, on the one hand, UNESCO member States (particularly users and producers of statistics), and on the other hand, international, inter-governmental, non-governmental and regional agencies, research institutes, universities and other relevant institutions.

a) Secondary education level TVET data and indicators published by UIS are mainly on school enrolments, percentage of students, teaching staff and some internal efficiency indicators.

- **School enrolments:**

They are:

- Secondary level technical or vocational education school enrolments: totals per level (1st and 2nd cycle), status (public and private), gender (male and female).

- **Percentage of students:**

This includes:

- School enrolments of technical/vocational education of ISCED 2 (1st secondary cycle) and ISCED 3 (2nd Secondary cycle) respectively in percentages of total enrolments of ISCED 2 and ISCED 3 respectively;
- School enrolments of technical/vocational education of ISCED 2 and 3 (1st and 2nd secondary cycles) in percentages of total school enrolments of ISCED 2 and 3 (1st and 2nd Secondary cycles);

[22] http://www.uis.unesco.org/ev_fr.php?ID=2867_201&ID2=DO_TOPIC.

- Percentage of female students of secondary cycle technical and vocational education;
- Percentage enrolments of the private sector at the level of the 1st and 2nd secondary cycles of technical vocational education.

- **Teaching Staff:**

  These include teaching staff of the secondary cycle of technical or vocational education: totals, full and part time, per level (1st and 2nd cycle), status (public and private) and gender (male and female).

- **Internal efficiency indicators:**

  These include the gross rate of 2nd secondary cycle of technical or vocational education completers (ISCED 3B: direct preparation for entry into ISCED 5B; ISCED 3C: preparation for entry to the labour market), totals and per gender (male and female).

UIS also computes some education cost indicators by level of education. For these secondary level indicators, disaggregation for the TVET sub-sector is not available.

b) TVET indicators at the higher level, published by UIS are only:

- ISCED 5B school enrolments: public and private, full and part-time, total and according to sex;
- ISCED 5B student distribution (%);
- Percentage of higher education level ISCED 5B female students;
- Post-secondary teaching staff: public and private, full and part-time, technical or vocational education, total and according to sex;
- Tertiary education teaching staff ISCED 5B: public and private, any programme, total and according to sex.

Although there is a set of higher education indicators published by UIS, most of them are not disaggregated for TVET purposes.

Generally, data collected by UIS on TVET is basic and offers a partial response to sub-sector information requirements.

4.2 Availability of data and indicators

In order to have an idea about the availability of TVET data and indicators at the level of Sub-Saharan Africa, our focus will be on non-available data trends over four years, from 2003 to 2006. The rate of non-availability can be calculated for one indicator or a group of indicators.

- The non-availability rate for an indicator in a given region is equal to the percentage of indicators that are not available in a country or a region for a given year.

$$Tx1 = \frac{\text{Number of countries that have not calculated the indicator}}{\text{Nombre de pays de la région}} \times 100$$

- The non-availability rate for a given category of indicators is equal to the percentage of non-available indicators for one year within a country or region.

$$Tx2 = \frac{\text{Number of non-available indicators in one given country / region for the TVET sub-sector}}{\text{Number of TVET sub-sector UIS indicators}} \times 100$$

Inset

☞ *Given that published UIS indicators are sourced from data collected by countries, a high rate of non-availability means that information on this indicator is not available in the area concerned.*

However, given the slow pace of collection and publication, indicators for 2008 are not available for most countries, justifying its exclusion from the analysis. Those for 2007 are not available for most countries; however, we shall keep the 2007 data for indicative purposes but the analysis will be carried out on data from 2003-2006.

4.2.1 Availability of data and indicators for TVET at the secondary level

Analysis of the availability of secondary level TVET information in Sub-Saharan Africa leads to the following conclusions:

4.2.1.1 A growing lack of quantitative TVET information in West Africa

In West African countries, an overall rise in the non-availability rate of indicators is observed; this rate rose from 59% in 2003 to 68% in 2006 (Table 5), an increase of about 9 percentage points. This reflects worsening availability of statistical information on TVET. The least available data are those on teaching staff. No data has so far been collected by West African countries on the internal efficiency of the TVET sub-sector.

Table 5

Trend in TVET data non-availability rate by indicator in West African countries (2003 to 2007)

Indicators \ Years	2003	2004	2005	2006	2007
School enrolments	54	50	47	63	77
Percentage of students	52	45	39	57	76
Teaching staff	62	66	88	78	85
Internal efficiency indicator	100	100	100	100	100
Non-availability index	59	56	59	68	80

By carrying out a more detailed analysis, we conclude that for all indicators in West African countries, there is more information available at the second TVET secondary cycle level than at the first cycle level **(cf. Annex A: table A.3)**. Indeed, in 2006, for all school enrolments, about ¾ of the countries provide no data on the TVET first secondary cycle while for this same indicator, more than half the number of countries have data at the second cycle level. There is also more information available by sector and by sex at the TVET second secondary cycle level than at the first cycle level. Thus, in 2006, we note about 88% of unavailable information on the percentage of private sector enrolments at the TVET first cycle level as against 56% for the second cycle. This probably shows that there is more control over statistical data collected on TVET at the second cycle secondary level.

4.2.1.2 A more alarming situation in Central Africa

The increasing lack of TVET data availability observed in West Africa is more striking in countries of Central Africa. In fact, the non-availability rate of TVET indicators collected by UIS rises from 69% to 85%, between 2003 and 2006 (Table 6).

Table 6

Trend in the non-availability rate of TVET data per indicators in Central African countries (2003 to 2007)

Indicators \ Years	2003	2004	2005	2006	2007
School enrolments	60	66	70	83	83
Percentage of students	54	62	72	79	79
Teaching staff	91	81	81	91	100
Internal efficiency indicators	100	100	100	100	100
Non-availability index	69	71	75	85	87

The least available indicators are those on school enrolments and teaching staff. In 2006, the unavailability rate for these groups of indicators was 83% and 91%, respectively. As in West African countries, no indicator on internal efficiency is produced in Central African countries.

The analysis by level and by sector shows clearly that in contrast to what is observed in West African countries, TVET information is virtually unavailable both for the first secondary cycle and for the second secondary cycle, but also for public and private sectors **(see Annex B: Table B.3).**

4.2.1.3 A less disquieting and more stable situation in East Africa

The deteriorating situation observed in West and Central Africa over the years regarding data availability is less flagrant in East African countries. Indeed, the non-availability rate rises from 61% to 66%, from 2003 to 2006. The non-availability rates by indicator are lower in this part of Africa, thus reflecting a better situation than in West and Central Africa **(Table n°7).**

Table 7

Trend in the non-availability rate of TVET data per indicators in East African countries (2003 to 2007)

Indicators \ Years	2003	2004	2005	2006	2007
School enrolments	56	46	49	59	93
Percentage of students	45	41	40	51	91
Teaching staff	76	83	86	83	100
Internal efficiency indicator	100	100	100	100	100
Non-availability index	61	58	59	66	95

Percentages of students in TVET are the most available country-level indicators; about 50% of the countries provide information on these indicators. School enrolment data is also fairly well reported. Indicators on teaching staff are virtually unavailable and as in West and Central Africa, no country in East Africa provides information on internal efficiency indicators.

Even if information is relatively more available in East African countries, it is nevertheless much less disaggregated per sector, per level and per sex **(see Annex C: Table C.2).**

4.2.1.4 Variable information availability in Southern Africa

In Southern Africa, the non-availability rate falls from 71% in 2003 to 65% in 2005, indicating an improvement of 6% for TVET data availability. From 2006, this rate rises. From 65% in 2005, it goes up to 79% in 2006, explaining the instability in data availability **(Table 8)**.

Table 8

Trend in the non-availability rate of TVET data per indicators in Southern African countries (2003 to 2007).

Indicators \ Years	2003	2004	2005	2006	2007
School enrolments	65	62	56	75	79
Percentage of students	71	62	61	75	80
Teaching staff	74	82	75	84	93
Internal efficiency indicator	100	100	100	100	100
Non-availability index	71	70	65	79	84

As in all regions covered, teaching staff indicators in Southern Africa are less available. In contrast to East Africa, the student percentages are also less informative; about 75% of the countries provided no data on these indicators in 2006. On the other hand, data on school enrolments are fairly well reported by the countries, but their non-availability deteriorates over the years (from 65% in 2003, it went to 75% in 2006).

As the years go by, there is a noticeable improvement in TVET first secondary cycle data collection. Thus, the school enrolment non-availability rate and first cycle schooling rates drop from 76% to 69% between 2003 and 2006. As a general rule, countries do not collect information by sector and by gender. As in the three regions examined above, no Southern African country records data on internal efficiency indicators **(see Annex D: Table D.2).**

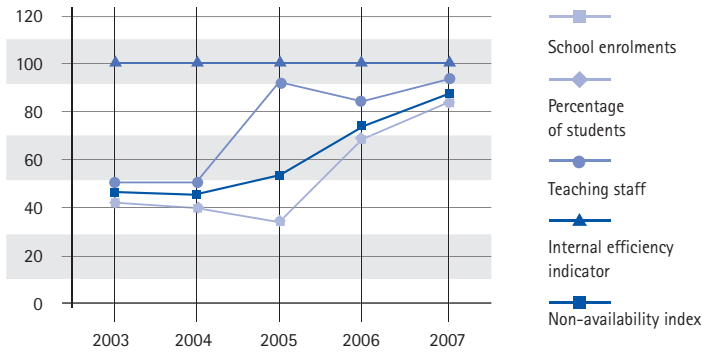
4.2.1.5 Regional analysis

At the regional level, the analysis shows that:

In the WAEMU [23] zone, data availability is slightly better, but it deteriorates over the years. Indeed, the non-availability rate for TVET indicators rises from 49% to 73%, between 2003 and 2006 **(Graph 1)**.

Graph 1

Trend in TVET indicators non-availability rate in the WAEMU zone (2003 to 2007)



[23] West African Economic and Monetary Union

Analysis per country (see Annex A: Graph A.1) reveals:

✓ A substantial improvement in data availability in Burkina Faso. Thus, as of 2005, there is adequate provision of all the indicators on school enrolments and schooling rates. Mali also registers a slight improvement in data availability. Up until 2006, there is no data provision on teaching staff, and from 2007, the rate of non-availability of these indicators falls from 100% to 65%. Data availability on school enrolments and student percentages remains stable.

✓ On the other hand, countries like Benin and Togo experience deteriorating data availability. From 2003 to 2005, all indicators pertaining to school enrolments, student percentages, and teaching staff are recorded. But from 2006, there was no TVET data collection by these countries.

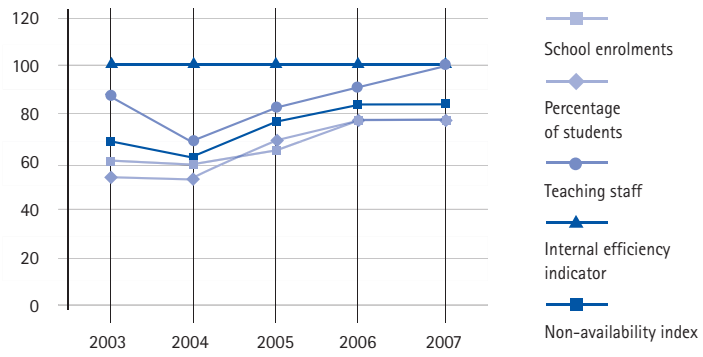
✓ In Niger and Senegal, TVET information collection is unstable. In Niger, information on school enrolments is available until 2006, unlike student percentages and teaching staff, which fluctuate over time. In Senegal, teaching staff data are well recorded up until 2004. Student percentages are available until 2006. As of 2007, no TVET data is reported.

✓ The situation is worse in Cote d'Ivoire and Guinea Bissau. In the former, there was no TVET data collection from 2003 to 2007, while in the latter, only student percentages are reported and availability deteriorates over the years.

In the CEMAC[24] zone, the situation regarding the non-availability of information is mediocre, becoming progressively worse over the years. The rate of non-availability of TVET indicators, which was 73% in 2003, goes to 87% in 2006. **(Graph 2)**

Graph 2

Trend in TVET indicator non-availability rate in the CEMAC zone (2003 to 2007)



An observation of each country situations reveals that (**see Annex B: Graph B.1**):

✓ Countries like Cameroon are making tremendous efforts in TVET data collection. In fact, between 2003 and 2004, only 33% of student percentage indicators go unrecorded. From 2005 up until 2007, all these indicators are available. As for indicators on school enrolments, they are 50% available between 2003 and 2004. In 2005, the non-availability rate declines to 33% and from 2006 up to 2007, all indicators on school enrolments are available. The non-availability rates of indicators on teaching staff also decline. All this shows improved TVET information collection in this country.

✓ In Chad, up until 2005, data on student percentages, school enrolments, and even teaching staff are fairly available, but from 2006, no TVET data is provided, and this shows degradation in data availability.

[24] Central Africa Economic and Monetary Community

✓ In Congo, TVET data collection shows real instability. From 2003 to 2004, school enrolments and students' percentages are all reported, but from 2005, their non-availability rate deteriorates, so that by 2007 no information can be provided on TVET. The unavailability rate for teaching staff indicators plummets, from 66% in 2003 to 0% in 2004, and subsequently rises sharply to 66% in 2005; and from 2006 up to 2007, stands at 100%.

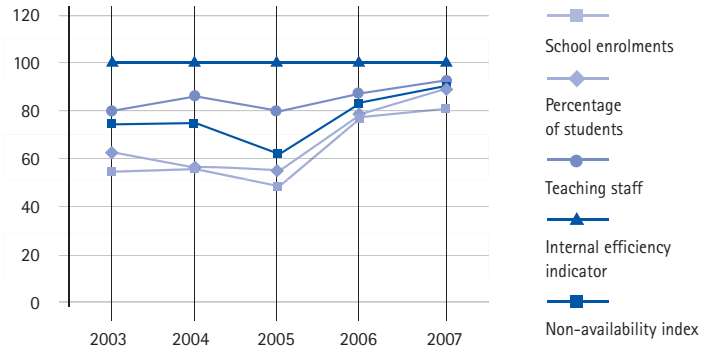
✓ In the Central African Republic, TVET data is virtually unavailable; only in 2005 is this country able to provide some data on school enrolments.

✓ Gabon and Equatorial Guinea have no TVET data from 2003 to 2007.

In the SADC [25] region, the TVET data availability situation was even more catastrophic. The rate of indicator non-availability, which is 76% in 2003, rises to 82% in 2006 (**Graph 3**).

Graph 3

Trend in the rate of TVET indicator non-availability in the SADC region (2003 to 2007)



The country data availability situation shows that (**see Annex D: Graph D.1**):

✓ Countries like Malawi, Namibia, Seychelles, United Republic of Tanzania and Zimbabwe are unable to provide any TVET data from 2003 to 2007. Hardly any data came from the Democratic Republic of Congo (DRC); only in 2003 can this country provide some information on school enrolment and student' percentages.

✓ In Angola, the situation is almost identical to that of DRC. Up until 2005, out of the group of indicators on school enrolments, only two out of twelve are provided; all the other indicators are unavailable. From 2006, there is some progress: school enrolment and student percentage non-availability rates declines from 83% and 100% to 66%, respectively.

✓ In South Africa and Mauritius, there is a certain level of stability in data collection up to 2005. More than half of the school enrolment and student percentage indicators are available. Teaching staff data are also fairly well reported. But in South Africa from 2006 in, no data is recorded. On the other hand, in Mauritius, from this same data, data availability improves overall.

✓ Countries like Botswana, Lesotho, Swaziland and Zambia demonstrate instability in TVET data collection.

✓ Only in Madagascar is there a real improvement in data availability over the years. From 2005 to 2007, all school enrolment indicators are available, student percentage and teaching staff indicators are also relatively well reported.

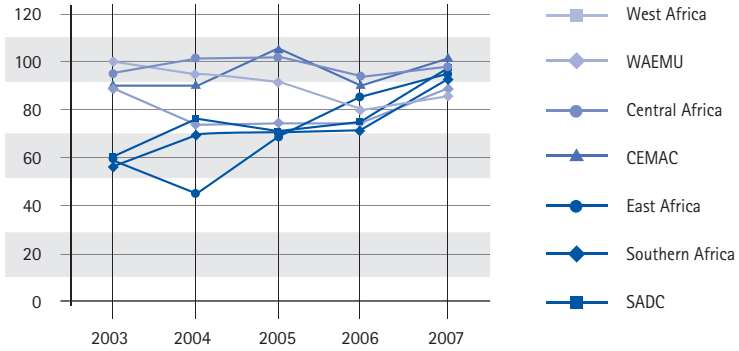
[25] Southern Africa Development Community

4.2.2 Tertiary education level availability of TVET data and indicators

A UIS analysis of data availability shows that most Sub-Saharan African countries have no data on TVET at the higher education level (**Graph 4**), or at least have no system of data collection on higher education that makes the distinction between general higher education and higher technical and vocational education.

Graph 4

Trend in rate of non-availability of TVET indicators at the higher education level (2003 to 2007)



At the regional level, the conclusion that emerges is as follows:

✓ **In the West Africa region**, TVET data at the higher education level is less available (**see Annex A: Table A.4**). The indicators non-availability rate for this region declines from 87% to 75%, between 2003 and 2006, thus a slight improvement in data availability.

In the WAEMU zone (**see Annex A: Table A.5**), although there is not as much TVET data at the higher education level as there should be, the trend is positive. Thus, the indicator non-availability rate goes down from 93%, in 2003 to 78%, in 2006. Most of the data that was available was on ISCED 5B student distribution, ISCED 5B student percentages and ISCED 5B school enrolments. Countries like Niger have data on school enrolments, from 2003 to 2007, and on ISCED 5B student distribution and ISCED 5B student percentages, up to 2006. Since 2006, some countries like Burkina Faso, Côte d'Ivoire and Mali have been making some efforts to get the latter indicators. Only Niger was able to provide data for 2005 where teaching staff indicators are concerned,

✓ **In Central Africa**, non-availability of TVET indicators at the higher education level is even more alarming (**see Annex B: Table B.4**). Rates for indicators non-availability went from 90% to 86% between 2003 and 2006. From 2004 to 2005, it was 96%.

In the CEMAC zone (**see Annex B: Table B.5**), the situation regarding TVET indicators non-availability at the higher education level is similar to that of the Central African region. There is virtually no data to be found in most of the countries. In 2003, only Congo could provide data on ISCED 5B student distribution, the percentage of ISCED 5B female students, ISCED 5B school enrolments and post-secondary level TVET teaching staff. Data in this area from 2004 are on TVET post-secondary level teaching staff and again only Congo was able to provide information on TVET at the higher education level.

In 2006, data available was on ISCED 5B students' distribution for Cameroon and the Central African Republic, and the percentage of ISCED 5B female students for the Central African Republic. In 2007, the data only covered school enrolments and it was provided by Congo. No country had data for ISCED 5B teaching staff.

This analysis reveals a certain level of irregularity in information availability in the CEMAC region, even for countries where data exists.

Southern and East Africa are the regions with the most information on TVET indicators at the higher education level, but the availability of these indicators deteriorated as the years passed (**see Annex C: Table C.3 and Annex D: Table D.3**). In fact, for the Southern Africa region, higher level TVET indicator non-availability rates rose from 57% to 71%, between 2003 and 2006. For East Africa, the rate of non-availability rose from 62% to 82%, between these same dates, nevertheless showing some improvement in 2004.

The SADC region (**see Annex D: Table D.4**) follows the same trend as the two Southern and East African regions, with deteriorating data availability. The non-availability rate of indicators rose from 63% in 2003, to 75% in 2006. The most available indicators to be found in this region are on ISCED 5B student distribution, ISCED 5B female student percentages and ISCED 5B school enrolments. Some countries, like Madagascar, have these data from 2003 to 2007. Mauritius, Namibia and South Africa also provide some data from 2003 to 2006.

Data on teaching staff are the least available. Only Madagascar and Swaziland were able to provide some data on post-secondary technical and vocational education teaching staff and on higher level ISCED 5B teaching staff, from 2004 to 2007 respectively.

4.3 Preliminary outline of the place and efficiency of formal TVET in Sub-Saharan African countries compared to all training systems

Most of the available TVET data pertains to formal education. However, work-based training, particularly on-the-job training is often non-formal or informal in nature and makes up a large part of the vocational training that takes place in most African societies.

In Chapter 3 of the Dakar+7 report [26], on **"Post-primary levels and education dynamics"**, formal TVET data generally collected by UIS made it possible to prepare an overview on TVET at the secondary level in Sub-Saharan African countries in 2004-2005 (or close to this period) in each of the 39 countries where data permitted an analysis. The overview covered the momentum of growth in enrolments, the relationship between the different country coverage levels and their levels of development, and gender disparities.

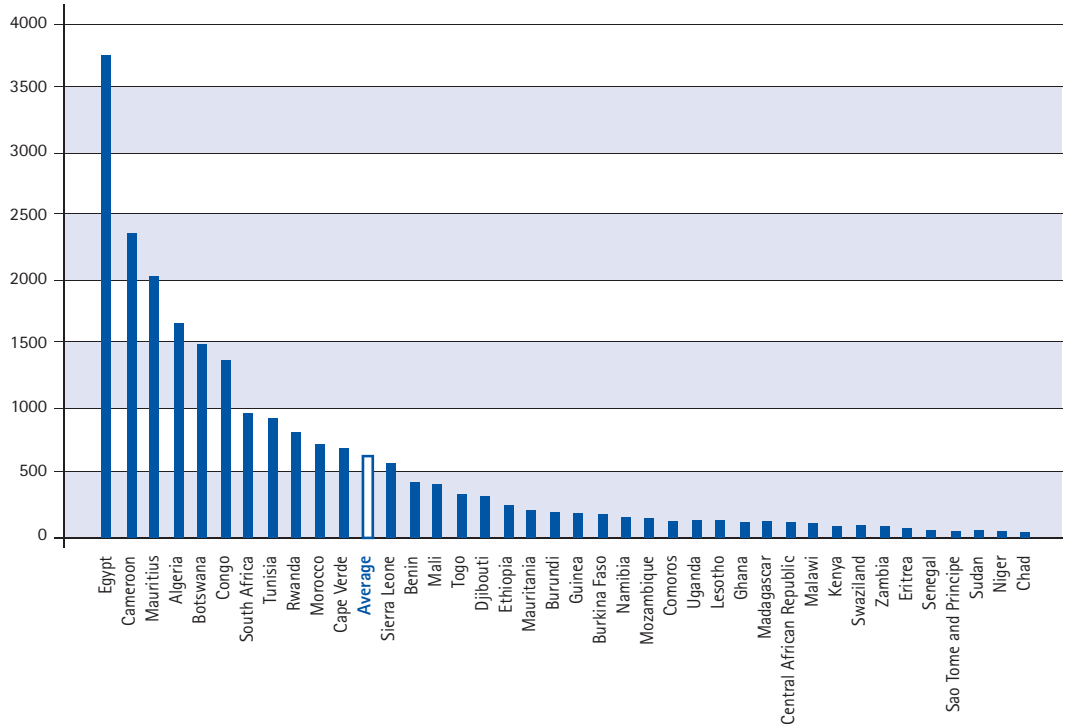
Diagnostic highlights may be summed up as follows:

1) TVET coverage (Graph 5) remains highly variable across countries. The average on the continent is 549 students per 100,000 inhabitants, in 2004-2005. Some countries (e.g. Chad, Eritrea, Niger, Sao Tome and Principe, Senegal and Sudan) have fewer than 100 TVET students per 100,000 inhabitants. Yet other countries have in excess of 1,000 students per 100,000 inhabitants.

[26] "Dakar +7 Report, Education for All in Africa 2007: The urgency of integrated sectoral policies, UNESCO-BREDA, Education Sector Analysis Unit (Pôle de Dakar)

Graph 5

TVET Coverage in 2004/2005 (or close to this period)

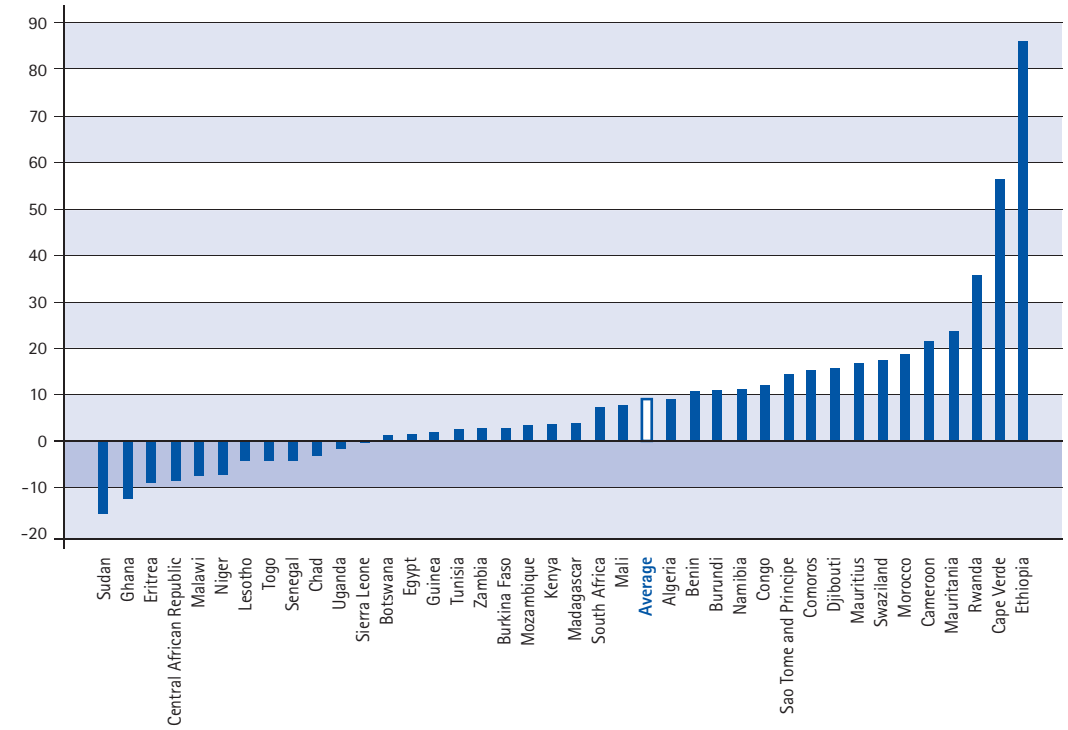


Source: Chapter 3, Dakar +7 Report, p. 92

Since 2000, there has been a significant evolution in TVET coverage on the continent, increasing by 27%, between 2000-2001 and 2004-2005, or 9% annually: 402 pupils to 549 pupils per 100,000 inhabitants (**Graph 6**).

Graph 6

Average annual growth rate in TVET coverage between 2000/2001 and 2004/2005 (or close to this period))



Source: Chapter 3, Dakar+7 Report, p. 100

This trend varies considerably from one country to another. In some countries, coverage is declining (Ghana for example), whereas, in other countries, it is rising with average annual growth rates exceeding 20%: this applies to Cameroon (21%), Mauritania (24%), Rwanda (35%), Cape Verde (56%) or, even more so, to Ethiopia (84%).

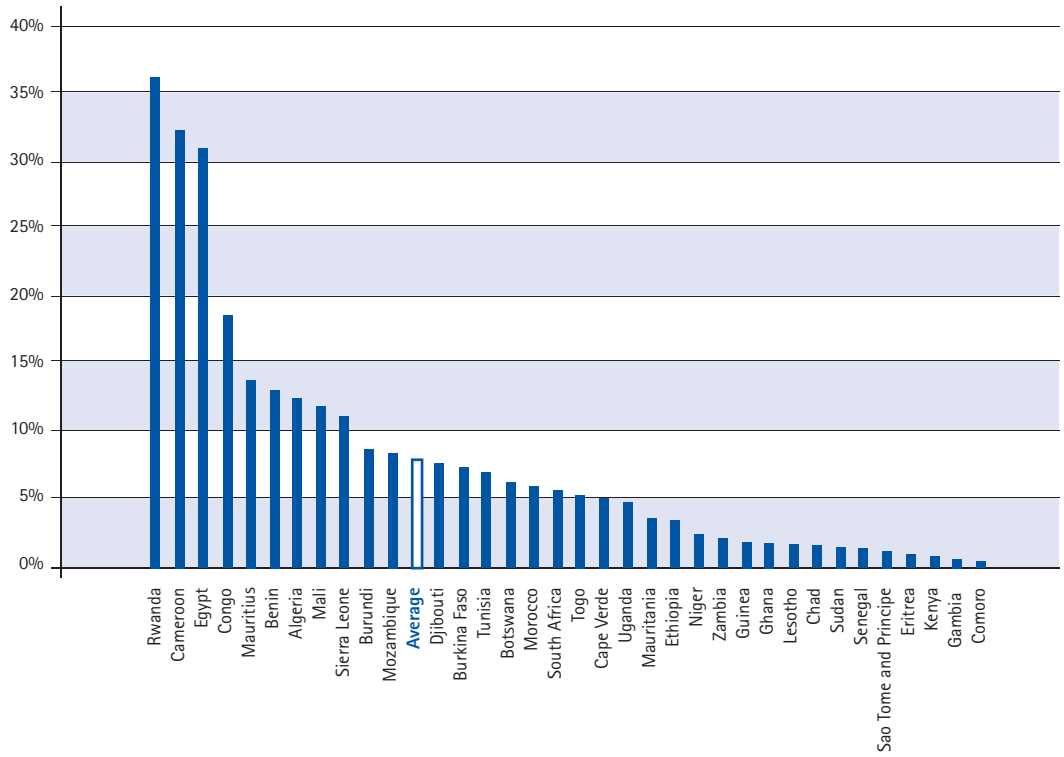
This variation in TVET coverage observed over the years derives from a policy option to attach more or less importance to this sub-sector within secondary education. What then is the portion of education allocated to TVET at the secondary level in each country?

2) At the continental level, the TVET share in secondary education is 14%, on average (**Graph 7**). At the national level, for some countries TVET allocations do not exceed 2% at the secondary level (Comoro Islands, Eritrea, Ghana, Guinea, Kenya, Namibia, Sao Tome and Principe, Senegal, Sudan and Zambia), whereas it exceeds 30% in countries like Cameroon, Egypt and Rwanda, where it is as high as 36%.

In countries where data exists, we note that the TVET sub-sector is completely independent of the general secondary levels. Some countries may have fairly high general secondary level gross enrolment rates (GER) with low TVET allocations (Ghana for example) or a high share (Egypt); inversely, countries with relatively undeveloped general secondary levels may have a substantial share for TVET (Benin) or a low share (Senegal).

Graph 7

Share of TVET enrolments in secondary education for the year 2004/2005 (or close to this period)



Source: Chapter 3, Dakar +7 Report, p. 93.

3) As regards gender, in both primary and general secondary education, most African countries reflect considerable gender disparities for TVET, with extremely varied situations. Girls in secondary level TVET represent about 42%, on average, at the continental level. But in most countries, this share is very low. Some countries for example, have five to ten times less girls than boys in TVET (Comoros, Zambia), in others, the proportion is the same if not more (Burkina Faso, Ghana, Lesotho).

The share of girls in TVET depends heavily on the areas of specialization. Some specializations may be more oriented to the female public while others are aimed more at the male public. The extreme variety of situations may therefore be attributable, to some extent, to the diversity in supply.

4) The rate of supervision [27] (number of pupils per teacher) gives us some information on a country's educational conditions at the secondary level. On average, this rate is 27 pupils per teacher at the continental level. At the level of the countries, it is observed that some have a supervisory rate of less than 15 pupils per teacher (Botswana, Comoros), while countries like Eritrea and Ethiopia have over 50 pupils per teacher.

Beyond this contrasting picture of the TVET sector in Sub-Saharan Africa, sector performance is analyzed in Chapter 7 of Dakar +7 which clearly and quantitatively (both for Francophone and Anglophone countries) demonstrates the urgent need for reflection on this sector, by taking stock of the uniformly and poorly adapted TVET, particularly through:

a) A generally very high unemployment rate particularly when taking into account visible and invisible underemployment;

b) An undoubtedly limited awareness of the narrowness of the modern employment sector that represents only an average of 10% of all employment;

c) Some appreciable difficulties for youth accessing employment, particularly for the most qualified, in spite of very reasonable salary expectations;

d) An imbalance between education supply and available employment, due to scarce employment openings and surplus of highly skilled labour supply in relation to the employment opportunities;

e) Some technical diplomas that do not guarantee more rapid access to skilled employment in the modern sector (compared to general secondary school diplomas).

This brief overview about TVET data shows very wide disparities on the African continent for TVET in 2004-2005, reflecting a variety of contexts and policy options, and reinforcing the idea that no single model exists. Rather, there are national situations to be managed in context by adopting efficient approaches (maximum efficiency within the framework of the resources that can be mobilized in a realistic manner).

4.4 Partial conclusion

This first overall picture sketches out the place occupied by TVET in a global and succinct manner. More in-depth information would be required to put an efficient development policy in place. Yet, it would appear that information is increasingly difficult to collect and data quality is questionable. It is therefore urgent to think in terms of qualitative improvements by better identifying specific TVET indicators and improving on information collection techniques. These techniques should lead to an implementation strategy presented in the second part of this report.

[27] The rates of supervision encompass general secondary levels and TVET. Available data renders a distinction between general secondary education and TVET impossible.

5

PROPOSALS FOR IMPROVED SIS FOR TVET MANAGEMENT AND PILOTING

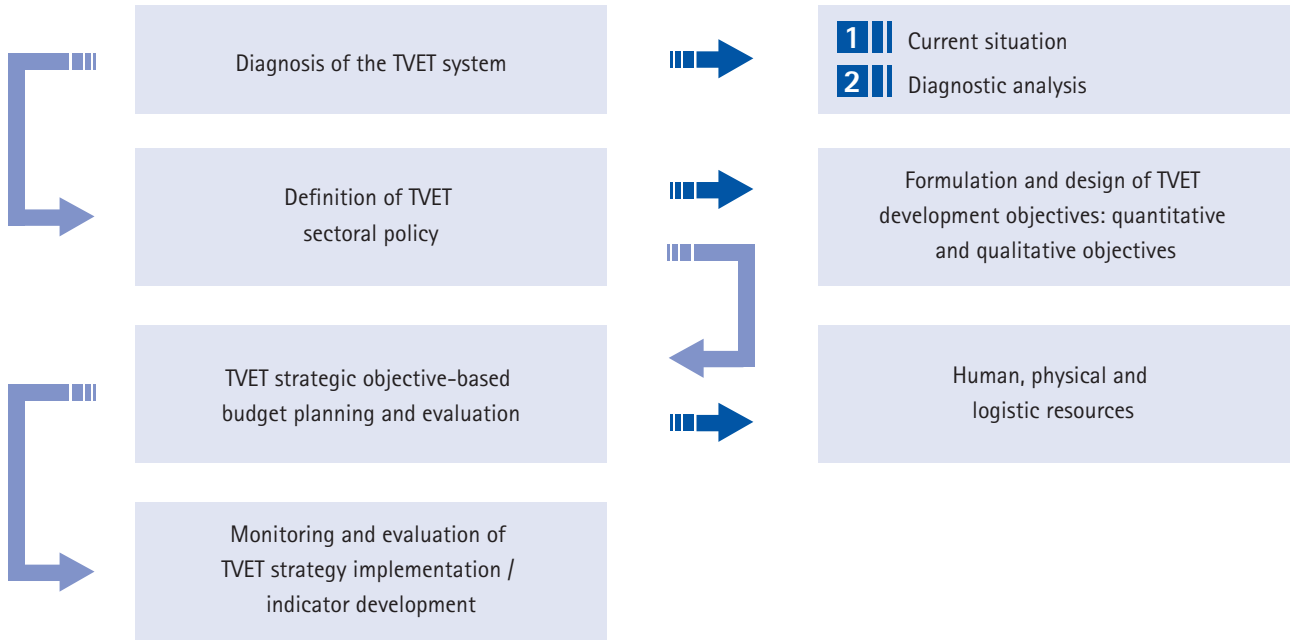
SIS is used for data collection and analysis and supplies the required information to TVET actors and users, particularly:

- Planners, development partners and TVET managers at all levels in order to plan, pilot, program, budget, monitor and evaluate, and coordinate TVET system programmes and services;
- teaching staff, research personnel in education and educators to support their respective activities;
- socio-economic planners, professional organizations, firms and the general public for inter-sectoral information exchanges;
- political authorities for educational policy formulation that is based on facts.

Meeting the information needs of all these TVET stakeholders and users necessarily involves the establishment of an integrated, stable and efficient SIS at the level of this sub-sector (Diagram 3).

Diagram 3

Conceptual approach for the establishment of an integrated, stable and efficient SIS: "Needs-based" approach.



The conceptual approach for implementation of a robust SIS for TVET should be based on:

5.1 A diagnosis of the TVET system

The diagnosis is made up of two main themes, namely:

✓ **Situational analysis of the information system**

a) system review of information assembly (data source and collection instruments), data processing (organization of data), archiving, and information flows to draw up a first list of deficiencies;

b) organizing field surveys (visits and interviews with officials involved in the information system) to complement the list of deficiencies and prepare the system diagnosis.

✓ **The diagnostic analysis of the system** serving to highlight constraints affecting activities conducted at the level of the institutional framework, information sources, information coordination and circulation, and data archiving.

The diagnosis will lead to a definition of the objectives to be attained in order to improve the situation.

5.2 A definition of sectoral policy

This is an indispensable phase making it possible to formulate and design TVET sub-sector development objectives. Indeed, there must be clearly-defined objectives for any improvements to an educational system. These objectives may be quantitative or qualitative:

1) **Quantitative objectives,** for example, may be an increase in enrolment rates at all levels of education, changing from a given percentage to another, higher, percentage within a given time frame.

2) **Qualitative objectives** may be improvements in quality, equity, and internal and external efficiency of the educational and training system.

As regards TVET, objectives may focus on sub-sector development (through better access for youth to this type of education), or on better job integration on the basis of certificates (through lowered unemployment rates).

Education policies may not clearly reflect these objectives, as defined. In this case, it should be possible to extract them from the official statements and education policy texts and have them validated by the authorities, after redefining them. In the process of defining these objectives indicators will emerge which, when calculated on a regular and sustained basis, will make it possible to measure progress made in relation to set objectives and initiate corrections, where necessary.

5.3 TVET strategic objective-based budget planning and preparation

Considerable human and financial resources are necessary to set up an SIS. Indeed, periodic surveys and specific studies should be conducted regularly. For information- sharing, the various structures involved need to be connected. They need to form a network. This means that they should be equipped with computers. They also need the logistics for field survey operations.

5.4 Monitoring and evaluation of TVET strategy implementation

It aims to gather the necessary information about the conduct of operations with a view to effective and efficient TVET sub-sector management. It follows five major objectives, namely:

- Enable optimal resource allocation and priority-setting in the budgetary process;
- Inform on the state of progress in project and programmes implementation;
- Facilitate responsible management that makes leaders accountable for activities implemented and compels the authorities to justify outputs;
- Enable measurement of development activity success rates;
- Facilitate decision-making to better guide the TVET sub-sector.

It is worth noting that the monitoring and evaluation system is only operable once planning, indicator definition, and the design of an efficient education system has occurred.

5.5 Taking into account the multi-faceted and multi-sectoral character of TVET

In addition to data on initial education, the TVET system should include data on continuous vocational training, types of learning in the non-formal system and professional transition (from schooling/on-the-job training). As a result, ministries of labour, industry, cottage industries, professional organizations, employers' associations, and enterprises are all actors who should be taken into consideration when setting up reliable information systems for TVET. There should, in fact, be permanent communication between these structures and the ministry responsible for TVET. Information should freely flow between them. To this end, a permanent consultation framework should be defined and made operational.

5.6 Taking into account rapid changes in the labour market

This is an essential element for obtaining the best possible linkages between training and employment. In fact, the authority in charge of vocational training and responsible for planning training supply needs to be informed about labour market situations throughout the country as a whole, and even within its different regions. More precisely, it should be fully conversant with the demand structures and trends of professional skills. To this end, structures responsible for TVET should do a labour market analysis. This essentially consists of gathering the most relevant information pertaining to labour requirements both in qualitative and quantitative terms, and evaluating this information in order to ensure a better match between supply and demand. This information generally focuses on professions and trades carried out in the national territory, sectors of economic activity, the characteristics of enterprises, as well as the economic situation (trends, challenges, and priorities).

Most often, this information is matched up against characteristics of the productive population (employment and unemployment rates), and regional socio-economic profiles in order to determine labour development needs.

The labour market analysis leads to a training needs assessment.

5.7 Assessing training needs

An assessment of training needs lays the foundation for the design of any vocational and technical training system. These needs should be defined and quantified. In simple terms, this consists of making a general survey of all labour functions (trades and occupations) practiced in the country that require vocational and technical training and defining the main associated skills in order to group them or, on the contrary, separate them for the purposes of curriculum design. It also means a quantitative assessment of labour needs according to each labour function so as to configure the training system in such a way as to attain a certain balance between training supply and demand.

For countries that have a classification or nomenclature of occupations, the best way to assess training needs is to attempt a quantitative definition of the scale of matching jobs and the way they are distributed amongst the sectors of economic activity.

Furthermore, training requirements should be further defined: are these properly documented needs for which training already exists or new requirements? Is this an ad hoc or recurrent training demand?

6

STRATEGIES FOR MORE AVAILABILITY AND RELIABILITY OF TVET DATA

Over the past few years, most discussions on education statistics focused on their availability and reliability. In fact, there is no doubt that it is often difficult to know just how accurate any given information may be on, for example, school enrolments or labour market operations. However, this should not be an obstacle to the quest for reliable data. On the contrary, only by publishing data and using it (with the necessary precautions) can its quality be improved. This is the virtuous cycle of statistics.

6.1 Prerequisites for data collection

There are certain prerequisites for the most complete TVET information collection, such as:

6.1.1 An ISCED standard better suited to TVET

Designed by UNESCO in the early 70s, and revised in 1997 at its 29th general conference, **"ISCED is designed to serve as an instrument suitable for assembling, compiling and presenting comparable indicators and statistics of education both within individual countries and internationally. It presents standard concepts, definitions and classifications. ISCED covers all organized and sustained learning opportunities for children, youth and adults including those with special needs education, irrespective of the institution or entity providing them or the form in which they are delivered."** [28]

The basic unit of ISCED classification is the education programme and each educational programme is classified by their content along two main axes: levels of education (Level 0, Level 1, Level 2, Level 3, Level 4, Level 5, Level 6) and fields of education.

The rules and criteria for allocating programmes levels to a given level of education are, inter alia:

- **Main and subsidiary criteria**
  - Programme content;
  - Entrance age;
  - Duration of the programme;
  - Teaching staff qualifications;
  - Entry requirements (for example, having completed a certain level);
  - ...

[28] "International Standard Classification of Education: ISCED 1997", Annex II of the report of the 29th UNESCO General Conference, Paris, November 1997.

- **Complementary dimensions:**

  - The type of subsequent education or destination: the type of subsequent education or destination for which completers are eligible or type of labour market positions for which they prepare completers. They number three in all: A, B, and C.
    - A: leads to higher level programmes, and ultimately to higher education, to level 6 in particular;
    - B: leads to higher level programmes but does not lead directly to level 6;
    - C: does not lead to a higher level.
  - The programme orientation (levels 2; 3; 4): the degree to which the programme is specifically oriented towards a specific class of occupations or trades. This orientation may be:
    - General;
    - Pre-vocational or pre-technical;
    - Vocational or technical.

Generally, ISCED classification is better suited to general education programmes. On the other hand, where TVET programmes are concerned, classification is harder to apply due to their greater heterogeneity, greater specificity, and shorter average duration.

6.1.1.1 Improving the ISCED standard by introducing more objectivity

Within TVET, training programmes may overlap between two levels. This is due to the latitude given to each country to bring more weight to bear on either of the classification criteria. As a result, a country may decide to classify a training programme at a given ISCED level even if this programme does not meet all the criteria defining this level. And by deciding to classify this training programme at that level, other criteria at this level would be minimized. Were all countries to behave this way, the resulting data would not be comparable from one country to the next or over a given time frame.

To illustrate this, let us take the example cited in the UNEVOC-UIS report [29] published in 2006. The example shows that the divide between international and national classification systems is becoming more blurred, and that this has led to the emergence of what could be called "mixed" ISCED programmes. For example, the study takes the case of a programme reclassified as 3B+5B by the Russian Federation. This means that students in the first two years of the programme are considered to be enrolled in ISCED 3B, whereas students in the last two years are regarded as enrolled in ISCED 5B. A similar phenomenon in the United States concerns "TechPrep" programmes which seamlessly combine the last two years of secondary school with the first two years of technical or community college.

This programmatic overlap between ISCED levels seems unsatisfactory; therefore, a solution would be to decide in favour of a given level. To do this, and be objective, each classification criterion should be assigned a weight (exact weighting would require more specific studies) and the training programme would, as a result, be placed at a level given the highest score (according to "the majority rule"). Opting for weighting makes it possible to introduce a hierarchy of scale for the different criteria, by classification level. Given the wide range of training on offer, weighting as a strategy may apply to all the classifications and this could be a component in ISCED reform.

6.1.1.2 Improving the ISCED standard by introducing the "Programme Orientation" criterion at level 5

An additional constraint imposed by ISCED is the "Programme Orientation" criterion. This criterion applies to levels 2 to 4 but not to level 5. Does this mean that "general", "pre-vocational or pre-technical" and "vocational or technical" categories do not apply to ISCED 5? Would this mean therefore that higher education is uniformly general? At the higher education level, the distinction between "general" and "vocational or technical" becomes blurred because higher education programmes tend to be specialized, their content either theoretical or practical, academic or technical; it is therefore difficult to consider higher education as being "general" education. Besides, even theory-oriented programmes lead to qualifications tailored to the labour market on completion of higher education. Moreover, many programmes

[29] "Participation in formal technical and vocational education and training programmes worldwide: an initial statistical study", UNESCO, 2006.

at ISCED level 5 are described as "technical" or "vocational" by the national educational authorities themselves. These programmes tend to be ISCED 5B rather than 5A; short rather than medium, long, or very long; and the first qualification rather than the second qualification.

Given these facts it would be preferable to introduce the "programme orientation" criterion at level 5 in order to create greater consistency in ISCED.

6.1.1.3 Improving the ISCED standard by a thorough understanding of the classification criteria

In addition, not all countries master the classification criteria, each classifying education programmes as they see fit. In fact, depending on the country, name similarity affects programmes classified at different ISCED levels. For example, in Chad and Niger where the teacher training programmes are virtually identical across the two countries the the "Teacher Training" programme was classified as 3C in Chad and 4A in Niger, or respectively: (i) BEPC + 2 years training for Teacher Assistants (TA) ; (ii) Advanced Level (AL) + 1 year training for Principal Teachers (PT).[30]

In these two specific cases, the TA should be classified in 3C and the PT in 4B, in line with ISCED 97 classification criteria. It would be a mistake to put all teacher training categories under the same classification even if these teachers were all required to carry out the same activities. Another example of discordant classification is the BTS and IUT: 4B in Togo and 5B in Djibouti. The Togo classification is in fact wrong since these certificates belong to the higher education level (AL+2 in general, i.e. 2 years of post "A"-level studies). Level 4 is generally reserved for graduate students of the second cycle of vocational education (Higher Vocational Education Certificate, for example) who wish either to have a level equivalent to the Advanced Level in order to further studies (4A) or attain a higher level (4B) for entry into the labour market. On the other hand, the Djibouti classification in 5B is more appropriate since this category is for students who have completed their second secondary cycle and have done a 2-year course at higher education level.

On the basis of the above examples, special importance should be given to the criteria defining each level as well as to the source data. Countries may well benefit from technical support to classify the criteria.

6.1.1.4 Improving the ISCED standard by redefining criteria pertaining to Level 4

ISCED data are not often collected at level 4, because there is some ambiguity in the definitions at this level of education. Some go to the extent of including in the classification anything relating to post-secondary vocational training organized by specialized institutions for the labour market.

There are three defining criteria: (1) age (typically older student); (2) training duration (6 months to 2 years); (3) level of entry (level 3).

- The age condition cannot be used to distinguish level 4 from the other levels. Some level 4 programmes recruit at younger ages, such as some programmes without preparatory classes that are less than two years in duration. On the other hand, there are level 4 programmes recruiting at older ages such as training directly leading to employment, with ISCED level 3 entry requirements for training that lasts less than 2 years.

In the first case mentioned above, the "age condition" is not a valid enough criterion to distinguish the level 4 programme from a second cycle secondary level programme whilst in the second case, it is difficult to make a distinction between the training programme and higher education programmes using this criterion. Therefore, information provided by the age criterion is not relevant.

The criteria characteristic of this level should be redefined:
- Entry requirement: should have gone through a level 3 training programme.
- Cumulative duration since the beginning of level 3, above all level 3 durations, and cumulative duration from level 4 under 2 years.

[30] "Contractual teachers and quality of education in Niger: what assessment?" CONFEMEN 2004. "Quality of education in Chad: What room and factors for improvement?": CONFEMEN 2006.

6.1.1.5 Improving ISCED standards by harmonizing "subsequent destination" criterion at all levels

The "subsequent destination" criterion is applied to ISCED levels 2 to 5 but it does not apply across the board:

- AT ISCED 2 and 3 levels, there are three types: A, B and C;
- At level 4, there are only two types of ISCED: 4A and 4B. However, the UOE (UIS/OECD/Eurostat) data collection sub-divides ISCED 4A (which gives access to ISCED 5A) into two types, called "4A" (which gives access to 5A) and "4B" (which provides access to ISCED 5B); and ISCED 4B (designed for direct access to the labour market) and "4C".
- At the ISCED 5 level, only two types exist: 5A (which gives access to ISCE 6) and 5B, which are not modified by UOE data collection.

6.1.1.6 Prospects for a new classification of education

In the final analysis, all these remarks and suggestions should lead us, in the medium or long term, to a reform of the entire ISCED in the future that would take specificities of the TVET sub-sector into account in the new classification.

For TVET, an alternative to ISCED would be to establish a specific standard for TVET training programmes. The transition model applied by ISCED could serve as a foundation but areas of qualification could be inserted. Therefore, this would lead to classification by level and fields of education, and not just by level, as is the case with ISCED. Introducing fields of education into such a classification is justified by the fact that the principle of vocational training is to specialize in a specific field. In addition, this classification would help solve the lack of "parity of esteem" that exists between general education and TVET and identify possible junctions between education/training sub-sectors.

This could lead to exploring certain working assumptions such as the brand new classification matrix (**see Annex F**) announced in a European Union recommendation, dated 23 April 2008, for implementing a national certification framework. In actual fact, this recommendation proposes an 8-level matrix using descriptors for the certificates: knowledge, aptitudes and skills (in terms of autonomy and responsibility). This matrix is important because its approach links certification to the type of training, both initial and then continuous, as well as taking into account mechanisms that validate all that has been learned from experience. However, it does not obviate the need for a nomenclature of specializations so that data from the various levels/fields of study can be cross-referenced.

6.1.2 A data comparability framework for occupations

As is the case with ISCED for data collection on training, data on occupations should also be collected using a common, standardized nomenclature, adapted to permit data comparability across regions of a country, and across countries.

Generally, nomenclature used in Sub-Saharan African countries is very heterogeneous. There are disparities from one country to another, and within a single country, not to mention inside the National Statistics Offices. These variances create major problems when it comes to comparing results from one country to another, from one survey to another, within the same country. To these data comparability difficulties can be added problems of readability for other users, particularly international organizations (World Bank, IMF, UN agencies, etc.).

However, in most countries international standards, particularly the International Standard Classification of Occupations (ISCO) serve as a basis for the preparation of nomenclatures on occupations. The ISCO was designed by the International Labour Office (ILO) with a view to assisting users of statistics and users whose approach is geared towards the needs of their customers. It is a tool for organizing all jobs into a clearly-defined set of groups according to the tasks and duties undertaken in the job. The first version of ISCO was adopted in 1957 by the Ninth International Conference of Labour Statisticians. It is known by the acronym ISCO-58. The original version was superceded by ISCO-68, which was adopted by the Eleventh International Conference of Labour Statisticians in 1966.

The third version, the ISCO-88 was adopted by the Fourteenth International Conference of Labour Statisticians in 1987. ISCO-88 was laterupdated and this new version was adopted in December 2007 at a tripartite meeting of experts on labour statistics, organized by ILO. This most current version is called ISCO-08 [31] . This updating activity was carried out as a result of the significant developments that had taken place in the world of work since 1988, but affected neither the basic principles nor the 1988 structure of classification. It simply made significant improvements in some areas.

On the basis of ISCO-88, the Economic and Statistical Observatory for Sub-Saharan Africa (AFRISTAT) has just set up a nomenclature of occupations and trades with specificities particular to the African context. Jobs are grouped together by occupations on the basis of the type of work that is done or should be done. The basic criteria used to define the major groups, sub-major groups, minor and unit groups are the "skill level" and "skill-specialisation" required to perform the tasks and functions related to the occupation.

Table 9

Comparison between ISCO 08, ISCO 88 and ISCO88/AFRISTAT Major Groups

Code	ISCO 08	ISCO 88	ISCO/AFRISTAT
0	Armed Forces Occupations	Armed Forces	Armed Forces
1	Managers, Chief executives, senior officials and legislators	Legislators, senior government officials, corporate managers, directors, and chief executives	Legislators, Senior Government Officials, Corporate Managers, Directors, and Chief Executives
2	Intellectual and scientific professionals	Intellectual and scientific professionals	Professions
3	Technicians and associate professionals	Technicians, administrative and associate professionals	Technicians and associate professionals
4	Clerical support workers	Clerks	Clerical support workers
5	Service and sales workers	Service workers and shop and market sales workers	Service workers and shop and market sales workers
6	Skilled agricultural, forestry and fishery workers	Skilled agricultural and fishery workers	Skilled agricultural and fishery workers
7	Craft and related trades workers	Craft and related trades workers	Craft and related trades workers
8	Plant and machine operators and assemblers	Plant and machine operators and assemblers	Plant and machine operators and assemblers
9	Elementary occupations	Elementary occupations	Elementary occupations

The levels of classification of the major groups are almost identical between ISCO -88 and the AFRISTAT classification. The differences are marginable at the level of the sub-major groups, minor and unit groups, at the level of titles for the groups, as well as the mode of codification.

However, there are some differences in the first level of classification of ISCO-88 and ISCO-08, leading to divergences between the standard updated in 2008, and that of AFRISTAT.

[31] The updated version of ISCO called ISCO-08 is available on the ILO website.

Table 10

Example of classification of sub-major groups of Major Group 1

Code	ISCO 08	Code (Non-codified level)	ISCO / AFRISAT
11	Managers, Chief executives, senior officials and legislators	NC	Members of the executive and legislative
12	Chief executive	NC	Senior public administration executives
13	Managing director and manager	NC	Corporate managers and senior executives

NC = Non-Codified

The ISCO/AFRISTAT classification is an adequate collection framework for comparable data within an African and international context. Some countries in the region have already adopted this nomenclature for various surveys; this is the case with Burkina Faso which used it for the main and complementary household expenditures survey (2009), and also with Cameroon for its employment surveys. The use of a common nomenclature of occupations for all surveys with an employment component will make it possible to mobilize these diverse sources of data in studies aimed at the integration of the students completing the TVET programmes in particular and, at the same time, make the results of these studies comparable in time and space.

In the global context, statistical data relating to the different countries or different economic zones should be directly comparable to facilitate political and economic decisions. It is important for national classifications of activities to be directly comparable with international reference classifications, or at least be compatible amongst each other. This does not necessarily mean that the national classification of activities should strictly follow the structure of the reference classification, but that it should be possible to make a precise and bi-univocal connection between elements of both classifications. Of course, it is also necessary for the methodological concepts used by the reference classification to be scrupulously observed at the national level.

6.2 What data to be collected for TVET?

For better TVET information collection, each country should firstly carry out an in-depth diagnosis of this sub-sector's SIS in order to identify dysfunctions.

6.2.1 Data collection at the level of all formal TVET structures

TVET is multi-sectoral; as a result, data collection cannot be restricted to the education sector. TVET training structures come under general sectors of activity other than the education sector. In Chad [32] for example, the education sector diagnosis has shown that there are many vocational training activities which are under the authority of various ministries some examples being: the National School of Health Services (under the Ministry of Health), the National School of Animal Husbandry (under the Ministry of Animal Husbandry), the National Police College (under the Ministry of Interior), the National School of Public Works (under the Ministry of Public Works and Transport), the Agricultural Technical Training School (under the Ministry of Agriculture), the National School of Administration and Magistrates (under the Office of the President), the National School of Telecommunications (under the Ministry of Post and Telecommunications), the Inter-Army Officers School (under the Ministry of Defense). TVET data collection in all countries should therefore be extended to multiple structures in order that they too benefit from the same classification in ISCED as the facilities managed by the Ministries of Education.

[32] "Diagnosis Elements of the Chadian Educational System for a New Educational Policy", Pôle de Dakar, 2006.

6.2.2 Data collection at the level of non-formal or informal training facilities

Household survey data collected from various Sub-Saharan Africa countries (**See Annex E: Table E.1**) shows the preponderance of the informal sector in African economies.

Indeed, non-formal or informal training facilities are primarily responsible for the professionalization of Sub-Saharan African youth. Countries like Ghana, Mali, Senegal, Togo, etc. are supporting informal training facilities in order to improve the quality of supervision offered. As a result, failure to incorporate informal learning into TVET statistics would be tantamount to omitting a considerable part of the information on TVET. By virtue of the non-structured character of these training activities, it would be difficult to evaluate their level in order to classify them in the ISCED transition model. Nevertheless, it is possible to get data on non-formal or informal trainings, depending on the fields of professional qualification from censuses, household surveys, employment surveys, or specific surveys on the informal sector.

6.2.3 Data collection on the labour market

Since the TVET system is designed to meet the needs of the labour market, an attempt should be made to assess the degree of articulation between training and employment. And this is only possible if labour market information is available.

6.2.3.1 Data collection on TVET system completers

Job market data can be obtained from specific surveys of the students who qualify from the TVET system. The survey objectives would be to describe and then to publicize the status of technical and vocational training system completers over a period of six months to one year after the end of their studies. Such surveys would be a source of reliable, accurate, and up-to-date information on the integration of of new completers into the labour market, according to programme of study or training sector, by region and for the entire country. Conducting these surveys each year would all labour market trends to be monitored and for the identification of training needs, wherever possible.

For these surveys to be reliable and informative, the data collected should be drawn from the total population concerned and not from a sample because in general, this population coverage is limited. Results obtained should be interpreted with care especially in the case of study programmes or sectors where there are very few completers. The collected data may, for example, deal with:

- ✓ The rate of integration in the labour market;
- ✓ The rate of training related employment;
- ✓ The rate of further studies;
- ✓ The unemployment rate;
- ✓ The average remuneration rate by programme of studies and by level of studies.

Time series data collection on TVET system completers makes it possible to do a longitudinal analysis of the training system and thus evaluate the study programmes, compare between them, or amongst them. For this descriptive data of the system to help in explaining dysfunctions, or to support system reforms, it should be compared to other data and an analysis of underlying assumptions validated by some experts and partners. A low rate of access for a given study programme may be explained by over-supply of training in relation to labour market needs whereas a sudden reduction in access rates may be explained by a slowdown in the economy affecting a given sector, or a set of sectors. Finally, a gradual decline of the labour market rate for a given sector may be caused by growing dissatisfaction on the part of employers with the training offered. This is why surveys on completers from the system used to calculate insertion rates in to the labour market should, occasionally, be combined with those conducted on employers; in order to identify the qualitative indicators that can help to explain the causes for limited job access for completers.

6.2.3.2 Data collection from employers

In order to measure training programme relevance and quality, it is useful to occasionally (every two or three years, for example) conduct specific surveys on employers who have recently recruited TVET completers. These surveys enable employers to have their say about the relevance and quality of training; in other words, if training matches the job. These surveys would deal with a small sample since they involve only qualitative data. From these surveys, it is possible to obtain reliable and directly usable data. These data make it possible to measure the employer satisfaction about the training received by the graduates. Questions may be about, inter alia:

- ✓ Mastery of technical skills;
- ✓ Mastery of new technologies;
- ✓ Mastery of more general or cross-cutting skills (ability to communicate and work in a group, especially)

7

CHOICE OF RELEVANT TVET INDICATORS

Although the vast majority of African countries have databases on education, in most cases, they are incomplete or of a quality and reliability that are far from being perfect. These databases are important for planning educational policies however, policymakers barely use to guide their educational policies due, at least in part, to their presentation in statistical yearbooks full of raw data. What policymakers need are summarized, analytical, relevant information, presented in a more easily digestible manner. It is the development of indicators that can meet this need, making them very important for educational policy decisions.

7.1 What is an indicator?

An indicator [33] is defined as a set of information that has been elaborated so that an educational phenomenon can be studied. It summarizes a lot of data and provides a global snapshot or a general indication about a situation being analyzed. Indicators can describe the dynamics of each educational system, both at a precise moment in time and over time, because in revealing the interactions between various elements of the system they help assess progress. Thus, without indicators, it is impossible to carry out a coherent analysis of educational system data, measure progress with a view to achieving policy objectives, or make the necessary adjustments in terms of strategies and actions.

The role of an indicator is:

- ✓ To be a technical instrument to guide educational policy implementation. It helps measure the characteristics of an educational system, prepare a diagnosis of its current situation and recent trends, formulate an educational policy with precise quantitative objectives, and measure the gaps in relation to the set objectives;
- ✓ To be a tool for facilitating communication between different social partners. By providing clear and understandable information, indicators facilitate dialogue between experts, policymakers, civil society actors, etc.

In addition to their role in enhancing statistical information, indicators are management tools, directing, and evaluating educational and training systems. By describing their status, they make it possible to identify problems, define or redefine strategies, measure and assess progress in relation to educational policy objectives.

The objectives of indicators are to:

- ✓ Assess the status of the educational system
- ✓ Monitor trends over time
- ✓ Forecast development
- ✓ Measure strengths and weaknesses
- ✓ Assess the degree of inequality in service delivery
- ✓ Inform policy makers about system functionality and efficiency

[33] Claude SAUVAGEOT "Key Indicators and Educational Policies: A Practical Guide", European Foundation for Training, April 2003.

In order to attain the objectives, an indicator should be deemed to be of good quality and **SMART,** that is:

- ✓ **Specific:** concrete and precise, in order to avoid confusion. There should be a link between the objective and the expected output;
- ✓ **Measurable:** quantifiable where possible or able to describe any change that occurs and external evaluations should be able to make an objective statement about it;
- ✓ **Achievable:** relevant in relation to set objectives. It should be capable of synthesizing and giving a maximum amount of information without sacrificing some important decision-making aspects;
- ✓ **Realistic:** There should be a consistent relationship between the resources and the expected outputs;
- ✓ **Time-bound:** Outputs should occur within set deadlines in order to permit comparisons in time and space.

In addition, an indicator must:

- ✓ Measure distance in relation to an objective;
- ✓ Identify problematic or unacceptable situations;
- ✓ Respond to the concerns of politicians and to the questioning that has resulted in it being chosen;
- ✓ Compare its own value to a reference value, to a norm, and to itself calculated for another period of observation.

TVET indicators that will be developed in this report will not be restrictive. Some indicators may be designed in line with countries and needs.

For each of the indicators that proposed, a file or chart (**see Annex G**) will summarize its description and purpose, its calculation formula and provide details about data required to calculate it.

7.2 Traditional educational system indicators and adapting them to TVET

Compared to other educational sub-sectors, the TVET sub-sector is very specific. In contrast to general education, TVET is not organized into "systems", as such.In most countries, there are a large variety of TVET institutions, including government, non-government, and private service providers, each with its own interests, administrative structures and traditions. Moreover, TVET is multi-sectoral; the ministries of education often share the responsibility for TVET with the ministries of labour and/or employment, amongst others.

Furthermore, "the presence of adults is often stronger in TVET programmes than in general programmes, because integration into the labour market, and consequently the need for marketable skills, increase from adolescence to youth to adulthood."[34].

Similarly, TVET programmes are often more difficult to classify by ISCED level than general programmes due to their greater heterogeneity, their shorter average duration, and their greater specificity. Part-time courses and courses that last less than one year are more often a TVET component than one of general education.

Owing to these specificities, a host of indicators in the education system in general are less appropriate in the TVET case or at least, should be used with great care. Amongst TVET indicators there are, all the same, the major groups of education indicators, namely:

- Access and coverage indicators;
- Internal efficiency indicators;
- Human resource indicators;
- Financing indicators.

[34] "Participation in formal technical and vocational education and training programmes worldwide: an initial statistical study", UNESCO, 2006.

7.2.1 Access and coverage indicators

Access indicators measure the access of individuals to TVET programmes. Coverage indicators measure the participation of the population in TVET programmes. Some traditional access and coverage indicators are not relevant for TVET because of the age constraint. They are mainly:

- **Gross Admission Rate (GAR)** - the ratio between the number of new students admitted to the first year in a given level of education and the population having the official admission age at this level, for a given year;
- **Net Admission Rate (NAR)** - ratio between the new first year students in a given level of education having the official admission age at this level of education and the corresponding population, for a given year;
- **Gross Enrolment Ratio (GER)** - number of pupils enrolled in a given level of education, regardless of age, expressed as a percentage of the population in the theoretical age group for the same level of education;
- **Net Enrolment Rate (NER)** - number of pupils in the theoretical age group for a given level of education enrolled in that level expressed as a percentage of the total population in that age group;
- **Age-Specific Enrolment Rate (ASER)** - ratio between the number of educated pupils of a given age and the population of the same age.

Indeed, to compute these indicators the theoretical age is essential. However, there is, strictly speaking, no official age for entry into a TVET programme. As a result, assessing the denominator to calculate these rates poses a problem at the TVET level where heterogeneity is the rule. In general, several programmes with different theoretical age groups coexist at the same level, each having a relatively restricted share of the total TVET enrolments. Consequently, it is unlikely for the theoretical age group for a given level to be defined by TVET programmes. Besides, the theoretical age groups for TVET programmes are often defined in an ambiguous or an exceedingly wide manner: for many of these programmes, the "typical" age of entry often extends over "25 years" [35] instead of being a given individual age [36].

Furthermore, TVET enrolments by age are not readily available. And even when they are available, they very likely include ages located outside the defined range in the questionnaires (for example, more than 24 years for secondary education). In addition, TVET enrolments are not given by age and by class which, in the case of general education, is often useful for consistency analysis. Consequently, to a certain extent, it is more likely that the Net Enrolment Rate numerator and the Net Admission Rate include incomplete or erroneous data for TVET. For this reason, we see no point in calculating net rates for the TVET sub-sector.

Training durations are very heterogeneous at the TVET programme level, This would amount to defining official ages at the entry point of a programme as opposed to entry point of a cycle, which is not practical given the large numbers involved.

In spite of the problems raised by the theoretical age groups, GER may be calculated for TVET at all relevant ISCE levels, but with great care, because these rules probably constitute the most fundamental indicators presently available for comparing TVET participation in countries with very varied population sizes. In addition to the GER, it would be more relevant, for the purpose of measuring TVET coverage at the secondary level, to use the number of students in TVET per 100, 000 inhabitants. As regards entry to a TVET cycle it would be more expedient to measure from Transition rates, rather than measuring from GAR.

[35] "Participation in formal technical and vocational education and training programmes worldwide: an initial statistical study", UNESCO 2006.

[36] The Evaluation and Preliminary Recognition Mechanisms of Learning (EPRL) may permit different ages of entry and different levels of entry into TVET, which makes it even more flexible.

7.2.2 Indicators of internal efficiency, and of human and material resources

The development of indicators of internal efficiency and of human and material resources is a matter of key importance in TVET sub-sector management.

Internal efficiency indicators do assess the relevance of pedagogical objectives, programmes and teaching methods, and also examine the relationships between a whole series of internal and external factors of school attendance and education performances or outcomes.

The indicators on human and material resources, for their part, examine learning conditions and directly impact on internal efficiency in the sub-system.

7.2.3 Financing Indicators

In most cases, it is extremely difficult to differentiate between resources for TVET and those for general education. And it is even more difficult to do so where the same schools are responsible for providing TVET and general education programmes at the same time, which is the case in many countries and at several ISCED levels.

Furthermore, the resources for TVET can come from the private sector, sometimes in ways that are informal (such as donations in kind). Yet it is absolutely necessary to disaggregate data by funding destination, especially as TVET is said to be cost-intensive because of the constant need to buy consumables, costly material, and ensure maintenance of the material and infrastructure, plus the perception that student/teacher ratios are high. This process will help countries calculate TVET financing indicators and thus have a better understanding about financial sustainability in the sub-sector.

7.3 Indicators on the specific nature of TVET: the training/employment relationship

TVET is designed to address labour market needs more or less over the long term. This is why the process of monitoring, evaluating and directing the TVET system should go beyond indicators on the education system and integrate the training/employment relationship in the selection and calculation of indicators. In fact, securing this linkage guarantees entry into the world of work. Efforts to strike a more even balance between training and employment should be one of the major goals of TVET system planners and managers, and applying indicators to measure this is fundamental. However, it is more challenging to measure non-quantitative or qualitative data, such as the relevance of curricula, for this requires studies with a more qualitative and analytical thrust.

There are two aspects to the relationship between education and employment, one quantitative and the other qualitative, requiring special information that does not come from school surveys alone, or from initial and end-of-year school reports.

7.3.1 The quantitative aspect of the training/employment relationship

The quantitative aspect of the relationship between training and employment relates to professional integration. It means striking a balance between training supply and the labour requirements of trades or occupations in each region of the country, or across the entire nation. The question that comes to mind in this case is: do graduates from the TVET system satisfy labour market needs? Or in other words, are graduates from the TVET system able to find a job? An assessment of the needs- satisfaction level basically presupposes human resources development planning. It is indeed imperative to assess TVET programme certification by examining how youth enter the job market when they graduate from the TVET education and training system with those qualifications. In this way, the relevance of the qualifications they receive and the recognition such qualifications get in the world of work can be assessed.

There are two main indicators for measuring the quantitative aspect of the relationship between training and employment. These are the Gross Professional Integration Rate and Net Professional Integration Rate for completers.

The Gross Professional Integration Rate actually evaluates the overall external efficiency of a cycle. This programme indicator enables us to forecast the level of professional integration for new entrants from the cycle (all things being equal). Working from the education profiles of job seekers, projections can then be made to predict, in a rather approximate manner, trends that are likely to be observed on the labour market over the short and medium term.

- **Gross Professional Integration Rate (Gross/Pintr)** is the ratio of elements in the initial number (for example, graduates) with employment to the initial number:

$$Gross/Pintr = \frac{Ngw}{Numbers\ upon\ entry} x$$

Gross/pintr = Gross professional integration rate
Ngw = Total number of graduates in employment

The Net Professional Integration Rate assesses the relative external efficiency in an education system (for those who have completed their cycle). This indicator gives a more precise evaluation of the numbers and type of human resources needed to fill specific positions in a productive capacity.

- **Net Professional Integration Rate** (Net/pintr) is the ratio of final year students (for example, graduates) in employment to the number of students in the final year (for example, the total number of graduates).

$$Net/Pintr = \frac{Ngw}{Total\ number\ of\ graduates} x\ 100$$

Net/pintr = Net professional integration rate
Ngw = Total number of graduates in employment

For reasons outlined below, the Net Rate is the more generally used indicator.

- External efficiency deals more specifically with the school careers of those who have already graduated from the system (internal efficiency deals with persons still in the education system). Hence the net rate, focusing on graduates from the TVET system, is better adapted than the gross integration rate.
- The gross rate supposes that labour market structures and education system structures do not change for the entire time period that the cycle lasts. This is not often the case, given that several circumstantial constraints may affect either of the two sectors. Thus the real number of graduates (ex-post) who enter the world of work may turn out to be lower than the number of graduates (ex-ante) estimated to enter the world of work.
- Moreover, it is difficult to get cohort data as of the first year of the cycle through to the period of activity on the job market.

7.3.2 The qualitative aspect of the training/employment relationship

This aspect of the training/employment relationship pertains to the relevance of TVET system curricula, meaning the correlation between work skills required and the skills acquisition objectives in the TVET system. Put differently, it is the match between training and the job.

However, training does not systematically secure access to the occupations or jobs for which it is supposed to prepare graduates. This can be attributed as much to labour market dysfunctions as to the diversity and cross-cutting nature of skills acquisition methods, ranging from "formal" education (that awards degrees or certificates) to training "on the ground". For approximately one in three cases, a profession is closely linked to educational specialization. Access to such professions is regulated, in some instances, by holding a certificate or degree (as with doctors or legal practitioners). There are some occupations that are historically associated with craftsmanship (carpenters, plumbers, bakers), or jobs that demand specific technical skills (workers in the auto repair trade or workers in the accounting profession)" [37].

[37] "Educational specialty plays a secondary role in access to most professions"; Olivier Chardon, ÉCONOMIE ET STATISTIQUE, N° 388-389, 2005.

To ensure a more even balance from education to employment and integration into the world of work, TVET establishments need to take certain measures. In this regard, developing indicators that are conducive to professional integration and matching training with employment is a necessity.

To make the relationship between education and employment an integral part of TVET development, an analysis has to be done on the labour market at a particular moment in time as well as over time, so that plans can be made to anticipate future needs. A sociological analysis of national development may provide clues in this regard. Such work requires appropriate labour market indicators.

8

CONCLUSION: RECOMMENDATIONS FOR IMPROVING TVET SIS MANAGEMENT

The importance of SIS as a tool to direct the TVET sub-sector cannot be overemphasized. In fact, education system diagnostic analyses, carried out by UIS in some African countries, showed that there are considerable malfunctions in the statistical system and a crucial lack of TVET data.

Improving the quality and efficiency of TVET cannot become a reality unless an integrated, stable and efficient SIS is put in place, with the contribution of all the actors who work in the TVET sub-sector. To achieve this goal countries have to reform their educational and training systems. Recommendations have therefore been issued in this report to initiate the reform process.

8.1 Recommendations on Statistical Information Systems (SIS)

To improve the SIS for the TVET sub-sector, there is a need to:

- ✓ Conduct an in-depth analysis of the TVET system (on a multiform and multi-sectoral basis) with a view to detect what is not working well;
- ✓ Establish an institutional and legislative framework for the creation of an integrated SIS with one official source of information coordinated by the relevant entity designated in the Ministry in charge of TVET. This measure will contribute to improved communication and data sharing among the respective directorates in the Ministry charged with TVET;
- ✓ Set up an SIS monitoring and evaluation committee, made up of all SIS management bodies and other external structures, such as National Statistics Offices, concerned ministries, stakeholders in professionalizing the informal sector, etc. in order to gather all TVET-relevant information;
- ✓ Allocate adequate funding to the SIS by making provision in the national budget for a heading explicitly directed to statistical operations and covering all the needs expressed at the various stages of production and dissemination of TVET statistics;
- ✓ Decentralize SIS operations to the provincial and divisional level;
- ✓ Deploy the appropriate quantity and quality of human resources to the central and local levels to ensure good SIS management. This implies that efforts should be made to build capacity of existing human resources such as statisticians, demographers, IT professionals, economists, education planners and cartographers, while, at the same time, training and sensitizing school managers so as to facilitate data collection;
- ✓ Provide all the services involved in SIS management with the material and technical equipment they need. The emphasis should be placed on the following key elements: logistical facilities, IT materials, IT network, high speed internet access, intranet, data server, anti-virus software, cutting edge database analysis and management software (SQL Server or ORACLE, SPSS, SAS or Stata, mapping software). Efforts should also be made to promote statistical data publication on the Internet/Intranet, as well as on CD-ROM and other interactive IT mediums.

8.2 Recommendations for production and dissemination of statistical data

To ensure seamless availability and reliability of TVET data, upstream efforts should be made to:

- ✓ Sensitize authorities at the ministerial level to the importance of statistics and promote the culture of grounding decision-making in statistical evidence;
- ✓ Select key indicators corresponding to the needs of TVET system stakeholders. Indicators chosen should take into account the main objectives set for the TVET sub-sector;
- ✓ Develop a sole data collection medium for all TVET establishments, thereby contributing to a better reflection of the particularities of the sub-sector. This would make it possible to include data on matching training to employment, and on the professional integration of graduates into the questionnaire;
- ✓ Improve the ISCED norm so that it fits in better with the TVET system and to the extent possible, ensure that countries adopt this nomenclature for purposes of statistical comparability published at regional and international level;
- ✓ Develop a nomenclature of TVET sectors/branches/specialties, as well as a nomenclature of occupations in TVET for all sectors of employment (formal, informal, public and private). This should be the sole nomenclature at the national level, based on international norms, such as ISCO;
- ✓ Collaborate with national statistics institutes on household surveys, job surveys and population censuses, as well as with labour market observatories in order to obtain data on TVET system completers;
- ✓ Use multi-year database models conducive to conducting longitudinal analysis;
- ✓ Carry out surveys on the productive workforce (e.g. 'job'/labour force surveys) in order to obtain more general information on training/employment relationships. Information obtained could be used to study business hiring practices and detect shifts in their demands, or employment trends in a sector targeted by a given field of education;
- ✓ Conduct rapid surveys on representative samples of TVET facilities or sub-populations (e.g. households, workers in an economic sector) in order to speed up data availability on the fields of study pursued and professional integration. This would facilitate professional integration studies and surveys on the graduate career profiles. Survey findings, and the various indicators measured in particular, would be used to make decisions as to whether or not training curriculum content should be altered and hence, whether the corresponding certificates awarded should be modified, or on whether or not to terminate a particular field of study.

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A. Statistical Information Systems (SIS) for TVET in West African countries

UIS diagnostic surveys on education, and TVET in particular, covered Burkina Faso, Cote d'Ivoire, Ghana, Guinea, Mauritania, Niger, Nigeria and Sierra Leone. The survey findings on each country can be summarized as follows:

Table A.1

Summary of the state of the SIS for TVET secondary schools in West African countries surveyed

Country	Strong points	Weak points
Burkina Faso *January 2008*	- The country has an SIS. - Data collection is on a yearly basis during the school census. - The SIS is in the process of being decentralized. - Considerable efforts are being made to improve TVET sub-sector statistical production.	- There is no Ministry designated for TVET. - No legal provisions regulating data collection operations are in place. - Coordination and collaboration between SIS management structures is poor. - The quantity and quality of human resources available is not enough for good SIS management. - There is a real lack of equipment. - No logistical facilities are provided for data collection. - Funding for statistical activities comes mostly from external donors. - There is a separate questionnaire for TVET, with some sub-sector specificity, but some sections of the questionnaire are similar to that for general secondary education. - The TVET questionnaire needs to be improved and standardized to include sub-sector particularities, using work done in Cameroon (e.g. harmonized list of fields of education, interaction with the world of work, professional integration, TVET quality, etc.). The questionnaire does not make provision for examination results produced by a parallel sub-system and this makes it hard to combine the two sources of information. - Access to data assembled by the Ministry of Secondary Education, Higher Education and Scientific Research is not quite satisfactory. - The list of fields of education does not include TVET. - On the whole, macro-financial data (budget voted and spent on TVET, as well as the other sub-sectors) is not included in publications from the Directorate for Studies and Planning. - Data quality needs improvement.

Country	Strong points	Weak points
Cote d'Ivoire *May 2009*	- There is a Ministry in charge of TVET. - There is a statistical unit. - TVET data is collected by means of a questionnaire. - Efforts are being made to produce a statistics directory, undertake research on the TVET fields of education that will be in high demand by 2020, and the financial burden on households educating students in TVET establishments, conduct a survey on the professional integration of TVET completers, and carry out a study on the potential of national administrative regions. - There is an employment agency, set up as far back as 1993, comprising the directorate of the Employment Observatory.	- There is no SIS for TVET. - No exhaustive data collection by census was done from 1998 to 2006. Most statistical data was pulled from administrative reports. - Administrative reports are in many different formats and do not address all information needs in the TVET sub-sector. - Official letters have to be sent to the Ministries concerned before obtaining statistical data on training institutions that are not under the Ministry of Technical Education and Vocational Training. - Reliable statistical data is very scarce. - Specialized human resources, particularly statisticians, are lacking. - Logistical and technical resources are lacking. - No funds are provided for statistical operations. - No operational database and data processing tools are in place. - No annual directory has been published since 1998 due to malfunctions in the data collection process. - The questionnaire response rate is very low due to the country's socio-political situation, and because some private schools refuse to share information requested by the Directorate for Statistics. - There is no statistical chain based on decentralized units. - Data is not structured in a relational model. - Data control and verification is not done in a rigorous manner. - The employment agency lacks reliable data that can be used to assess training/employment complementarity.
Ghana *September 2004*	- A "TVET National Coordination Committee" has been set up. - There is an SIS in place. - The TVET questionnaire has been designed. - Skilled human resources are available. - The SIS decentralization process is ongoing. - An adequate stock of technical and material resources exists.	- There is no Ministry in charge of TVET. - SIS is not really well structured. - SIS is not completely decentralized. - The quantity of human resources is inadequate. - The State makes no budget allocation for TVET sub-sector statistics. - External funding for the TVET sub-sector is more and more difficult to obtain. - Data quality is poor.
Guinea *November 2003*	- There is a Ministry in charge of TVET. - There is a Service for Statistical Studies and School Maps that handles statistical operations [Service Études Statistiques et Cartes Scolaires, (SESCS)] - There is an SIS in place. - Significant efforts are being made to improve the statistical production in the TVET sub-sector.	- SIS is still in the embryonic stage. - Data collection is not done in a systematic manner. - The SIS is not sufficiently decentralized. - Data collection tools are not well structured. - Geographic coverage for vocational and technical schools is poor. - There are no measures for systematic monitoring of the survey data sheets used to collect data. - Human, material and financial resources are very insufficient. - Data quality is poor.

Country	Strong points	Weak points
Mauritania *June 2005*	- There are other Ministries involved in TVET sub-sector management. - The country has an SIS. - There are a sufficient number of well qualified human resources at the central level. - World Bank provides IT support.	- There is no Ministry for TVET. - The SIS is poorly decentralized. - TVET data assembled by other ministries is not included in the National Education Ministry's database. - The same sheet is used to collect data for primary schools, secondary schools and TVET schools. - No skilled human resources are available at the regional and divisional level. - The database is not designed in a multi-year format.
Niger *July 2004*	- There is a Ministry (created recently) in charge of TVET. - The country has an SIS. - Data collection for TVET is done through the annual school census. - The Ministry of Vocational and Technical Training has produced and published its first statistics directory, based on data from the 2006/2007 census. - Ministerial authorities are making significant efforts in the TVET sub-sector and should be supported.	- The data production chain is not well organized. - Census data collection sheets are poorly structured. - There is no data collection strategy. - The data collection tool is not adapted to TVET sub-sector information needs. - Human and material resources are lacking. - The SIS is poorly decentralized and not integrated. - TVET data is weak and not totally reliable. - Financial resources are limited. - Irregular data flows have been observed in the TVET sub-sector.
Nigeria *September 2005*	- Data collection is decentralized.	- There is no Ministry tasked with managing the TVET sub-sector. - The same questionnaire is used for general secondary schools and TVET schools. - Data quality is poor.
Sierra Leone *2004*	- About 250 TVET schools have been identified and listed by the Ministry of Education, Science and Technology. - There is a TVET sub-sector data series, assembled by the German Agency for Technical Cooperation (GTZ).	- There is no Ministry in charge of the TVET sub-sector. - Schools lack basic tools and equipment. - The Ministry has no department for statistical operations. - There is no SIS, so data is collected manually. - Data collection is done in a very fragmented manner. - Data collection is done on the basis of specific requests. - The same questionnaire is used to collect data in all education sub-sectors. - The data gathered is simplistic and cannot be used to calculate indicators. - Human and material resources are lacking.

Table A.2

Summary of the state of the SIS for TVET in higher education institutions (HEIs) of the West African countries surveyed

Country	Strong points	Weak points
Burkina Faso *January 2008*	- There is an SIS at the tertiary level. - Data collection is done on an annual basis. - The SIS is in the process of being decentralized. - Significant efforts are being made to improve statistics.	- Logistical facilities and qualified human resources are lacking. - All the sections on higher education are not covered (e.g. data on evening classes, scientific research is not collected). - Some key data is not collected (i.e. graduates, non-teaching staff, information on departments). - Several data sources are not decentralized. - Data publication takes a long time. - The same tools are used to collect data for general education and TVET at the tertiary level. - Technical education and vocational training is not on the list of courses available. - The current data collection system makes no distinction between tertiary general education and higher technical and vocational education.
Ghana *September 2004*	- There is an SIS at the tertiary level. - HEIs have qualified staff and logistical facilities. - HEIs have databases with information on students, personnel, and financial data. - HEIs receive questionnaires by email, fill them out, and send them back. - The data collection tool for TVET is different from the one for general education.	- Data collection is limited to public HEIs. - Data collection is not decentralized. - Human resources are very inadequate. - There is no budget line for the production of statistical data at the higher level. - Development partners give the tertiary education sub-sector no financial backing. - Tertiary level statistics are not published at national level. - Accessing publications is an uphill task. - Publication deadlines are not met. - The quality of data needs to be improved.
Guinea *November 2003*	- There is a Planning and Statistics Department for collecting and processing data.	- Data collection is not monitored systematically (SIS still at the embryonic stage). - Data collection is not decentralized. - Human, material and financial resources are lacking. - Data collection is limited to public HEIs. - Data on the system's internal efficiency is not collected. - The same data collection tools are used for general education and TVET. - There are gaps in the publications distribution network. - External data sources are not utilized (data from the NSO). - Techniques for demographic projection have still not been mastered. - The quality of data needs to be improved. - The current data collection system does not distinguish between tertiary general education and higher technical and vocational education.

Country	Strong points	Weak points
Mauritania *June 2005*	- Efforts were under way (in 2004) to make up for the lack of an SIS	- There is no statistical data production chain for higher education, vocational education, and non-formal education.
Niger *July 2004*	- There is a statistics division that is trying, among other things, to develop a data collection tool (data sheet) for distribution in higher education institutions.	- The data production chain in this sub-sector is very weak. - Resources that can include statistical production work are scarce. - Some data collection activities are performed by the school statistics service. This data is poorly structured and not quite reliable. - Data quality is poor. - The current data collection system makes no distinction between tertiary general education and higher technical and vocational education.
Nigeria *September 2005*	- The Ministry has a statistics division.	- There is no organized data collection.
Sierra Leone *2004*	- Data is collected on request.	- There is no SIS. - There is no tool or formal methodology for data collection.

Table A.3

Trend in TVET data non-availability rates in West African States from 2003 to 2007, presented by indicator

Indicators	Year				
	2003	2004	2005	2006	2007
School population	**54.17**	**50.00**	**47.91**	**63.02**	**77.08**
Number of students at the lower secondary level; public and private sectors; technical or vocational education; total	68.75	68.75	62.50	75.00	87.50
Number of students at the lower secondary level; public sector; technical or vocational education; total	75.00	75.00	62.50	81.25	87.50
Number of students at the lower secondary level; public and private sectors; technical or vocational education; female	68.75	68.75	62.50	75.00	87.50
Number of students at the lower secondary level; public sector; technical or vocational education; female	75.00	75.00	62.50	81.25	87.50
Number of students at the upper secondary level; public and private sectors; technical or vocational education; total	43.75	37.50	37.50	56.25	68.75
Number of students at the upper secondary level; public sector; technical or vocational education; total	50.00	37.50	43.75	56.25	75.00
Number of students at the upper secondary level; public and private sectors; technical or vocational education; female	43.75	37.50	37.50	56.25	68.75
Number of students at the upper secondary level; public sector; technical or vocational education; female	50.00	43.75	43.75	62.50	75.00
Number of students at the secondary level; public and private sectors; technical or vocational education; total	37.50	37.50	37.50	43.75	68.75
Number of students at the secondary level; public sector; technical or vocational education; total	50.00	37.50	43.75	56.25	75.00
Number of students at the secondary level; public and private sectors; technical or vocational education; female	37.50	37.50	37.50	50.00	68.75
Number of students at the secondary level; public sector; technical or vocational education; female	50.00	43.75	43.75	62.50	75.00
Student Percentages	**52.08**	**45.83**	**39.58**	**57.30**	**76.04**
Number of students in technical/vocational education at ISCED level 2 as a percentage of the total school population at ISCED 2	56.25	56.25	50.00	62.50	87.50
Number of students in technical/vocational education at ISCED level 3 as a percentage of the total school population at ISCED 3	37.50	25.00	25.00	50.00	68.75
Number of students in technical/vocational education at ISCED levels 2 and 3 as a percentage of the total school population at ISCED 2 and 3	31.25	25.00	25.00	43.75	68.75
% of female students; at the secondary level; in technical and vocational education	31.25	25.00	25.00	43.75	68.75
% of students in private schools; at the lower secondary level; in technical and vocational education	87.50	87.50	68.75	87.50	87.50
% of students in private schools; at the upper secondary level; in technical and vocational education	68.75	56.25	43.75	56.25	75.00

Indicators	Year				
	2003	2004	2005	2006	2007
Teaching staff	**62.50**	**66.67**	**88.54**	**78.17**	**85.42**
Teaching staff at the lower secondary level; public and private sectors; full and part time; technical or vocational education; total.	81.25	87.5	93.75	81.25	100
Teaching staff at the lower secondary level; public and private sectors; full and part time; technical or vocational education; female.	81.25	87.50	100	81.25	100
Teaching staff at the upper secondary level; public and private sectors; full and part time; technical or vocational education; total.	56.25	62.50	87.50	75.00	81.25
Teaching staff at the upper secondary level; public and private sectors; full and part time; technical or vocational education; female.	56.25	62.50	93.75	87.50	87.50
Teaching staff at the secondary level; public and private sectors; full and part time; technical or vocational education; total.	50.00	50.00	75.00	62.50	68.75
Teaching staff at the secondary level; public and private sectors; full and part time; technical or vocational education; female.	50.00	50.00	81.25	81.25	75.00
Internal efficiency indicators	**100**	**100**	**100**	**100**	**100**
Gross graduation rate from the upper secondary level at ISCED 3B and 3C by gender and in total.	100	100	100	100	100
Gross entry rate to higher education (ISCED 5B) by gender and in total.	100	100	100	100	100
Index of non-availability	**59.13**	**56.73**	**59.37**	**68.03**	**80.53**

Graph A.1

Trend in non-availability rates in WAEMU Member States, presented by group of indicators and by country

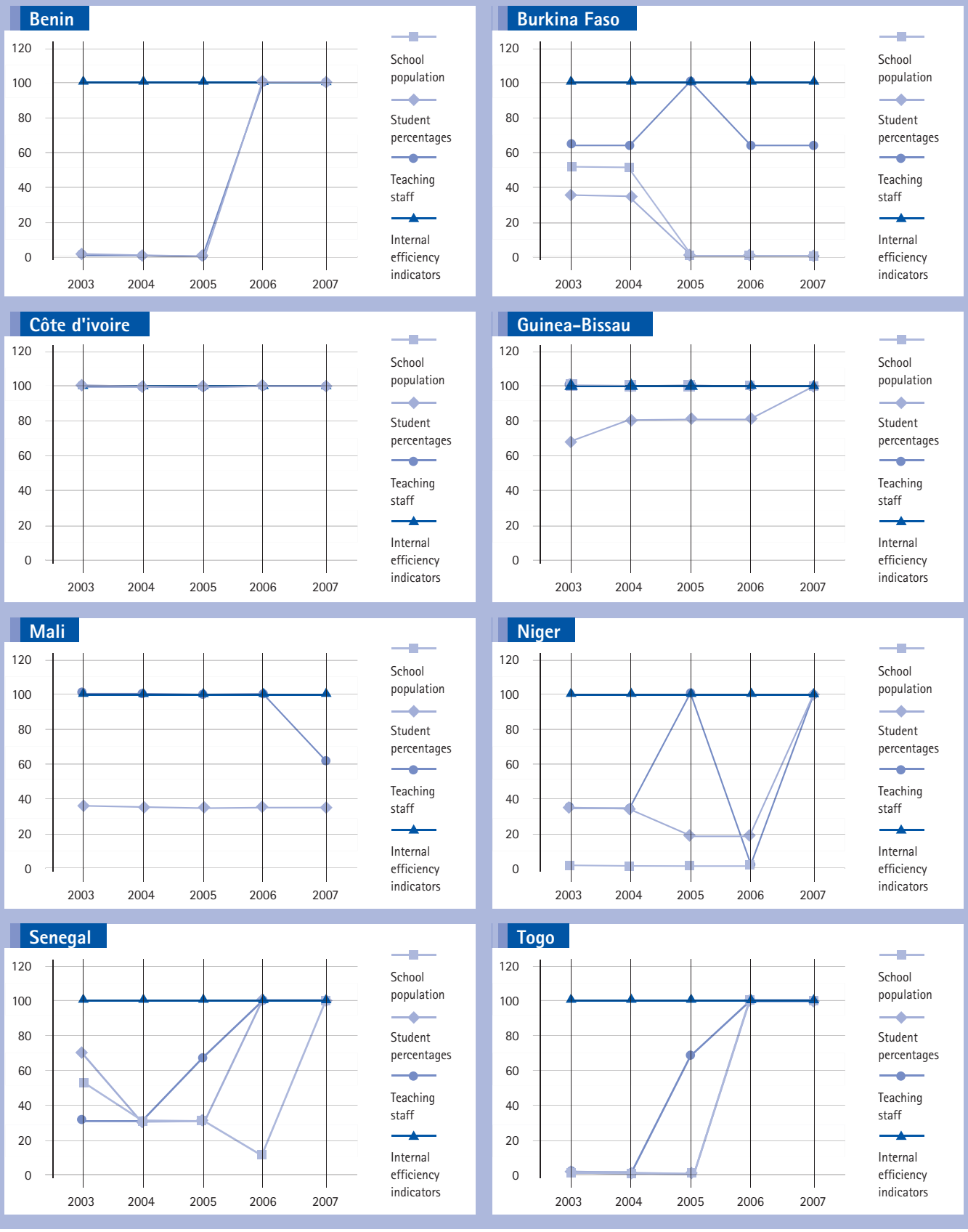


Table A.4

Trend in TVET indicators non-availability rates at the higher level in West African countries

Indicators	Year				
	2003	2004	2005	2006	2007
Student distribution (%) at ISCED 5B	87.50	75.00	75.00	75.00	81.25
Student percentages in higher education institutions at ISCED 5B	87.50	75.00	75.00	62.50	87.50
Number of students at ISCED 5B; public and private sectors; full and part time; Total	87.50	87.50	87.50	37.50	37.50
Number of students at ISCED 5B; public and private sectors; full and part time; Female	87.50	87.50	87.50	62.50	62.50
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Total	100	100	100	100	100
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Female	100	100	100	100	100
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Total	100	100	100	87.50	100
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Female	100	100	100	100	100
Index of non-availability	**93.75**	**90.62**	**87.50**	**78.12**	**82.81**

Table A.5

Trend in TVET indicator non-availability rates for higher education institutions of WAEMU Member States

Indicators	Year				
	2003	2004	2005	2006	2007
Student distribution (%) at ISCED 5B	81.25	62.50	62.50	75.00	81.25
Student ercentages in higher education institutions at ISCED 5B	81.25	62.50	68.75	68.75	87.50
Number of students at ISCED 5B; public and private sectors; full and part time; Total	81.25	68.75	68.75	56.25	56.25
Number of students at ISCED 5B; public and private sectors; full and part time; Female	81.25	68.75	75.00	68.75	75.00
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Total	93.75	87.50	81.25	87.50	93.75
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Female	93.75	87.50	81.25	81.25	93.75
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Total	93.75	87.50	87.50	81.25	93.75
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Female	93.75	87.50	87.50	87.50	93.75
Index of non-availability	**87.5**	**76.56**	**76.56**	**75.78**	**84.37**

B. SIS for TVET in Central African countries

UIS diagnostic surveys covered Cameroon, CAR [38], DRC [39] and Chad. The tables below outline the strengths and weaknesses of TVET sub-systems in these countries.

Table B.1

Summary of SIS situational analysis for secondary education and training in the Central African countries surveyed

Country	Strong points	Weak points
Cameroon *November 2008*	- Two Ministries handle TVET. MINESEC is in charge of secondary general education and secondary technical education, while MINEFOP is in charge of employment and vocational training. - MINESEC has a unit for statistical operations. - MINESEC has a directorate for education that also does data collection. - SIS is in place. - A specific questionnaire for technical education already exists, but it is not designed for collection of all TVET data. - Technical education data is collected through the annual census. - MINEFOP has a vocational training statistics unit: Division for Studies, Future Trends and Cooperation [Division des Études, de la Prospective et de la Coopération, (DECP)]. - A vocational training SIS exists institutionally, but it is not fully operational. - Data collection for vocational training is done using beginning and end-of-year administrative reports. - MINEFOP receives some foreign assistance, particularly from the ILO (labour market analysis training), from the Yaoundé UNESCO Office (vocational training mapping, vocational training costs, training manuals), AFRISTAT and ACBF (indicator measures), and some local support for sector-based strategy design and review, particularly from PASE, and the National Statistics Office. - Ministerial authorities have requested support to set up a TVET information system.	- A multiplicity of statistical information sources exist side by side, and this undermines the credibility of statistics published by the Ministry. - The data collection institutional framework is weak. - There is no steering committee for the SIS. - The culture of using statistics for managing this educational sub-sector is still not well understood by Ministerial authorities. - Communication between the different entities involved in SIS management is poor. - The SIS is still very centralized (all operations, from data design to dissemination, are run by the central level). - The existing quantity and quality of human resources is inadequate. - There is an almost total lack of physical and technical resources. - Financial resources are inadequate. - No data confidentiality. - Some private schools refuse to fill out the questionnaire. - The school census is not always exhaustive. - The database models are not designed for multi-year data entries, which makes it difficult, or even impossible to produce longitudinal data. - The administrative reports on vocational training, prepared at the beginning and the end of the school year, are not structured and look very different from one school to another. This makes it hard to capture all the information on vocational training and prepare a national and/or international summary. This is why the Ministry does not publish a directory of statistics. - These administrative reports are not always available. - MINEFOP faces the same difficulties in human, physical, financial and technical resources as MINESEC does in vocational training management and coordination. - The vocational training SIS is also very highly centralized. - There is no harmonized data collection tool for the entire education system. - The existing data collection tools are not relevant to the sub-sector's managerial strategies and key issues (e.g. matching training and employment, professional integration of completers). - There is no key normative document with a list of education sectors/fields of study/specialized training. - Data quality is very poor.

[38] The diagnostic survey is incomplete and does not do an analysis of the SIS.

[39] The diagnostic survey is incomplete and does not do an analysis of the SIS.

Country	Strong points	Weak points
Chad *March 2009*	- There is a statistical operations unit called the Analysis and Forecasting Directorate [Direction de l'Analyse et de la Prospective (DAPRO)]. - There is an SIS in place. - There is a TVET questionnaire that provides information on: • school name; • student population and number of repeaters by class, sex and fields/course of study; • previous year examination results; • number of teaching and non-teaching staff by grade, source of funding, academic qualification, professional training, subject of instruction, and language of instruction; • furniture and infrastructure; • financial information and in-kind contributions. - The ministerial authorities have taken major initiatives to improve statistical production. These initiatives deserve support.	- The same Ministry is in charge of TVET and the other educational sub-sectors. - Data is collected by several departments in the same Ministry. - DAPRO has a weak institutional framework. - There is no steering committee for the SIS. - The culture of producing and using statistics is still weak. - The statistics published by the Ministry are not exhaustive. - Communication between the different structures is still poor. - The SIS is still heavily centralized. - The questionnaire for collecting data on TVET does not cover all the needs of an integrated information system and fails to gather the types of data related to the other key entities in the TVET sub-sector. - The quantity and quality of human resources is inadequate. - Equipment is sorely lacking. - There is no budget line for statistical operations, so there is reliance on external funding sources (such as UNICEF and AFD). - In a considerable number of cases, school principals, especially in the private sector, refuse to fill the survey data sheet. This may lead to underestimation of the system's indicators and performances. - Databases are not designed for multi-year data entries and hence, do not make provision for longitudinal analysis. - Methodological weaknesses have been observed in the treatment of missing data. - No short term, medium term and long term projections are made on major education variables (e.g. students, teachers, and classrooms, etc). - Statistical publications are basically limited to directories of statistics that mainly present statistical tables, with little analysis and few indicators. - Data quality is poor.

Table B.2

Summary of SIS situational analysis for higher level education and training in the Central African countries surveyed

Country	Strong points	Weak points
Cameroon *November 2008*	- SIS in place for the tertiary level. - Data collection annually. - Data collection is exhaustive. - Data collection tools for general education are different from those for TVET.	- The SIS is not decentralized. There are several discordant sources of data. - Certain key variables are not taken into account (e.g. students abroad, number of students per age group, student welfare, financial data, infrastructure, etc.). - There is no harmonized nomenclature for programmes of education. - The quantity and quality of human and material resources is inadequate. - Data publication takes too long. - Population data is inappropriate (the database is for those over ten years of age, and there are no projections by age). - Data quality is poor. - The current data collection system makes no distinction between tertiary general education and higher technical and vocational education.
Democratic Republic of Congo *2006*	- There is a directory of universities and institutes, presented according to status. - Technical support from UIS since 2006 to set up the SIS.	- No SIS for the higher level. - No statistics are produced at the level of tertiary education.
Central African Republic *October 2005*	- There is a project under way to establish an SIS.	- There is no SIS. - Data collection in higher education institutions is done using data sheets from the Admissions Office. The same applies to data on Staff and Material. This data is not very reliable. - The present data collection system makes no distinction between tertiary general education and higher technical and vocational education.
Chad *March 2009*	- Data is collected in all universities through annual educational censuses.	- The Ministerial department in charge of higher education is new. The full set of legislative and enabling measures are not yet in place for the Ministry to function at optimal capacity. - The Ministry sorely lacks the human and material resources it needs to perform its work. - The Higher Education Ministry currently depends on the Ministry of National Education to manage its information system. - The medium for collecting data on higher education is too simplistic and does not capture all the information on this sub-sector. - The current data collection system makes no distinction between tertiary general education and higher technical and vocational education.

Table B.3

Trend in TVET data non-availability rates in Central African countries from 2003 to 2007, presented by indicator

Indicators	Year				
	2003	2004	2005	2006	2007
School population	**60.42**	**66.67**	**70.83**	**83.33**	**83.33**
Number of students at the lower secondary level; public and private sectors; technical or vocational education; total	50.00	62.50	62.50	87.50	87.50
Number of students at the lower secondary level; public sector; technical or vocational education; total	87.50	87.50	100	87.50	87.50
Number of students at the lower secondary level; public and private sectors; technical or vocational education; female	50.00	62.50	62.50	87.50	87.50
Number of students at the lower secondary level; public sector; technical or vocational education; female	87.50	87.50	100	87.50	87.50
Number of students at the upper secondary level; public and private sectors; technical or vocational education; total	37.50	50.00	62.50	75.00	75.00
Number of students at the upper secondary level; public sector; technical or vocational education; total	75.00	75.00	75.00	87.50	87.50
Number of students at the upper secondary level; public and private sectors; technical or vocational education; female	37.50	50.00	62.50	75.00	75.00
Number of students at the upper secondary level; public sector; technical or vocational education; female	75.00	75.00	75.00	87.50	87.50
Number of students at the secondary level; public and private sectors; technical or vocational education; total	37.50	50.00	62.50	75.00	75.00
Number of students at the secondary level; public sector; technical or vocational education; total	75.00	75.00	62.50	87.50	87.50
Number of students at the secondary level; public and private sectors; technical or vocational education; female	37.50	50.00	62.50	75.00	75.00
Number of students at the secondary level; public sector; technical or vocational education; female	75.00	75.00	62.50	87.50	87.50
Student Percentages	**54.17**	**62.50**	**72.92**	**79.17**	**79.17**
Number of students in technical/vocational education at ISCED level 2 as a percentage of the total school population at ISCED 2	50.00	62.50	62.50	87.50	87.50
Number of students in technical/vocational education at ISCED level 3 as a percentage of the total school population at ISCED 3	37.50	50.00	62.50	75.00	75.00
Number of students in technical/vocational education at ISCED levels 2 and 3 as a percentage of the total school population at ISCED 2 and 3	37.50	50.00	62.50	75.00	75.00
% of female students; at the secondary level; in technical and vocational education	37.50	50.00	62.50	75.00	75.00
% of students in private schools; at the lower secondary level; in technical and vocational education	87.50	87.50	100	87.50	87.50
% of students in private schools; at the upper secondary level; in technical and vocational education	75.00	75.00	87.50	75.00	75.00
Teaching staff	**91.67**	**81.25**	**81.25**	**91.67**	**100**
Teaching staff at the lower secondary level; public and private sectors; full and part time; technical or vocational education; total.	100	87.50	87.50	100	100
Teaching staff at the lower secondary level; public and private sectors; full and part time; technical or vocational education; female.	100	87.50	87.50	100	100
Teaching staff at the upper secondary level; public and private sectors; full and part time; technical or vocational education; total.	100	87.50	87.50	100	100
Teaching staff at the upper secondary level; public and private sectors; full and part time; technical or vocational education; female.	100	87.50	87.50	100	100
Teaching staff at the secondary level; public and private sectors; full and part time; technical or vocational education; total.	75.00	62.50	62.50	75.00	100
Teaching staff at the secondary level; public and private sectors; full and part time; technical or vocational education; female.	75.00	75.00	75.00	75.00	100

Indicators	Year				
	2003	2004	2005	2006	2007
Internal efficiency indicators	**100**	**100**	**100**	**100**	**100**
Gross graduation rate from the upper secondary level at ISCED 3B and 3C by gender and in total.	100	100	100	100	100
Gross entry rate to higher education (ISCED 5B) by gender and in total.	100	100	100	100	100
Index of non-availability	**69.23**	**71.63**	**75.96**	**85.57**	**87.50**

Graph B.1

Trends in non-availability rates in the CEMAC region, by group of indicators and by country

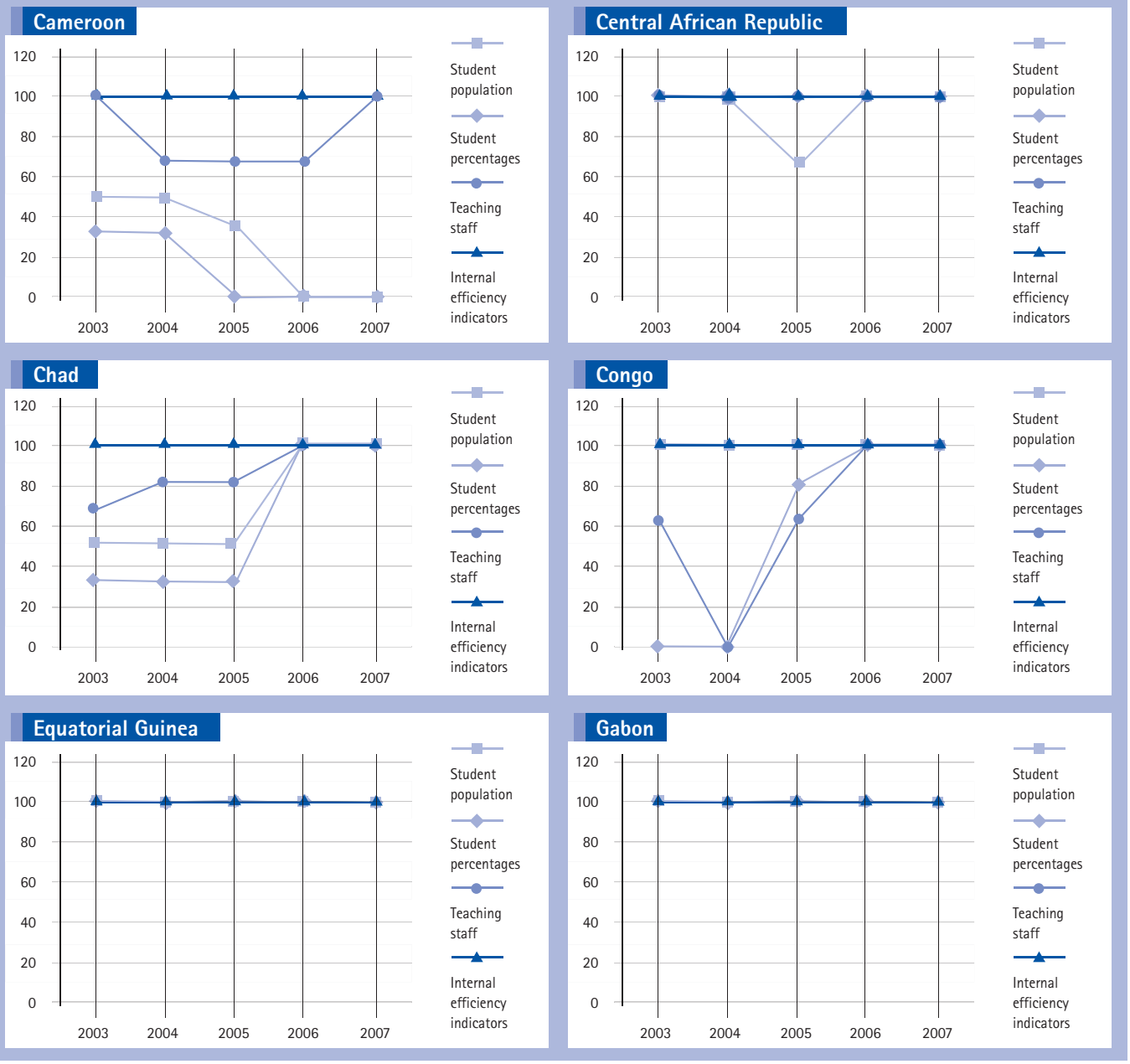


Table B.4

Evolution of the rate of non-availability of indicators for TVET at the higher level in Central African countries

Indicators	Year				
	2003	2004	2005	2006	2007
Student distribution (%) at ISCED 5B	87.50	100	100	75.00	100
Student ercentages in higher education institutions at ISCED 5B	87.50	100	100	87.50	100
Number of students at ISCED 5B; public and private sectors; full and part time; Total	87.50	100	100	75.00	62.50
Number of students at ISCED 5B; public and private sectors; full and part time; Female	87.50	100	100	75.00	75.00
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Total	87.50	87.50	87.50	100	100
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Female	87.50	87.50	87.50	100	100
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Total	100	100	100	100	100
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Female	100	100	100	100	100
Index of non-availability	**90.62**	**96.87**	**96.87**	**89.06**	**92.18**

Table B.5

Trends in TVET indicator non-availability rates at the higher level in CEMAC Member States

Indicators	Year				
	2003	2004	2005	2006	2007
Student distribution (%) at ISCED 5B	83.33	100	100	66.67	100
Student ercentages in higher education institutions at ISCED 5B	83.33	100	100	83.33	100
Number of students at ISCED 5B; public and private sectors; full and part time; Total	83.33	100	100	66.67	83.33
Number of students at ISCED 5B; public and private sectors; full and part time; Female	83.33	100	100	66.67	83.33
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Total	83.33	83.33	100	100	100
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Female	83.33	83.33	100	100	100
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Total	100	100	100	100	100
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Female	100	100	100	100	100
Index of non-availability	**87.50**	**95.83**	**100**	**85.41**	**95.83**

C. SIS for TVET in East African countries

Presently, only one East African country, Ethiopia, has benefited from a diagnostic survey on its education system. The table below outlines the state of SIS for TVET in Ethiopia.

Table C.1

Situational analysis of the SIS for education and training in the East African country surveyed

Country	Strong points	Weak points
Ethiopia *August 2004*	- SIS in place. - SIS is decentralized. - A specific questionnaire exists for the TVET sub-sector to collect information on: • the number of trainers; • the number of formal training centres and their distribution nationwide; • the number of persons trained (certified) and already employed in their fields (disciplines) of study (collected by ¼ of institutions); • training quality (potential for assessing sub-sector internal efficiency indicators). - Data is collected in both public and private training centres. - A project is being designed to expand data collection to non-formal establishments in this sub-sector. - A TVET school mapping project is under way that will list all training centres and create a network of providers, thus making it possible to analyze data from the 126 training centres across the nation. The non-formal sector may well reflect a similar need for training centres, especially as they represent the vast majority of centres in the country. - Human resources exist at the central level in adequate quantity and quality, as compared to the other countries in the sub-region. - The Ministry organizes a test for the TVET sub-sector to assess the quality of training in certain training centres in the formal and non-formal sectors. - Significant efforts are being made to improve statistics for the TVET sub-sector.	- The same Ministry manages all education sub-sectors. - The TVET questionnaire does not generate all the data needed to direct the sub-sector. - There is almost no information gathered by field of study, on the incidence of labour market trends on the TVET system (indicator of the system's external efficiency). - There is relatively little financial data collected, as schools most often fail to fill in this section of the questionnaire. - There is presently no data analysis, but statisticians have been trained for it (SPSS software). - The database is not designed for multi-year data entries and this makes it difficult to do longitudinal analysis. - Directories of statistics are not published according to schedule. - Human resources, while considered quite adequate in quantity and quality as compared to the other countries in the sub-region, are not enough for good management of the TVET system. - Staff at the local level are not trained well enough to conduct statistical operations smoothly. - Statistical operations are dependent on foreign aid, because state budget allocations are insufficient to cover all related needs. - Data quality needs improvement.

Table C.2

Trends in TVET data non-availability rates in East African countries from 2003 to 2007, presented by indicator

Indicators	Year				
	2003	2004	2005	2006	2007
School population	**56.67**	**46.67**	**49.17**	**59.17**	**93.33**
Number of students at the lower secondary level; public and private sectors; technical or vocational education; total	50.00	50.00	50.00	70.00	100
Number of students at the lower secondary level; public sector; technical or vocational education; total	90.00	70.00	70.00	70.00	100
Number of students at the lower secondary level; public and private sectors; technical or vocational education; female	50.00	50.00	50.00	70.00	100
Number of students at the lower secondary level; public sector; technical or vocational education; female	90.00	70.00	70.00	70.00	100
Number of students at the upper secondary level; public and private sectors; technical or vocational education; total	30.00	30.00	30.00	50.00	80.00
Number of students at the upper secondary level; public sector; technical or vocational education; total	70.00	50.00	60.00	60.00	90.00
Number of students at the upper secondary level; public and private sectors; technical or vocational education; female	30.00	30.00	30.00	50.00	80.00
Number of students at the upper secondary level; public sector; technical or vocational education; female	70.00	50.00	60.00	60.00	90.00
Number of students at the secondary level; public and private sectors; technical or vocational education; total	30.00	30.00	30.00	50.00	90.00
Number of students at the secondary level; public sector; technical or vocational education; total	70.00	50.00	50.00	50.00	100
Number of students at the secondary level; public and private sectors; technical or vocational education; female	30.00	30.00	30.00	50.00	90.00
Number of students at the secondary level; public sector; technical or vocational education; female	70.00	50.00	60.00	60.00	100
Student Percentages	**45.00**	**41.67**	**40.00**	**51.67**	**91.67**
Number of students in technical/vocational education at ISCED level 2 as a percentage of the total school population at ISCED 2	40.00	40.00	40.00	60.00	100
Number of students in technical/vocational education at ISCED level 3 as a percentage of the total school population at ISCED 3	20.00	20.00	20.00	40.00	80.00
Number of students in technical/vocational education at ISCED levels 2 and 3 as a percentage of the total school population at ISCED 2 and 3	20.00	20.00	20.00	40.00	90.00
% of female students; at the secondary level; in technical and vocational education	20.00	20.00	20.00	40.00	90.00
% of students in private schools; at the lower secondary level; in technical and vocational education	90.00	80.00	70.00	70.00	100
% of students in private schools; at the upper secondary level; in technical and vocational education	80.00	70.00	70.00	60.00	90.00

Indicators	Year				
	2003	2004	2005	2006	2007
Teaching staff	**76.67**	**83.33**	**86.67**	**83.33**	**100**
Teaching staff at the lower secondary level; public and private sectors; full and part time; technical or vocational education; total.	90.00	100	100	90.00	100
Teaching staff at the lower secondary level; public and private sectors; full and part time; technical or vocational education; female.	90.00	100	100	90.00	100
Teaching staff at the upper secondary level; public and private sectors; full and part time; technical or vocational education; total.	80.00	90.00	90.00	90.00	100
Teaching staff at the upper secondary level; public and private sectors; full and part time; technical or vocational education; female.	80.00	90.00	90.00	90.00	100
Teaching staff at the secondary level; public and private sectors; full and part time; technical or vocational education; total.	60.00	60.00	70.00	70.00	100
Teaching staff at the secondary level; public and private sectors; full and part time; technical or vocational education; female.	60.00	60.00	70.00	70.00	100
Internal efficiency indicators	**100**	**100**	**100**	**100**	**100**
Gross graduation rate from the upper secondary level at ISCED 3B and 3C by gender and in total.	100	100	100	100	100
Gross entry rate to higher education (ISCED 5B) by gender and in total.	100	100	100	100	100
Index of non-availability	**61.92**	**58.07**	**59.61**	**66.15**	**95.00**

Table C.3

Trends in TVET indicator non-availability rates at the higher level in East African countries

Indicators	Year				
	2003	2004	2005	2006	2007
Student distribution of (%) at ISCED 5B	50	20	50	70	100
Student percentages in higher education institutions at ISCED 5B	50	20	50	70	100
Number of students at ISCED 5B; public and private sectors; full and part time; Total	60	30	50	80	80
Number of students at ISCED 5B; public and private sectors; full and part time; Female	60	30	50	80	80
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Total	70	80	90	80	80
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Female	70	80	90	80	70
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Total	70	60	90	100	100
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Female	70	60	90	100	100
Index of non-availability	**62.5**	**47.5**	**70**	**82.5**	**88.75**

D. SIS for TVET in Southern African countries

The Southern African countries that have benefited from UIS diagnostic surveys are Madagascar, Uganda and The united republic of tanzania. The following table outlines the state of the SIS for TVET in these countries.

Table D.1

Summary of the SIS situational analysis for education and training in the Southern African countries surveyed

Country	Strong points	Weak points
Madagascar *2008/2009*	- There are 63 TVET public establishments, including 26 technical and vocational schools (TVS) at upper secondary level and 37 vocational training centres (VTC). - A SIS is in place. - There are other actors involved in educational statistical data production. - The SIS is decentralized. - A questionnaire exists for collecting data on TVET. - The Ministry of National Education has a website (http://www.education.gov.mg) but the section on education system statistics or tools is still not properly resourced and needs to be improved. - Data processing is carried out in a more professional manner. - The Ministry of National Education has introduced a checklist at the central level, a monitoring tool that has improved follow-up on data collection and quality, as well as updating the list of schools at the central level. - Classification used by the Ministry of National Education is globally in line with ISCED 97 and facilitates comparison at the international level.	- No Ministry in charge of TVET. - The SIS is not integrated. - Decentralization of the SIS for TVET is still at an early stage. The whole statistical chain, apart from data collection and filling questionnaires, is centralized at the Ministry of National Education. - The TVET questionnaire cannot be used for assembling certain TVET variables, particularly those on the system's level of conformity between training and employment, and aiming at improved professional integration. - There are no procedures that guarantee anonymity for respondents and data confidentiality during the surveys and censuses conducted by the MNE. - There is no administrative rule that compels people to "respond to a statistical survey". - Technical and methodological approaches to statistical data production are not accessible to the public. - Demographic data used by the Ministry of National Education to calculate indicators is not sufficiently disaggregated, and not very reliable. - There is no programming on a multi-year basis. - Metadata is not disseminated. - There is no advisory body or think tank, which should exist for discussions on quality issues. - Access to individual data is not clearly separated from that of aggregated data. - The Ministry of National Education suffers a chronic lack of quality human resources assigned to perform statistical duties. - TVET sub-sector figures and indicators published on the Ministry's website are still aggregated at the national level, and are not updated in a timely manner. - Data quality needs to be improved.

Country	Strong points	Weak points
Uganda *November 2004*	- The Education Ministry has a TVET department that collects statistical data on TVET. - There is an SIS in place. - There is a specific questionnaire for TVET. - There is an adequate stock of quality human resources, contrary to other Sub-Saharan African countries. - Directories of statistics are published in a timely manner. - Considerable efforts are being made to improve statistics in the TVET sub-sector.	- The same Ministry covers all the educational sub-sectors. - The SIS is not sufficiently decentralized, and only data collection is done at the local level. - The questionnaire for collecting data on TVET is almost identical to the one for secondary general education, and therefore does not reflect the particularities of TVET, either in structure or content. - Data on student education and training in TVET looks very much like those assembled in general primary and secondary schools. It is limited to access, whereas quality and efficiency remain the main education policy objectives for this sub-sector. - Government funding for the statistical production is inadequate. Hence, the SIS remains heavily dependent on external funding. - Data quality needs to be improved.
Tanzania *August 2004*	- There is a Ministry for TVET in mainland Tanzania, the Vocational Education and Training Authority (VETA). - Data collection in the TVET sub-sector is highly decentralized in mainland Tanzania (provinces, regions and districts). - There is quite a substantial quantity of human resources of reasonably good quality. In relative terms, almost all officials running the SIS for TVET have a fairly good knowledge of statistical tools and have experience in database management, whether in mainland Tanzania or in Zanzibar. - Adequate physical and technical resources are in place. There is an equitable distribution of equipment between the central VETA level and the local level. On average, each staff member has access to one computer.	- The same Ministry covers all educational sub-sectors in Zanzibar. - There is no standardized questionnaire for TVET data collection throughout all mainland Tanzania zones. Standard information appears on each questionnaire, which means unfortunately that very little data and indicators for the national directory can be used. - There is no SIS for TVET. Data assembled at the national level is entered in Excel format and contains very basic information. - Statistical operations for TVET are highly centralized in Zanzibar. - Data quality needs to be improved.

Table D.2

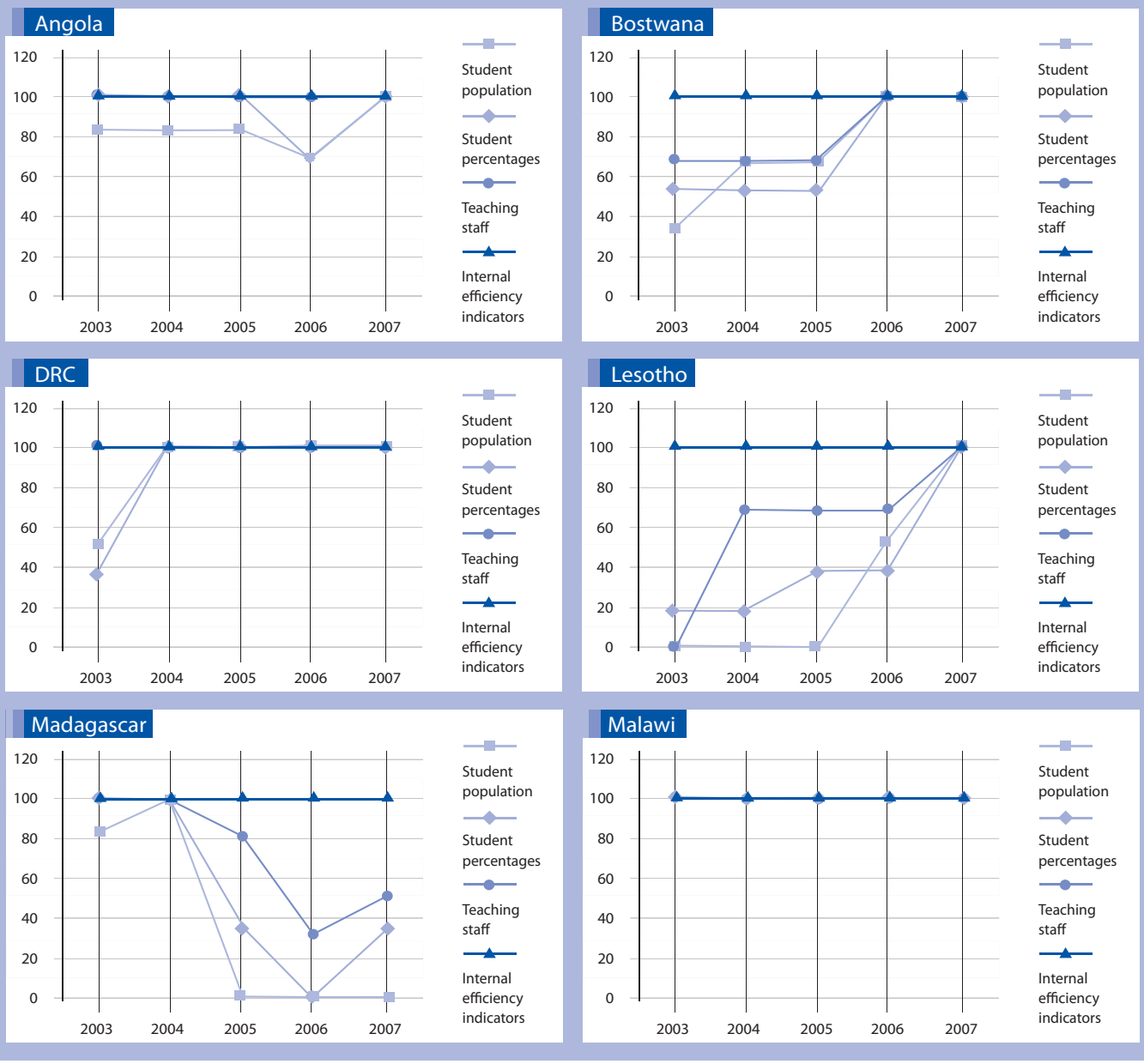
Trends in TVET data non-availability rates in Southern African countries from 2003 to 2007, presented by indicator

Indicators	Year				
	2003	2004	2005	2006	2007
School population	**65.38**	**62.82**	**56.40**	**75.64**	**79.48**
Number of students at the lower secondary level; public and private sectors; technical or vocational education; total	76.92	76.92	69.23	69.23	84.61
Number of students at the lower secondary level; public sector; technical or vocational education; total	76.92	84.61	76.92	84.61	84.61
Number of students at the lower secondary level; public and private sectors; technical or vocational education; female	76.92	76.92	69.23	69.23	84.61
Number of students at the lower secondary level; public sector; technical or vocational education; female	76.92	84.61	76.92	84.61	84.61
Number of students at the upper secondary level; public and private sectors; technical or vocational education; total	61.54	46.15	38.46	69.23	76.92
Number of students at the upper secondary level; public sector; technical or vocational education; total	61.54	61.54	53.84	76.92	76.92
Number of students at the upper secondary level; public and private sectors; technical or vocational education; female	61.54	46.15	38.46	69.23	76.92
Number of students at the upper secondary level; public sector; technical or vocational education; female	61.54	61.54	53.84	76.92	76.92
Number of students at the secondary level; public and private sectors; technical or vocational education; total	53.84	46.15	38.46	76.92	76.92
Number of students at the secondary level; public sector; technical or vocational education; total	61.54	61.54	61.54	76.92	76.92
Number of students at the secondary level; public and private sectors; technical or vocational education; female	53.84	46.15	38.46	76.92	76.92
Number of students at the secondary level; public sector; technical or vocational education; female	61.54	61.54	61.54	76.92	76.92
Student Percentages	**71.79**	**62.82**	**61.53**	**75.64**	**80.05**
Number of students in technical/vocational education at ISCED level 2 as a percentage of the total school population at ISCED 2	76.92	69.23	69.23	69.23	84.61
Number of students in technical/vocational education at ISCED level 3 as a percentage of the total school population at ISCED 3	61.54	46.15	38.46	69.23	76.92
Number of students in technical/vocational education at ISCED levels 2 and 3 as a percentage of the total school population at ISCED 2 and 3	53.84	38.46	38.46	76.92	76.92
% of female students; at the secondary level; in technical and vocational education	53.84	38.46	38.46	76.92	76.92
% of students in private schools; at the lower secondary level; in technical and vocational education	92.30	92.30	92.30	84.61	84.61
% of students in private schools; at the upper secondary level; in technical and vocational education	92.30	92.30	92.30	76.92	92.30
Teaching staff	**74.35**	**82.05**	**75.63**	**84.61**	**93.58**
Teaching staff at the lower secondary level; public and private sectors; full and part time; technical or vocational education; total.	84.61	100	92.30	84.61	92.30
Teaching staff at the lower secondary level; public and private sectors; full and part time; technical or vocational education; female.	84.61	100	92.30	92.30	100
Teaching staff at the upper secondary level; public and private sectors; full and part time; technical or vocational education; total.	84.61	84.61	84.61	84.61	92.30
Teaching staff at the upper secondary level; public and private sectors; full and part time; technical or vocational education; female.	84.61	84.61	84.61	92.30	100
Teaching staff at the secondary level; public and private sectors; full and part time; technical or vocational education; total.	53.84	61.54	46.15	76.92	84.61
Teaching staff at the secondary level; public and private sectors; full and part time; technical or vocational education; female.	53.84	61.54	53.84	76.92	92.30

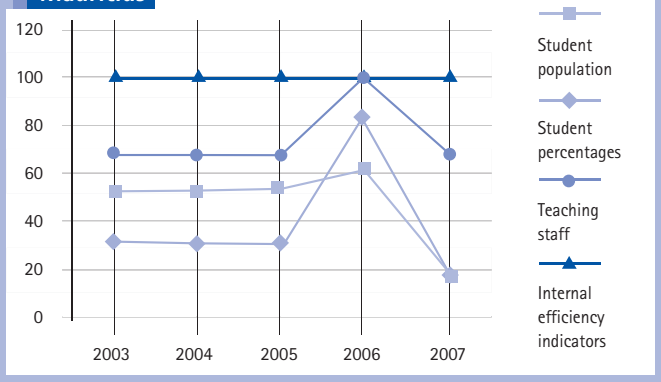
Indicators	Year				
	2003	2004	2005	2006	2007
Internal efficiency indicators	**100**	**100**	**100**	**100**	**100**
Gross graduation rate from the upper secondary level at ISCED 3B and 3C by gender and in total.	100	100	100	100	100
Gross entry rate to higher education (ISCED 5B) by gender and in total.	100	100	100	100	100
Index of non-availability	**71.59**	**70.11**	**65.38**	**79.58**	**84.90**

Graph D.1

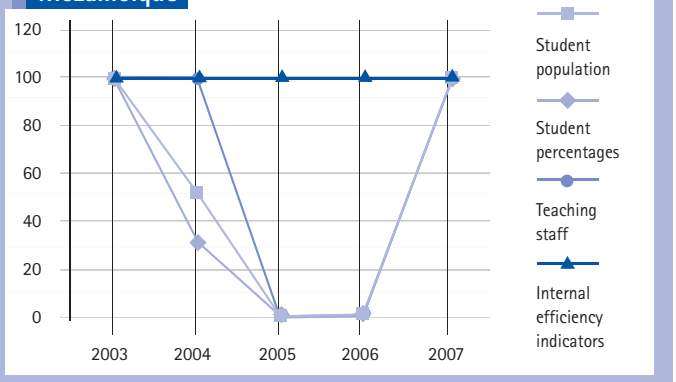
Trends in non-availability rates in the SADC region, by indicator groups and by country



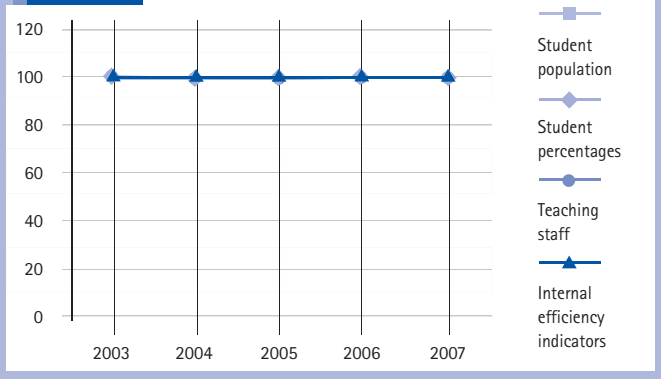
Mauritius



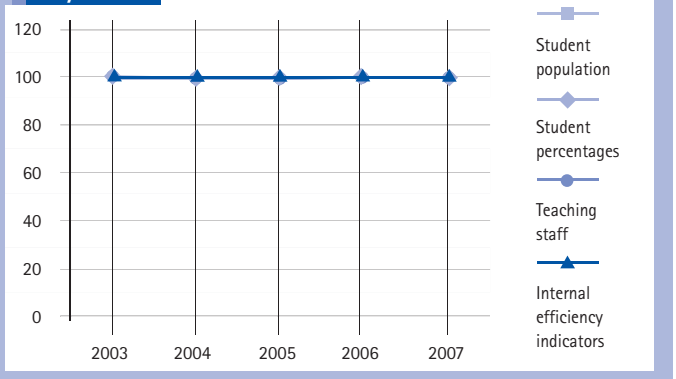
Mozambique



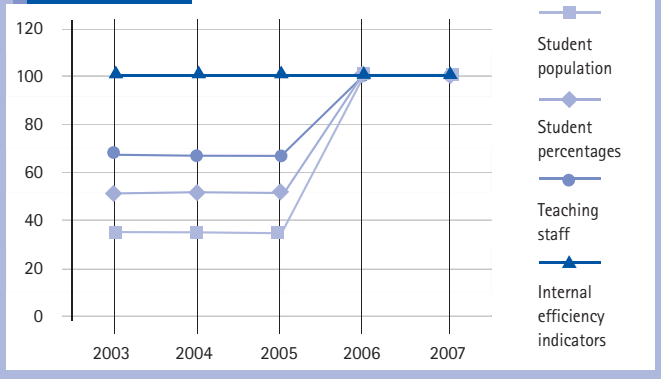
Namibia



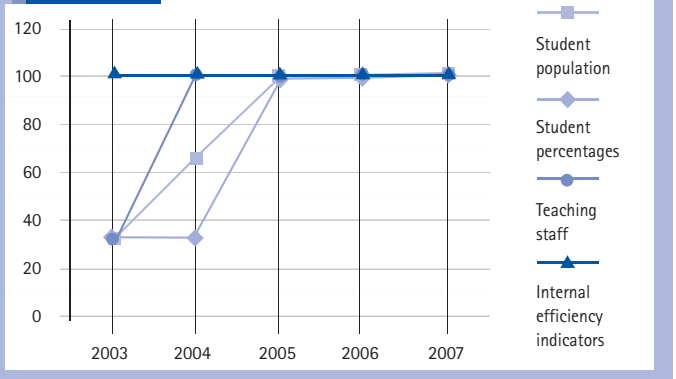
Seychelles



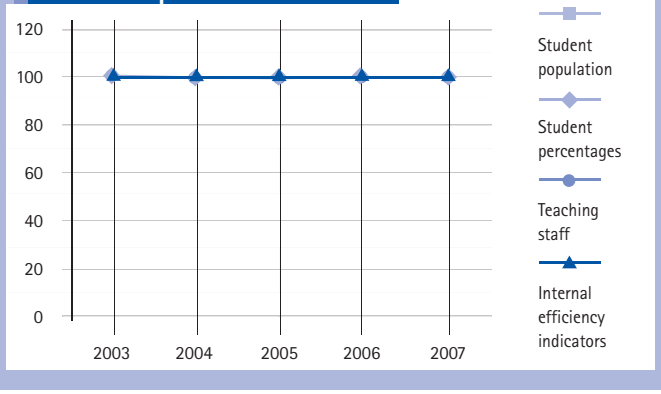
South Africa



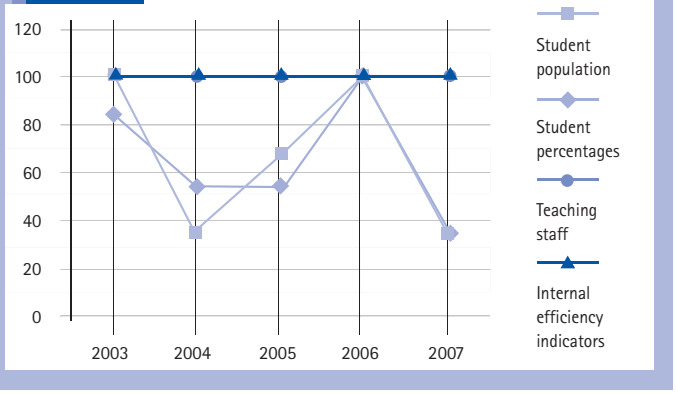
Swaziland



United Republic of Tanzania



Zambia



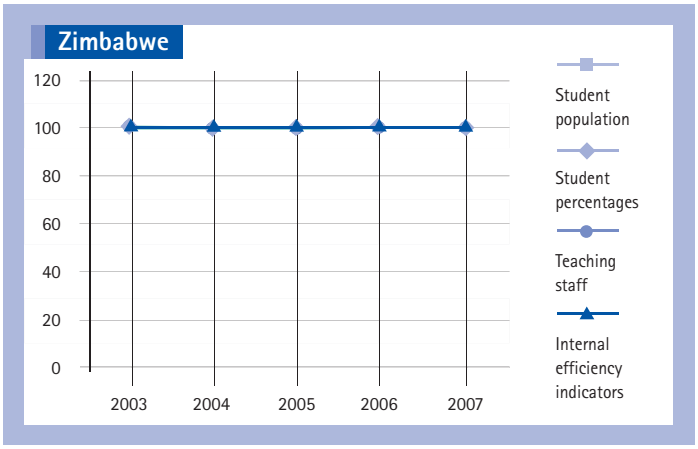


Table D.3

Trends in non-availability rates of indicators for TVET at the higher level in Southern African countries

Indicators	Year				
	2003	2004	2005	2006	2007
Student distribution (%) at ISCED 5B	46.67	60	53.33	66.67	93.33
Student percentages in higher education institutions at ISCED 5B	46.67	60	53.33	66.67	93.33
Number of students at ISCED 5B; public and private sectors; full and part time; Total	53.33	60	53.33	66.67	73.33
Number of students at ISCED 5B; public and private sectors; full and part time; Female	53.33	60	53.33	66.67	73.33
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Total	80	93.33	86.67	93.33	93.33
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Female	80	93.33	86.67	93.33	93.33
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Total	73.33	86.67	93.33	73.33	93.33
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Female	73.33	86.67	93.33	73.33	93.33
Index of non-availability	**63.33**	**75.00**	**71.66**	**75.00**	**90.83**

Table D.4

Trend in the TVET indicator non-availability rates for the higher level in SADC Member States

Indicators	Year				
	2003	2004	2005	2006	2007
Student distribution (%) at ISCED 5B	38.46	53.84	53.84	61.53	92.30
Student percentages in higher education institutions at ISCED 5B	38.46	53.84	53.84	61.53	92.30
Number of students at ISCED 5B; public and private sectors; full and part time; Total	46.15	53.84	53.84	61.53	76.92
Number of students at ISCED 5B; public and private sectors; full and part time; Female	46.15	53.84	53.84	61.53	76.92
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Total	76.92	84.61	84.61	92.30	92.30
Teaching staff at the post-secondary level; public and private sectors; full and part time; technical or vocational education; Female	76.92	84.61	84.61	92.30	92.30
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Total	69.23	84.61	92.30	69.23	92.30
Teaching staff in higher education institutions at ISCED 5B; public and private sectors; all programmes; Female	69.23	84.61	92.30	69.23	92.30
Index of non-availability	**57.69**	**69.22**	**71.14**	**71.14**	**88.45**

The informal sector's strategic importance in African country economies

Contrary to conventional wisdom, the informal sector is not a temporary or marginal phenomenon, condemned to disappear over the medium term. The sector's growing scale and complexity on the economic, social and political arena of developing countries, particularly those in Africa, represents a part of life today that more and more people have come to accept and acknowledge.[40] In most major African cities, the informal sector plays a predominant role in local economies:

- It makes up a significant portion of urban employment (between 50 and 80%);
- It also makes a significant contribution to GDP: the ratio of informal non-agro-pastoral activities is estimated at between 14 and 62%;
- It is the pull-factor for increasing the professionalization of youth and adults in Africa's workforce;
- It is becoming a more and more heterogeneous sector, teeming with multiple types of activity and pathways for entry into the world of work.

Although some general characteristics of the informal sector cut across boundaries, let us not forget that this sector may comprise different aspects from one country to another, and even from city to city (Table E.1).

Table E.1

The characteristics and weight of the informal sector in a small sample of African countries

Country surveyed	Information source	Informal sector
Angola	Income and expenditure survey, conducted in 2001 by the National Institute of Statistics (INE[41])	- The informal sector provides 66% of all jobs. - 72% of Angolan families have at least one family member in the informal sector. - There are two times more women than men in the sector. - Self-employed persons represent 82% of workers in the informal sector whereas micro and small business owners make up 18%. - 61% of female workers in the informal sector are single, divorced or in polygamous households. - 53% of young people in the informal sector are between 16 and 20, and have had the equivalent of four years of schooling. - Between 16 and 24% of people working in this sector are about 60 years old. - ¾ of the activities are on trade, while only 10% are productive activities, such as welding, carpentry, or baking of bread. - From 1995 to 2000/2001, salaried employment dropped from 43% to 34%. Over the same period, the number of families associated with the informal sector increased from 55% to 72%.
Cameroon	Employment and Informal Sector Survey (EISS), conducted in 2005 by the National Statistics Office.	- The informal agricultural sector alone accounts for 55% of all jobs and 72.9% of rural employment. - The non-agricultural informal sector provides 35.2% of all jobs and 67.4% of urban employment. - About 46% of IPUs[42] are in industry, 28% in trade sector, and 26% in services. - The informal sector generates around 50% of GDP.

[40] SEED working paper n°24 "Méthodes et instruments d'appui au secteur informel en Afrique francophone", Carlos Maldonado ; Cheikh Badiane; Anne-Lise Miélot ; ILO 2004.

[41] Instituto National de Estatistica

[42] Informal Production Unit

Country surveyed	Information source	Informal sector
Ethiopia	Two surveys: the first on urban employment in 2003, conducted by the Central Statistical Authority, and the second on employment or the workforce in 2005.	- Informal businesses employ 50.6% of the productive population. - 43.29% of these businesses are in the production sector and 37.78% in trade, hotels, and catering. - 99% of these businesses are owned by a single person, while formal joint partnerships represent only 0.5%. Cooperatives and associations are still in a growing phase and therefore, make up only a marginal quantity of informal enterprises for the time being. - The vast majority of the active workforce are either domestic workers (50.3%) or self-employed persons (40.9%), and their activities fall mostly within the informal sector. - Only 8.8% of the active workforce, as per the status of their occupation, comes under salaried worker status and as a result, may be able to have a formal employment contract. - The percentage of jobs in the informal sector is estimated at about 91.2% of the total employed workforce.
Morocco	Since 1984 several surveys on the informal sector have been carried out, the most recent being the 1999/2000 survey on the non-agricultural informal sector.	- There are approximately 1,233,40 IPUs, 71.6% of which are based in urban areas. This figure is much higher than the 1988 estimates (244,869 in urban areas, with the exception of those in building and civil engineering works) and those in 1997 (513,450 IPUs installed in urban areas). It shows the growing proportion of the informal economy in national employment. - 70.5% of IPUs have only one employee and 1.5 persons per unit, on average. - IPUs employ approximately 12.7% of women and 87.3% of men. The average age of the productive workforce is estimated at 36.5 years. - IPU salaried workers make up 18.4% of the working population and 81.4% of them work in a family context. - 48.2% of the workers in the informal economy are traders and repairers (including 36.9% of small store retailers). - 25% of them work in industry and the crafts (including 49.7% in textiles, clothing, hides and skins, and footwear). - About 19.8% provide non-trade services (including 30.5% who provide services to people and 28.3% who are engaged in transport and communication activities). - 7% are engaged in construction and civil engineering works. - On the whole, the informal sector in Morocco employs 39% of the active population in the non-agricultural sector. - Overall, the informal sector generates approximately 40.5% of national wealth. - IPUs in the informal sector have increased by 7% and active workers in the sector by 8%.

Country surveyed	Information source	Informal sector
South Africa	2001 employment survey and the 2003 informal sector survey.	- South Africa's economy is one of the least informal on the African continent to the extent that the informal sector contributed 28.4% to the GDP in 2005[43], against 50 to 60% for beninese and senegalese informal sector. - Over 4 million workers, some 34% of the total workforce, have found employment in the informal sector and 26% of these workers are employees in businesses, whereas 8% are domestic workers. - The sector employs more women than men (45% against 25%). - Domestic labour makes up 25% of informal sector employment, and only 8% of total employment, and keeps 39% of female workers in employment. - 53% of workers in non-urban areas and 27% of workers in the urban areas are in the informal sector. - The agriculture and service sectors provide 52% of informal sector jobs. - 30% of informal sector workers are in building and trade, and 60% of informal jobs in the trade sector are held by women. - The sector comprises 81% of farmers, gardeners and skilled farm workers, 36% of unskilled workers, and 32% of artisans. - 80% of informal businesses get supplies from formal enterprises. - 36% of informal businesses sell their goods directly to formal enterprises. - 50% of informal businesses compete directly with enterprises in the formal sector. - Only 14% of informal enterprises subcontract their work. - The country's informal sector encompasses a large variety of occupations. - The informal economy grew sharply from 1997 to 2001. - The number of active workers in the informal sector (apart from subsistence farming and domestic work) doubled between 1997 and 2001, climbing from 965,000 to 1,873,000, and workers in the sector, including agricultural labourers and domestic workers, make up at least 30% of South Africa's labour market. - Micro and small informal enterprises contributed 28% to the GDP, in 2002. - The break down of informal employment by race is as follows: 84% of workers are black, 7% are people of mixed race, 2% are Indian, and 6% are white.
Benin	Survey carried out by Benin's Ministry of Planning and the World Bank, and the 1-2-3 surveys in WAEMU Member States, conducted in 2001/2003 by AFRISTAT-DIAL.	- The informal sector has huge numbers of self-employed (1,473,272), and house help (598,410). - 97% of women and 93% of men are estimated to be working in the informal sector. - The informal sector demonstrates constant growth: it provides jobs to 86% of the working population, in 1979, and about 93%, in 1992. - The informal sector accounts for 95% of total employment. In the capital city, it accounts for 80% of jobs. - The annual growth rate for informal sector jobs is approximately 10%.

[43] According to World Bank data

Country surveyed	Information source	Informal sector
Senegal	Senegalese household survey in 2001/02 and the 1-2-3 surveys conducted in WAEMU Member States in 2001/2003, by AFRISTAT-DIAL.	- Informal sector jobs in Senegal's capital city represent about 90% of total employment, which is 77.5% of non-agricultural sector jobs. - The Dakar region has about 281,600 IPUs employing 434,200 persons engaged in trading non-agricultural products. - On average each household earns all or part of its income from running an IPU. - About 47% of IPUs engage in trade, 31% in industry, and 21% in services. - The average size of micro-units is 1.5 jobs per unit, and self-employment is the rule in two out of three establishments. - Productive informal sector workers have slightly over 7 years of work experience, on average. - Women fill over 42% of jobs where job insecurity prevails, namely self-employment and and domestichelp. - The informal sector focus is on satisfying household needs since 83% of demand in the sector comes from household consumption needs. - The share in national wealth generated by the informal sector in Dakar is estimated at about 11% of GDP, and at 13% of non-agricultural GDP.

The analysis of informal sector survey data from this sample of African countries shows that, far from regressing, the sector is expanding in all African countries. This finding applies as much to emerging countries like South Africa as it does to the less developed countries in West Africa. African country economic realities show how the vast majority of youth and adults who enter the world of work and ply a trade must go through the informal sector.

Labour market analyses in Africa show clearly that the working population in the informal sector face difficulties tied to the lack of primary education, technical education and training in management techniques. In Ethiopia, for example, 55% of men and 93% of women working in the informal sector are either illiterate or have not gone beyond primary education. The same finding came from the AFRISTAT survey on the informal sector in seven capital cities in West Africa, after comparing the education levels of public, private formal and private informal sector workers. The first group had acquired a little more than 11 years of schooling, the second group about 9 years, while the third group had barely more than 3 years of schooling on average. The same trend is seen in South Africa, where the 2001 employment survey shows that whereas 55.6% of formal sector workers had acquired upper secondary education and beyond, 80% of informal sector workers had not. This finding reinforces the need for human resource development.

Descriptors defining levels in the European Qualifications Framework (EQF)

Each of the eight levels is defined by a set of descriptors indicating the learning outcomes relevant to qualifications at that level, in any system of qualifications.

	Knowledge	Skills	Competence
	In the context of EQF, knowledge is defined as theoretical and/or factual.	In the context of EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).	In the context of EQF, competence is described in terms of responsibility and autonomy.
Level 1 Learning outcomes relevant to level 1 :	Basic general knowledge.	Basic skills required to carry out simple tasks.	Work or study under direct supervision in a structured context.
Level 2 Learning outcomes relevant to level 2 :	Basic factual knowledge of a field of work or study.	Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools.	Work or study under supervision with some autonomy.
Level 3 Learning outcomes relevant to level 3 :	Knowledge of facts, principles, processes and general concepts, in a field of work or study.	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information.	Take responsibility for completion of tasks in work or study. Adapt own behaviour to circumstances in solving problems.
Level 4 Learning outcomes relevant to level 4 :	Factual and theoretical knowledge in broad contexts within a field of work or study.	A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study.	Exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change. Supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities.
Level 5* Learning outcomes relevant to level 5 :	Comprehensive, specialized, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge.	A comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems.	Exercise management and supervision in contexts of work or study activities where there is unpredictable change. Review and develop performance of self and others.
Level 6** Learning outcomes relevant to level 6 :	Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles.	Advanced skills demonstrating mastery and innovation required to solve complex and unpredictable problems in a specialized field of work or study.	Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts. Take responsibility for managing professional development of individuals and groups.

	Knowledge	Skills	Competence
Level 7* Learning outcomes relevant to level 7 :	Highly specialized knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research. Critical awareness of knowledge issues in a field and at the interface between different fields.	Specialized problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures to integrate knowledge from different fields.	Manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches. Take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams.
Level 8** Learning outcomes relevant to level 8 :	Knowledge at the most advanced frontier of a field of work or study and at the interface between fields.	The most advanced and specialized skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice.	Demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research.

Compatibility with the Framework for Qualifications of the European Higher Education Area:

The Framework for Qualifications of the European Higher Education Area provides descriptors for cycles.

Each cycle descriptor offers a generic statement of typical expectations of achievements and abilities associated with qualifications that represent the end of that cycle.

* The descriptor for the higher education short cycle (within or linked to the first cycle), developed by the Joint Quality Initiative as a part of the Bologna process, corresponds to the learning outcomes for EQF level 5.

** The descriptor for the first cycle in the Framework for Qualifications of the European Higher Education Area agreed by the ministers responsible for higher education at their meeting in Bergen in May 2005 in the framework of the Bologna process corresponds to the learning outcomes for EQF level 6.

*** The descriptor for the second cycle in the Framework for Qualifications of the European Higher Education Area agreed by the ministers responsible for higher education at their meeting in Bergen in May 2005 in the framework of the Bologna process corresponds to the learning outcomes for EQF level 7.

**** The descriptor for the third cycle in the Framework for Qualifications of the European Higher Education Area agreed by the ministers responsible for higher education at their meeting in Bergen in May 2005 in the framework of the Bologna process corresponds to the learning outcomes for EQF level 8.

Summary tables on a proposed series of indicators for TVET

Table G.1

Access and coverage indicators

Indicator	Definition and purpose	Formula and data required
Transition rate : (From the lower secondary TVET level to the upper secondary TVET level; from the upper secondary TVET level to the tertiary TVET level)	**Definition :** The transition rate is the number of new entrants admitted to the first year of a cycle in the TVET system (lower secondary TVET level, upper secondary TVET level, tertiary TVET level) in a given year expressed as a percentage of the number of students enrolled in the final year of the preceding cycle (primary, lower secondary TVET cycle, upper secondary TVET cycle) in the previous year. **Purpose:** To measure the ratio of students who pass from one cycle in the formal TVET system to another, from one year to the other.	$\frac{\text{New entrants in year one of a given TVET cycle in year N}}{\text{Number of students in the final year of the preceding TVET cycle in year N-1}} \times 100$ **Data required:** - New entrants in the lower secondary level, or upper secondary level, then in the tertiary level of TVET during year N. - Number of pupils in the final year of primary school, TVET students at the lower secondary level, and TVET students at the upper secondary level. *Data source: the education system*
	Comments: - This indicator is easy to calculate. Retrospective data on new entrants is not always available. Only new entrants in public and private school establishments are captured. Therefore, care must be taken not to factor in repeaters and also students from other education systems. - The transition rate may be higher than the graduation rate for a given TVET cycle, to the extent that TVET programmes may include a high number of adults who are not necessarily graduating from a primary or secondary cycle, in year N-1. - It may be difficult to calculate these transition rates because programmes in the TVET system are sometimes "terminal", in the sense that they prepare students to leave the education system and enter the world of work. We also did not think it necessary to calculate a transition rate from primary to secondary school in the TVET system, since TVET programmes as such do not exist at the primary level.	
Gross enrolment ratio (GER)	**Definition:** This is the number of students enrolled in a specific level of education (lower secondary level TVET, upper secondary TVET level, tertiary TVET level) expressed as a percentage of the population in the theoretical age group corresponding to the eligible school-age population in a given school year. **Purpose:** - To show the general level of participation in a given level of education - To estimate global intake capacity of the TVET system	$\frac{\text{Total number of students enrolled in a given TVET cycle for year N}}{\text{Total schooling age population officially entitled to enter that cycle of TVET in year N x100}} \times 100$ **Data required:** - Total number of students of all ages enrolled at the lower secondary and upper secondary TVET levels. - Official schooling age population for the TVET lower secondary levels or upper secondary levels. *Data sources: education system; population censuses*
	Comments: - In calculating this rate, the total number of students enrolled in public and private TVET schools should be taken into account. - The rate may sometimes exceed 100% to the extent that over-age and under-age students are included in the calculation. - An analysis of GER trends over a period of several years provides a basis for measuring progress made in the provision of access to TVET.	
Number of pupils in TVET at ISCED 2 and 3 (lower and upper levels), as a percentage of the total number of students at ISCED 2 and 3	**Definition:** This indicator gives the proportion of TVET in secondary education. **Purpose:** To see the relationship between development in the general secondary system andthat in the TVET system.	$\frac{\text{Number of students in TVET}}{\text{Total number of students at the secondary level}} \times 100$ **Data required:** Number of secondary level students TVET Number of students at the secondary level *Data source: education system*

Indicator	Definition and purpose	Formula and data required
Number of students in TVET at ISCED 2 (lower secondary level) and ISCED 3 (upper secondary level) respectively, as a percentage of the total number of students at ISCED 2 and ISCED 3, respectively.	**Definition:** This indicator gives the proportion of TVET in the various cycles at secondary level. **Purpose:** To see the relationship between the development of general secondary cycles and the development of secondary level TVET cycles.	$\frac{\text{Number of students in TVET at the lower secondary and upper secondary levels, respectively}}{\text{Total number of students at the lower secondary and upper secondary levels, respectively}} \times 100$ **Data required:** - Number of students at the lower secondary and upper secondary TVET levels. - Number of students at the lower secondary and upper secondary levels. *Data source: education system*
Percentage of the student population in private lower secondary and upper secondary TVET schools	**Definition:** This is the proportion of TVET students educated in the private sector in a given school year. **Purpose:** To understand what share goes to the private sector in TVET secondary level programmes.	$\frac{\text{Number of students in private TVET schools at the lower secondary and upper secondary levels respectively, for year N}}{\text{Total number of students in TVET schools at the lower secondary and upper secondary levels respectively, for year N}} \times 100$ **Data required:** - Number of students in private TVET establishments at the lower secondary and upper secondary TVET levels - Number of students at the lower secondary and upper secondary levels for TVET *Data source: education system*
	Comments: - Information on private schools is not always available, and yet they make up the bulk of TVET providers. It wouldtherefore be necessary to establish a centralized system by which to collect data from all TVET providers.	
Percentage of girls/women enrolled in TVET at the secondary level.	**Definition:** Ratio of girls in TVET **Purpose:** To assess female participation in TVET programmes.	$\frac{\text{Number of females enrolled in TVET at secondary level}}{\text{Total number of enrolments in TVET at secondary level}} \times 100$ **Data required:** Number of females enrolled in TVET Total student population in TVET *Data source: education system*
	Comments: - This indicator is easy to calculate and can be disaggregated by field of study in the TVET system, by sector (public and private), and by level.	
Annual growth rate in the number of students in TVET (secondary, tertiary levels)	**Definition and purpose:** This indicator monitors the development of TVET at the secondary and tertiary levels.	$\frac{[\text{Number of secondary and tertiary level students in TVET for year N}] - [\text{Number of secondary and tertiary level students in TVET for year N-1}]}{\text{Number of TVET schools in year (N-1)}} \times 100$ **Data required:** Number of secondary and tertiary level students per year Number of TVET schools (secondary and tertiary levels) *Data source: education system*

Table G.2

Internal efficiency indicators in the TVET sub-system

Indicator	Definition and purpose	Formula and data required
Promotion rate	**Definition:** This indicator is the ratio of students enrolled in TVET who have successfully completed a specific grade and are passing to the next grade the year after. **Purpose:** This rate measures the internal efficiency of an education system.	$\frac{\text{Number of students in grade J+1 promoted for year N + 1}}{\text{Total number of students in grade J for year N}} \times 100$ **Data required:** - Number of students enrolled in grade J for year N Number of students promoted to grade J+1 for year N+1 *Data source: education system*
	Comments: - This indicator can be disaggregated by field of study, and by cycle. A low promotion rate shows poor system flow-through. A promotion rate above 100 shows there have been student transfers. By analyzing this indicator over a period of several years, it may be possible to identify trends (e.g. improvement, stagnancy, or decrease) to take into account when we want to estimate student population forecasts.	
Repetition rate	**Definition:** The repetition rate is the ratio of students enrolled in TVET at a specific grade who stay at the same grade in the following school year. **Purpose:** To measure the internal efficiency of education systems	$\frac{\text{Repeaters in grade J for year N}}{\text{Total number of students in grade J for year N}} \times 100$ **Data required:** Number of students enrolled in grade J for year N Number of students promoted to grade J+1 for year N+1 *Data source: education system*
	Comments: - This indicator can be disaggregated by field of study, and by cycle. - Repetition seems to be less frequent in TVET than in general education. In some programmes it may even be nil, or at least kept to the barest minimum level. Some TVET programmes target students who have repeated one or several times in general education and are considered, therefore, as students who more readily drop out of school. - High repetition rates are usually tied to problems of internal efficiency in the system and can be indicative of mediocre instruction/learning levels. But one must be careful. This rate alone does not tell us the reasons for inefficiency in the education system. - The indicator has to be interpreted with care, especially in comparing different education systems where the rules for promotion are not always the same. - Low repetition rates may be the outcome of voluntar policies for automatic promotion of students to the next class.	
Dropout rate	**Definition:** Percentage of students enrolled in TVET at a given grade that drop out at the end of a specific school year. **Purpose:** To measure internal "inefficiency" in the education system	100% – (apparent promotion rate – repetition rate) *Or* $\frac{\text{Number of students in grade G who drop out in year N}}{\text{Number of students enrolled in grade G during year N}} \times 100$ **Data required:** Repetition rate Promotion rate Number of students enrolled in grade G for year N Number of students in grade G who drop out of school for year N *Data source: education system*
	Comments: - The indicator can be disaggregated by field of study, and by cycle - High drop-out rates are considered to be a sign of inefficiency in the education system, a loss in "student-year" and awaste of resources.	

Indicator	Definition and purpose	Formula and data required
Success rate in a final examination	**Definition:** Ratio of students who pass the final certificate exam in a given cycle compared to the number of enrolled students who sat the final exam for that cycle. **Purpose:** This ratio is used to measure the education system's end-of-cycle performance.	$\frac{\text{Number of candidates who pass the final exam in a given cycle}}{\text{Number of enrolled students who sit that exam}} \times 100$ **Data required:** Number of students who registered to sit the final examination in a given cycle and passed the examination Number of students who registered for the examination and actually sat the examination *Data source: education system*
	Comments: - This rate is similar to the promotion rate. It is just that it applies to the final year of a cycle. - Examination pass rates seem of little interest for TVET because of the immense variety of TVET programmes and their different durations. It is possible for a country to have several TVET programmes at the same ISCED level that last from six months to four years, and for all these programmes to award certificates. - A high pass rate is a sign of good results for the education system, but does not enable us to assess the intrinsic value of those who pass and how well their qualifications suit job market needs. - This rate cannot exceed 100%. It includes external candidates and is different from the graduation rate.	
Graduation rate	**Definition:** The graduation rate is the ratio of final year students in a given cycle who pass the final examination to the number of students enrolled in the final year. **Purpose:** To measure the system's efficiency at the end of the cycle.	$\frac{\text{Number of graduates from a cycle in year N}}{\text{Number of students in the final year of the cycle for year N}} \times 100$ **Data required:** Number of graduates Number of students in the final year *Data source: education system*
	Comments: - The indicator can be disaggregated by qualification, field of study, course, and cycle. - A high graduation rate is a sign of good results for the education system (internal efficiency), but does not enable us to assess the intrinsic value of the graduates and how well their qualifications suit job market needs (external efficiency). This rate only considers individuals trained in the formal system. It does not consider teaching/learning in the non-formal setting, even where such teaching/learning produces skilled labour.	
Survival rate at a grade J	**Definition:** This is the ratio of a cohort of students who enter the first year of a cycle in TVET together and progress to a certain year of study J in that cycle, with or without a repeater or repeaters. **Purpose:** To measure the education system's ability or capacity to retain students, and to assess the incidence of the repetition and drop-out rates on the efficiency of the education system.	$\frac{\text{Aggregate number of students in a given cohort who progress to a level of learning J, with or without a repeater or repeaters}}{\text{Initial number of students in this reference cohort}} \times 100$ **Data required:** - The aggregate number of students in a reference cohort who have reached a given year of learning J, with or without repeaters. - The initial number of students who were part of this same reference cohort. *Data source: education system*
	Comments: - The rate of survival up to a given class cannot be calculated for the simple reason that the number of students in the TVET system is not available by class. - A high survival rate more or less indicates that the education system has a high capacity to retain students in the system. - A high survival or retention rate can be the outcome of continued repetition, which is not a sign of efficiency in the system. - This indicator is calculated using cohort analysis models which are based on a certain number of hypotheses. Care should be taken when comparing countries, levels of education, etc. - As in all indicators using longitudinal data, there is a problem of data availability by cohort for the entire cycle.	

Indicator	Definition and purpose	Formula and data required
Average period of learning per graduate	**Definition:** This is the ratio between the total resources utilized (measured in student-years) by a cohort of students who graduate at the end of a given cycle, with or without repeaters, and the total number of graduates from the same cohort. **Purpose:** To measure cost-effectiveness of production in an education system.	$\frac{\text{Aggregate number of student-years spent by a cohort of students who graduate at the end of a cycle, with or without repeaters}}{\text{The total number of students who graduate from this cohort N in the normal period of duration of the cycle}} \times 100$ **Data required:** - The aggregate number of student-years spent by a cohort of students who graduate at the end of a cycle, with or without repeaters. - The total number of graduates who are part of this same cohort. *Data source: education system*
	Comments: - The bigger the difference in value between this indicator and the normal period of learning for a cycle, the higher the number of "wasted" student-years, the lower the level of internal efficiency. - The reliability of this indicator depends on the coherence and reliability of enrolment and repetition data for a given number of years of study, and for a period of at least two successive school years. - When cross-countries comparisons are being made, it serves us to remember that repetition rules vary from one country to another.	
TVET school growth rate (secondary and tertiary levels)	**Definition and purpose:** This indicator presents how TVET establishments progress from year to year.	$\frac{[\text{Number of TVET schools for the year (N)}] - [\text{(Number of TVET schools for the year (N-X)}]}{\text{Number of TVET schools for the year (N-X)}} \times 100$ **Data required:** Number of TVET schools by year *Data source: education system*
	Comments: - If X=1, we will have a very low annual growth rate. However, considering that TVET schools increase at a slow pace, it might be useful to consider a longer interval of time.	
Proportion of private schools in the TVET system	**Definition and purpose:** The is the proportion of private schools that provide TVET	$\frac{\text{Number of private schools in TVET}}{\text{Number of schools in TVET}} \times 100$ **Data required:** - Number of private schools in TVET - Number of schools in TVET *Data source: education system*
	Comments: - In order to understand the areas where private sector education and training providers do best, the indicator can be presented according to areas/fields of study.	
Internal Efficiency Coefficient (IEC)	**Definition and purpose:** This coefficient is obtained through the cohort reconstruction method. It shows the ratio between the number of student-years needed in theory to complete a learning cycle (for each enrolled student), if there are no drop-outs or repeaters, and the number of student-years that the cohort has actually spent (to educate each of the graduates). The coefficient ranges between 0 (total inefficiency) and 1 (maximum efficiency). The opposite of the coefficient of efficiency is the drop-out coefficient.	$\frac{\text{The theoretical number of student-years needed in theory to complete the cycle}}{\text{Number of student-years actually utilized}} \times 100$ **Data required:** - Number of students in the cohort in year one - Student distribution in the cohort by grades and number of years in the cycle *Data source: education system*
	Comments: - This indicator is calculated using cohort model analyses that are based on a certain number of hypotheses. Care should be taken when comparing countries and levels of education. - As is the case with all indicators that use longitudinal data, it is difficult to have data by cohort over the entire period of the cycle.	

Table G.3

Human and material resource indicators

Indicator	Definition and purpose	Formula and data required
Student teacher ratio	**Definition:** This is the ratio between the number of full-time equivalent students who undergo training at a given level of education and the number of full-time equivalent teachers for that same level, in a given school year. **Purpose:** It is an "indicator of the proportion of the most important resource made available to each student, namely the services of teachers" (OECD 1992, p. 82)	$\frac{\text{Number of full time equivalent students at a given level of education}}{\text{Number of full time equivalent teachers for that same level}} \times 100$ **Data required:** - Number of full-time equivalent students at a given level of education - Number of full-time equivalent teachers for that same level *Data source: education system*
	Comments: - This indicator can be disaggregated by field of study and by cycle. A low promotion rate shows a low output level for the system. Promotion rates above 100 means there have been student transfers. - Analysing this indicator over a period of several years may help us identify the trends (e.g. improvement, stagnancy, or decrease) to take into account when we want to estimate the student population over time.	
Student / classroom ratio	**Definition:** It is the ratio between the number of students at a given level of education and the number of classrooms available at that same level. **Purpose:** To assess the classroom intake capacity of the TVET sub-sector.	$\frac{\text{Number of students at a given level of education}}{\text{Number of classrooms available for that specific level of education}} \times 100$ **Data required:** - The number of students at a given level of education - The number of classrooms available at that same level of education *Data source: education system*
	Comments: - The indicator can be disaggregated by areas and fields of study, and by school status.	
Ratio of students to workshops or laboratories	**Definition:** This is the ratio between the number of students at a level of education and the number of laboratories or workshops they have at their disposal. **Purpose:** To serve as an indicator of the quality of education	$\frac{\text{Number of students at a given level of education}}{\text{Number laboratories or workshops}} \times 100$ **Data required:** - Number of students at a given level of education - Number of laboratories or workshops available at that same level of education *Data source: education system*
	Comments: - This ratio can be presented by area, field of study, and school status. - The ratio is relevant to technical training. Care should be taken not to include students in non-technical training in the number of students considered.	
Ratio of qualified teachers	**Definition:** This is the ratio of teachers who have the necessary qualifications for their assigned field of teaching/learning **Purpose:** To serve as an indicator of the quality of education	$\frac{\text{Number of qualified teachers at a given level of education, teaching at that level of education}}{\text{Total number of teachers teaching at that level of education}} \times 100$ **Data required:** - Number of qualified teachers - Total number of teachers *Data source: education system*
	Comments: The indicator can be disaggregated by field of study, area, and school status.	

Indicator	Definition and purpose	Formula and data required
Average level of satisfaction with equipment	**Definition and purpose:** To do a general assessment of satisfaction with equipment	$\frac{\text{Aggregate score on satisfaction with equipment for each establishment (for example, on an ordinal scale of 1 to 10)}}{\text{Total number of establishments providing TVET}} \times 100$ **Data required:** - Score on satisfaction with equipment, by establishment - Number of establishment *Data source: education system*
	Comments: - This is an important indicator for technical education and training. It can be presented by type of equipment. - The indicator requires us to take stock of equipment and set a scale for rating each type of equipment. Establishments will be given an average score on the state of their equipment. The score will be used to calculate the national score for satisfaction with equipment. - This indicator is based on assessments, and can hence be a subjective measure. Moreover, establishments are required to provide calculated data, which is not always easy to do.	
Average level of satisfaction with school infrastructure	**Definition and purpose:** This is a general assessment of satisfaction with school infrastructure (classrooms, laboratories, workshops, administrative buildings).	$\frac{\text{Aggregate score on assessment of infrastructure for each establishment (for example, on an ordinal scale of 1 to 10)}}{\text{Total number of establishments providing TVET}} \times 100$ **Data required:** - Scores assessing infrastructural facilities, by establishment - Number of establishments *Data source: education system*
	Comments: - This indicator can be presented by type of infrastructure and by status.	
Percentage of teachers who undergo retraining in new teaching/ learning methods	**Definition and purpose:** To assess the quality of education	$\frac{\text{Number of teachers retrained in new teaching/learning methods at a given level of education}}{\text{Total number of teachers at that level of education}} \times 100$ **Data required:** - Number of teachers who have undergone retraining - Total number of teachers *Data source: education system*
	Comments: - The indicator can be disaggregated by area and field of study in TVET.	
Average number of partners for a TVET establishment	**Definition and purpose:** - To put establishments in direct contact with the world of work - This indicator is a factor for enhancing professional integration	$\frac{\text{Aggregate number of partners of the various establishments}}{\text{Total number of establishments}} \times 100$ **Data required:** - Number of partners per establishment - Number of establishments *Data sources: education system, concerned Ministries*
	Comments: - The indicator can be disaggregated by field of study in TVET.	

Table G.4

Financing indicators

Indicator	Definition and purpose	Formula and data required
Share of public expenditure on education	**Definition:** This is the share of the public budget allocated to education **Purpose:** To measure the State's financial effort towards promoting education.	$\frac{\text{Budget allocated to education}}{\text{State budget}} \times 100$ **Data required:** - Budget allocations for TVET education - Budget resources allocated to education *Data sources: education system; Ministry of Finance*
	Comments: - The higher this indicator turns out to be, the more the State is considered to afford high priority to education in general. Analyzing this indicator over a period of several years makes it possible to assess how efforts made by the State in the education sector have evolved over time.	
Share of education budget allocated to TVET	**Definition:** This is the ratio between resources allocated to TVET and resources for education. **Purpose:** To measure the financial burden of TVET in the education budget	$\frac{\text{Budget allocated for TVET}}{\text{Education budget}} \times 100$ **Data required:** - Budget allocations for TVET - Budget allocations for education *Data sources: education system, Ministry of Finance*
	Comments: - The higher this indicator turns out to be, the more the Ministry of Education and hence the State, is considered to afford high priority to TVET.	
Public expenditure on TVET as a percentage of total public expenditure on education	**Definition:** This is the portion of public expenditure on education that is allocated for TVET. **Purpose:** To measure the extent of State's funding efforts geared towards TVET	$\frac{\text{Amount of ordinary public expenditure allocated for TVET}}{\text{Total amount of ordinary expenditure allocated for education}} \times 100$ **Data required:** - Amount of ordinary public expenditure allocated for TVET - Total amount of ordinary expenditure allocated for education
	Comments: - The higher the value of this indicator, the higher the priority afforded by the State to TVET. A subtle approach needs to be taken when interpreting this indicator, so that the nature and coverage of education expenditure calculated can be explained properly, as this may vary depending on the source of information. - To calculate the indicator, care should always be taken to ensure that the focus is on actual spending data or on budget estimates that have been approved and voted. - It is also worth making sure that the expenses accounted for are checked in an exhaustive manner, taking into account non-public sector activities for TVET, as well as the TVET activities funded by other Ministerial departments...	
Public expenditure on TVET per student as a percentage of GDP per capita (or GNP per capita)	**Definition:** The ratio between average spending per TVET student and the theoretical average per capita income in the country. **Purpose:** To assess the relative importance given , in the proportion of national wealth, to funding for the education and training of TVET students.	$\frac{\text{Amount of ordinary public expenditure allocated to TVET}}{\text{GNP or GDP}} \times 100$ **Data required:** - Amount of ordinary public spending per student in TVET - GNP per capita (or GDP per capita) *Data sources: education system, Ministry of Finance*
	Comments: - High values of this indicator generally show the high levels of attention given to TVET. However, care should be taken when interpreting the indicator, because a high value can be tied to poor coverage for TVET in countries that are relatively rich and/or lowly populated. - The indicator may sometimes exceed 100% in countries with low GNP per capita and high ordinary expenditure per student.	

Indicator	Definition and purpose	Formula and data required
Expenditure on TVET by type (other ordinary expenses, capital) of expenditure, as a percentage of total expenditure on TVET	**Definition:** This is the ratio between expenditure for TVET, based on the nature of the expenditure, and total spending in TVET. **Purpose:** To provide an overview of TVET expenditure, by type.	$\frac{\text{Amount of expenditure in TVET by type}}{\text{Total expenditure in TVET}} \times 100$ **Data required:** - Amount of TVET expenditure by type of expenditure - Total expenditure on TVET

Table G.5

Indicators of professional integration

Indicator	Definition and purpose	Formula and data required
Net integration rate (by type or sector or field) after x years	**Definition:** This is the ratio of graduates who have secured employment X years after obtaining their qualification. **Purpose:** To see the fields and sectors where professional integration occurs at the fastest pace.	$\frac{\text{Number of graduates, by sector or field of study, who completed school after, at most, X years and who now have jobs}}{\text{Total number of graduates per area or field of study in the cohort}} \times 100$ **Data required:** - Graduates of the cohort of X past years, by course or field of study - Graduates of the cohort of X past years, by course or field of study, who have a job *Data sources: education system, cohort surveys, specific job market surveys*

Comments:

- A graduate is considered to be integrated in the world of work if she/he is exercising a salaried or non-salaried activity in the formal or informal sector for at least three straight months during the period of reference.
- Data on graduates is not always available by field of study or sector.
- Cohorts are not monitored on the job market.
- The number of graduates in the world of work includes those in formal and informal sectors.
- When looking at graduates' professional integration, attention should be also paid to the decency of work.
- This indicator presumes that there is no interference with the labour market, and that the system is closed. This is not the case on the ground, when:
  1. the job market is open and workers who are not from the education system under consideration can find jobs in the specific country under review and vice versa.
  2. the graduates in the cohort may decide to pursue further training.
- If X is at most equal to 2, this is termed short-term integration. If X is higher than 2 and at most equal to 5, this is termed medium-term integration. Otherwise, it is a case of long-term integration.
- Low professional integration rates, for a given field of study, may be due to oversupply of graduates for the needs of the job market. A sudden drop in the integration rate may be caused by an economic downturn affecting a given sector or all sectors of activity.- A progressive decrease in professional integration rate for a given sector may result from employers' growing dissatisfaction with the quality of training offered.

Table G.6

Indicators of conformity between education and employment

Indicator	Definition and purpose	Formula and data required
Training related employment rate or conformity rate*	**Definition:** This indicator presents the ratio of workers in jobs that correspond to their initial field of study. **Purpose:** It is an indicator of the quality of employment that enables us to know whether there is conformity between education and employment.	$\frac{\text{Number of persons plying a trade that corresponds to their training}}{\text{Number of persons working in the area of activity}} \times 100$ **Data required:** - Number of workers plying a trade that corresponds to their field of education - Number of persons working in the area of activity *Data source: Specific labour market surveys (formal and non formal sectors)*
	Comments: - In calculating this indicator, it is advisable to separate the formal sector from the informal sector, and the modern private sector from the public sector. - Conformity rate can be disaggregated by field of study, specialty, and qualification. - Data is collected exclusively on the labour market. The demand and supply of labour in the informal sector is not expressed in an explicit manner, so this makes data collection difficult. - The indicator requires that education specialties correspond to fields of professional activity. - In the same country, the list of study courses offered does not necessarily correspond to that of professions. This makes it difficult to relate education specialties to branches of professional activity. Designing a series of education and training courses for each branch of activity can, in principle, be a delicate, sensitive and relatively subjective exercise. Some generalist training seeks to offer a broad range of opportunities on the labour market. Taking a more flexible approach to conformity could be a fitting remedial measure. - Conformity between education and employment is strong, if the conformity rate exceeds 50%.	

* Indicator published by GFE (Groupe de Formation Emploi), which is under CREFOR (Centre de Recherche pour la Formation Professionnelle).

Table G.7

Indicators that enhance the relationship between education and employment

Indicator	Definition and purpose	Formula and data required
Percentage of secondary level/tertiary level students in dual training	**Definition and purpose** This is the percentage of secondary level/tertiary level students undergoing a two-tier training programme (with a part of training in a TVET school and another part in an enterprise).	$\frac{\text{Number of secondary level/tertiary level students in a two-tier training system}}{\text{Total number of secondary level/tertiary level students}} \times 100$ **Data required:** The number of secondary level/tertiary level students who are in a two-tier training system, and those who are not. *Data source: education system*
	Comments: - This indicator can be presented by field of study and by grade - A high proportion is a good sign for the professional integration of graduates	
Ratio of secondary level/tertiary level students in continuing training.	**Definition and purpose** This is the ratio of professionals undergoing continuing training in TVET.P	$\frac{\text{Number of working students}}{\text{Total number of students}} \times 100$ **Data required:** - Number of working students - Number of students *Data source: school system*
	Comments: - This indicator can be presented by field of study and by type. A high ratio can serve as an enabling factor of conformity between education and employment.	

Indicator	Definition and purpose	Formula and data required
Ratio of courses in the TVET curriculum with compulsory practical training in enterprises	**Definition:** The ratio of courses with a practical phase **Purpose:** To facilitate professional integration	$\frac{\text{Number of TVET courses with compulsory practical training in enterprises}}{\text{Number of TVET courses}} \times 100$ **Data required:** - Number of TVET courses with practical training - Number of TVET courses *Data source: education system*
	Comments: - This indicator requires sound knowledge of all fields of study. It can be disaggregated by short courses and by long courses. The indicator can serve as a contributing factor to professional integration.	
Proportion of TVET schools carrying out at least one visit to an enterprise per year	**Definition and purpose** - To bring schools closer to the world of work - To assess the interaction between students and their future work environment - To provide an enabling factor for professional integration	$\frac{\text{Number of TVET schools carrying out an annual visit to an enterprise}}{\text{Total number of schools}} \times 100$ **Data required:** - Number of schools carrying out an annual visit to an enterprise - Number of schools *Data sources: education system, concerned Ministries*
	Comments: - This indicator can be presented by TVET field of study. It encourages professional integration.	
Ratio of TVET schools organizing at least one open day per year	**Definition and purpose** - To present TVET schools to eventual partners - To provide a framework for interaction between students and their potential employers - To promote professional integration	$\frac{\text{Number of TVET schools organizing open days}}{\text{Total number of TVET schools}} \times 100$ **Data required:** - Number of TVET schools organizing open days - Total number of TVET schools *Data sources: education system, concerned Ministries*
	Comments: - The indicator can be presented by field of study in TVET. It can boost professional integration.	
Ratio of TVET schools with an enterprise incubator (or junior enterprise) or any other professional activity involving students	**Definition and purpose** - To promote entrepreneurship among graduates - To introduce students to the world of work	$\frac{\text{Number of TVET schools with some type of professional activity involving students}}{\text{Total number of TVET schools}} \times 100$ **Data required:** - Number of TVET schools with some type of professional activity involving students - Total number of TVET schools *Data source: education system, concerned Ministries*
	Comments: - The indicator can be presented by TVET field of study. It can promote professional integration and/or conformity between education and employment.	
Selectivity rate	**Definition and purpose** - This is the number of students' first preferences for one hundred places offered in public schools. - It is tied to orientation and illustrates how the selection process is done.	$\frac{\text{Position that the last student to go through orientation in the school had on the supplementary list}}{\text{Number of students who selected the school}} \times 100$ **Data required:** - Position of the last student to go through orientation in the school - Number of students who selected the school *Data source: education system*

Indicator	Definition and purpose	Formula and data required
Rate of continuity in the discipline	**Definition and purpose** - This is the ratio of entrants enrolled in the same discipline the following year. - It may be either by passing to the second year, or by repeating the first year in a higher education institution.	$\frac{\text{Number of students enrolled in a given discipline in year N + 1 and who were in the same discipline in year N}}{\text{Total number of students enrolled in that discipline in year N + 1}} \times 100$ **Data required:** - Number of students enrolled in a discipline in year N+1 and who were in the same discipline in year N - Total number of students enrolled in that discipline in year N+1 *Data source: education system*

Table G.8

Labour market indicators

Indicator	Definition and purpose	Formula and data required
Distribution of the active population by age group	**Definition:** This is the age distribution of both men and women who provide labour for the production of goods and services. **Purpose:** To identify the active population, including persons above a specified age, who are either "employed" or "unemployed".	Total number of working age persons with a job + Total number of persons without a job **Data required:** - Total number of working age persons with a job - Total number of persons without a job *Data sources: employment surveys, population censuses*
	Comments: - This indicator may be disaggregated by sex. - To determine the active population, a period of reference has to be chosen, meaning a period before the survey date, during which the survey sample group were employed or seeking employment. In this regard, there are two types of active populations, depending on how long the reference period lasts: *The currently active population* (or labour force), which refers to persons willing and able to work at the time of the survey, in which case the reference period considered is generally a week or a day. This category of the active population, the one most often covered in the majority of employment surveys, gives us a snapshot of the state of a population's economic activity. *The second category* of the active population, the usually active population, is surveyed over a relatively longer reference period, which, in general, is the year preceding the survey. - The indicator is obtained by doing an age distribution of the active population according to the official age group of the working age population.	

<table>
<tr><th>Indicator</th><th>Definition and purpose</th><th>Formula and data required</th></tr>
<tr><td>Activity rate</td><td>Definition and purpose
The ratio between the active population and the working age population.</td><td>$\frac{\text{Total active population}}{\text{Total working age population}} \times 100$

Data required:
- Active population
- Working age population (persons aged between 15 years and 64 years, with the exception of members of institutional establishments)
Data source: Employment surveys, population censuses</td></tr>
<tr><td></td><td colspan="2">Comments:
- This indicator may be disaggregated by certain age groups, and by sex.
- To determine the lower age limit for the working age population, the ILO recommendation is that it should be placed at 15 years. But ILO also gives countries some leeway to adapt the recommendation to their own legal or socio-economic context. From our standpoint, 10 years is a more appropriate age, because few children actually begin to work before then. Some of the children who do so are homeless children who spend their time on the streets. Consequently, it is hard to reach them during standard employment surveys. If the study focus is children living in poor and difficult environments, then the option of setting an even lower age limit can be taken into consideration. In some cases, there is an upper age limit that varies from country to country, but no recommendation has been issued in this regard.
- For the purpose of comparability, it is always useful to publish the age bracket used to calculate the indicator. Where the agreed lower age limit is below 15 years, the ILO recommends that all the relevant survey findings should be published, even if age does not come directly into play for those under 15 years and those who are 15 years and above.</td></tr>
<tr><td>Number of jobs</td><td>Definition and purpose
- This indicator refers to all people in the world of work (including those in salaried employment and those in non-salaried employment) during a reference period.
- People not working during the reference period, but who are still formally employed (annual leave, sick leave, maternity leave, leave of absence, strike action, professional training, etc.) are considered as persons in employment.</td><td>Total number of persons in salaried employment
+ Total of persons in non-salaried employment.

Data required:
- Total number of persons in salaried employment
- Total number of persons in non-salaried employment

Data sources: employment surveys, population censuses</td></tr>
<tr><td></td><td colspan="2">Comments:
- This indicator may be presented by age distribution and disaggregated by sex.
- According to ILO, the salaried workers' category includes sub-groups of persons in apprenticeship, who are paid in cash or in kind, and the armed forces. The category of non-salaried workers includes employers and self-employed persons, members of farmers' cooperatives, unpaid family workers, and persons engaged in the production of goods and services for their own consumption (consumption of own production), where such action "makes a substantial contribution to total household consumption".</td></tr>
<tr><td>Employment rate</td><td>Definition and purpose
- The employment rate is the ratio of persons in employment to the working age population (15 to 64 years).
- The employment rate shows the capacity of an economy to utilize its labour resources.</td><td>$\frac{\text{Total active population in employment}}{\text{Working age population}} \times 100$

Data required:
- Number of jobs
- Working age population
Data sources: employment surveys, population censuses</td></tr>
<tr><td></td><td colspan="2">Comments:
- This indicator can be disaggregated by sex and presented by age distribution.
- When it comes to evaluating the labour market status in a country, the employment rate is a more relevant measure than the unemployment rate.</td></tr>
</table>

<table>
<tr><th>Indicator</th><th>Definition and purpose</th><th>Formula and data required</th></tr>
<tr><td>Number of unemployed persons</td><td>Definition and purpose
This indicator designates all persons above a specified age (i.e. working age population) who, during a reference period, were:
- unemployed, that is, without a job, be it salaried or non-salaried employment, for a reference period (one week);
- able and willing to work and take up a job, be it salaried or non-salaried employment, during the reference period (two weeks);
- seeking employment, meaning they had taken specific measures during a specified period in the recent past (the past four weeks or the last twelve months) to look for a salaried or non-salaried job.</td><td>Total number of unemployed persons
who are willing to work and are seeking employment

Data required:
- Unemployed persons who are willing to work and are looking for a job
Data source: employment surveys, population censuses</td></tr>
<tr><td></td><td colspan="2">Comments:
- This indicator may be disaggregated by sex and by certain age groups.
- In the case of unemployed persons, who are able and willing to work, and who find a job, be it a salaried or non-salaried job, and begin to work on a date later than the period of reference used to calculate the number of unemployed persons, the ILO recommends that they should be considered as unemployed persons (ILO: subsequent stock of job seekers) even if they did not seek employment during the period of reference. The decision on whether or not to include this sub-group of the active population among the unemployed is at the discretion of the national authorities. However, what basically matters is the ability to identify and present them as statistical data.
- In the case of students, persons attending to the household, and other persons engaged mainly in non-economic activities during the period of reference, these persons should be considered as unemployed persons if they fulfill the criteria proposed above for defining unemployment.</td></tr>
<tr><td>Unemployment rate</td><td>Definition:
- The unemployment rate is the ratio between the number of unemployed persons and the active population (in work and out-of-work).
Purpose:
- The unemployment rate assesses the weaknesses or imbalances in the labour market.</td><td>$\frac{\text{Number of unemployed persons}}{\text{Total active population (with or without jobs)}} \times 100$
Data required:
- Number of unemployed persons
- Total active population
Data sources: employment surveys, population censuses, household surveys</td></tr>
<tr><td></td><td colspan="2">Comments:
- The unemployment rate may be disaggregated by gender, age (e.g. unemployment rate among young people between 15 and 24 years), qualifications, fields of study, level of education, region, and area of residence.
- The unemployment rate is different from the unemployment ratio, which is expressed as the proportion of unemployed persons in the total population.
- The difficulty in calculating the unemployment rate lies in the definition of unemployed persons. The ILO definition does not take into account the quality of work. For example, a person who works at least one hour per week is considered as a worker. Persons who perform duties considered as "inappropriate" work for the qualifications they have acquired, are also considered as workers.
- Another difficulty, which specifically concerns African countries, is that the unemployed do not generally go to register in the relevant departments as job seekers.</td></tr>
<tr><td>Aggregate unemployment rate</td><td>Definition and purpose
This indicator is the ratio between unemployed persons, in the strict sense of the ILO definition, plus discouraged jobless persons, and the active population (occupied and non-occupied), where the non-occupied population is understood to include discouraged workers.</td><td>$\frac{\text{Number of unemployed persons + Number of discouraged unemployed persons}}{\text{Total active participation}} \times 100$
Data required:
- Number of unemployed persons
- Number of discouraged unemployed persons
- Total active population
Data sources: employment surveys, population censuses, household surveys</td></tr>
<tr><td></td><td colspan="2">Comments:
- The term "discouraged unemployed persons" designates jobless people who are able and willing to work but who, as they often are people of a certain age and that have been without employment for a long time (in the ILO sense of the term), decide to no longer make efforts to seek employment, either for personal reasons or owing to factors attendant to the situation on the labour market.</td></tr>
</table>

<table>
<tr><th>Indicator</th><th>Definition and purpose</th><th>Formula and data required</th></tr>
<tr><td>Long-term unemployment rate</td><td>Definition and purpose
The long-term unemployment rate measures the proportion of long-term unemployed persons among the entire active population.</td><td>$\frac{\text{Number of persons without jobs for at least 3 years}}{\text{Total active population}} \times 100$
Data required:
- Number of persons without jobs for at least 3 years
- Active population
Data sources: population censuses, household surveys, job placement or job seeking agency records, labour market observatory.</td></tr>
<tr><td>Incidence of the long-term unemployment rate</td><td>Definition and purpose
The incidence of long-term unemployment measures the gravity or depth of the situation caused by chronic unemployment</td><td>$\frac{\text{Number of persons unemployed for at least three years}}{\text{Total number of unemployed persons}} \times 100$
Data sources: population censuses, household surveys, job placement or job seeking agency records, labour market observatory.</td></tr>
<tr><td></td><td colspan="2">Comments:
- This indicator may be disaggregated by gender, level of qualification, age, education, and number of years of professional experience.
- The problem of identifying unemployed persons, presented above in relation to calculating the unemployment rate, comes up again for this indicator.</td></tr>
<tr><td>Percentage of the active population occupied, by sector of activity (formal and non-formal)</td><td>Definition and purpose
- This indicator gives the percentage of each sector of activity on the labour market.
- It is meant to enable us to see which sectors provide the highest number of jobs.</td><td>$\frac{\text{Number of economically active persons occupied in a given sector}}{\text{Number of economically active persons occupied}} \times 100$
Data required:
Number of economically active persons occupied in the various sectors of activity.
Data sources: population censuses, household surveys, records of job placement or job seeking agencies</td></tr>
<tr><td></td><td colspan="2">Comments:
- This indicator can be disaggregated also by the formal public sector and the formal private sector, as well as by the level of qualification attained by graduates or the type of education and training pursued (vocational or general).</td></tr>
<tr><td>The rate of tension or rate of attractiveness of supply*</td><td>Definition and purpose
- This indicator expresses the relation between the demand and supply of labour
- It is designed to show how many job applications are submitted when a vacancy announcement is published. It assesses the pressures of recruitment according to profession.</td><td>$\frac{\text{Number of applications for employment recorded in a year N}}{\text{Number of vacancies announced in the same year}} \times 100$
Data required:
- Number of job vacancies announced during year N
- Number of job applications submitted during year N
Data sources: specific labour market surveys, job placement office records, labour market observatory</td></tr>
<tr><td></td><td colspan="2">Comments:
- This indicator is especially relevant for the formal sector. The demand and supply of labour is not expressed in an explicit manner in the informal sector, and it is therefore difficult to obtain the necessary information in this regard.
- The indicator can be disaggregated by level of education attained.
- Demand for labour is not organized in a centralized manner. Therefore surveys need to be conducted in order to collect relevant data.
- The labour market is said to be tense where the rate of tension is lower than 1.5. In that case, there is tension in the recruitment process.</td></tr>
</table>

* Indicator published by the GFE (Groupe de Formation Emploi) which is under CREFOR (Centre de Recherche pour la Formation Professionnelle)

<table>
<tr><th>Indicator</th><th>Definition and purpose</th><th>Formula and data required</th></tr>
<tr><td rowspan="2">Renewal rate*</td><td>Definition and purpose
- This is the ratio between the number of economically active persons above 50 years of age who are in employment and the total number of active persons who are gainfully occupied.
- It expresses the potential number of persons who will be retiring in the next 10 years (from the date of the census) and thusthe potential labour demand trends in the coming decade.</td><td>Number of economically active persons in employment who are over 50 years of age in year N
——————————————— x 100
Number of economically active persons in employment in year N
Data required:
- Number of economically active persons above 50 years of age in year N
- Number of economically active persons in employment in year N
Data source: population censuses</td></tr>
<tr><td colspan="2">Comments:
- This indicator is a specific indicator for the formal sector.
- The indicator supposes that the situation in the labour market is stable.
- The indicator's major weakness is that it gives no information on those who leave work to go on retirement each year.
- The indicator is a structural indicator that supposes also that retirement is the reason for all departures from work. It fails to take into account the circumstantial constraints that may lead to dismissals, or massive recruitments, or any other reasons why cohorts may quit the world of work.</td></tr>
<tr><td rowspan="2">Replacement rate*</td><td>Definition and purpose
- The replacement rate expresses the number of economically active persons, aged less than 30 years, for every economically active person aged above 50 years.
- The purpose of this indicator is to assess the state of youth in the working population.</td><td>Number of economically active persons below 30 years in year N
——————————————— x 100
Number of economically active persons in employment over 50 years in year N
Data required:
- Number of economically active persons aged above 50 in year N
- Number of economically active persons aged above 30 in year N
Data sources: population censuses, labour market surveys</td></tr>
<tr><td colspan="2">Comments:
- This indicator is relevant specifically to the formal sector.
- Data from the census: given that it is impossible to conduct population censuses frequently, we are going to limit ourselves to data from projections, working from the assumption that the labour market structure is stable.</td></tr>
<tr><td rowspan="2">Employment opportunity rate*</td><td>Definition and purpose
- This is the ratio between the number of active persons employed and the number of graduates who leave the education system.
- The purpose is to express a theoretical period of renewal of a given population.</td><td>Number of active persons employed (stock of jobs) in a given period
——————————————— x 100
Annual flows of students, apprentices, trainees in the final year of education/training (who are potentially going to leave initial and continuous training)
Data required:
- Number of active persons employed during a given period
- Number of new graduates from the education system
Data sources: education system, population censuses</td></tr>
<tr><td colspan="2">Comments:
- This indicator is relevant specifically to the formal sector.
- In the event where an economy is stable (without growth in employment) and the age pyramid is harmonious, the average employment opportunity rate should be close to the number of years in a professional career (supposing that this age is equal to 30 years) [44]
- An employment opportunity rate < 30: shows that the training system has a high capacity to provide training.
- An employment opportunity rate > 30: shows that the system does not provide enough training to replace the economically active persons in employment.</td></tr>
</table>

* Indicator published by the GFE (Groupe de Formation Emploi), which is under CREFOR (Centre de Recherche pour la Formation Professionnelle)

[44] The retirement age is around 60 years in the majority of African countries and we suppose that the average age to get a job is 30 years. But this remains hypothetical and should be calculated with the data collected for the purposes of the study.