PARTICIPATION IN FORMAL TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING PROGRAMMES WORLDWIDE

An Initial Statistical Study

UNESCO UNEVOC
INTERNATIONAL CENTRE
for Technical and Vocational
Education and Training

UNESCO
INSTITUTE FOR STATISTICS

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UNESCO-UNEVOC INTERNATIONAL CENTRE FOR TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (UNESCO-UNEVOC)

UNESCO-UNEVOC is UNESCO's specialised centre for technical and vocational education and training (TVET).

From its location in Bonn, Germany, it serves UNESCO Member States worldwide to develop and strengthen TVET.

It mainly focuses on:

- Promoting best and innovative practices in TVET,
- Developing TVET systems,
- Improving access to TVET, and
- Assuring quality of TVET.

The UNESCO-UNEVOC International Centre focuses on meeting the needs of developing countries, countries in transition and those in a post-conflict situation, especially for youth, girls and women, and the disadvantaged.

The UNESCO-UNEVOC International Centre uses tools such as:

- Networking,
- Knowledge sharing and publications,
- Interagency collaboration and partnerships,
- Advisory services, and
- Training and human resources development.

The most prominent of its networks is the UNEVOC Network which consists of more than 250 specialised TVET institutions in over 150 countries worldwide.

UNESCO INSTITUTE FOR STATISTICS (UIS)

The UNESCO Institute for Statistics is the statistical office of UNESCO and is the UN depository for global statistics in the fields of education, science and technology, culture and communication.

The UIS was established in 1999. It was created to improve UNESCO's statistical programme and to develop and deliver the timely, accurate and policy-relevant statistics needed in today's increasingly complex and rapidly changing social, political and economic environments.

The UIS is based in Montreal, Canada.

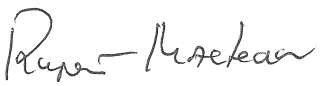
FOREWORD

There is a common perception that technical and vocational education and training (TVET) is diversifying and expanding in terms of its supply and demand. Practitioners and policymakers often believe that educational systems are offering a wider array of programmes at different levels and in various fields of study. They also assume that these programmes are attracting larger and more diverse populations.

Yet, there has been a shortage of comparable quantitative data and indicators on global TVET participation. There are several reasons for this void: lack of data for a vast number of countries; comparability issues; methodological difficulties in defining relevant indicators; and even the misrepresentation of TVET as being less relevant than other forms of education. Fortunately, comparable data are becoming increasingly available as these programmes become more visible and justly valued. This, in turn, fuels the debate over which indicators should be used to measure the perceived progress.

This report aims to stimulate an important process to fill the information gap. It provides basic information on the supply of these programmes and their demand as indicated by student participation. Nevertheless, it is important to note that measures of participation do not reflect the un-met demand in many countries. Indeed this is one of the study's main limitations. In addition, the reported data, which are provided to the UIS by education ministries or their equivalents, refer solely to formal education programmes. As a result, this study provides only a cross-sectional view: additional monitoring will be required to track trends over time.

We expect that this initial attempt at quantifying global participation in TVET will provide a starting point for fruitful discussion among policymakers and practitioners.



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LIST OF ACRONYMS

BEP	Brevet d'études professionnelles, France
BTS	Brevet de technicien supérieur, France
CLA	Classification of Learning Activities
CONALEP	Colegio Nacional de Educación Profesional Técnica, México
CVET	Continuing Vocational Education and Training
CVTS	Continuing Vocational Training Survey
EFG	Basic Vocational Training Courses, Denmark
FPR	Formazione Professionale Regionale, Italy
GCSE	General Certificate of Secondary Education, England
GDP	Gross Domestic Product
GED	*Global Education Digest* published by the UNESCO Institute for Statistics
GER	Gross Enrolment Ratio
GNVQ	General National Vocational Qualification, England
GPI	Gender Parity Index
HEIs	Higher Educations Institutions
IALS	International Adult Literacy Survey
ILO	International Labour Organization
INA	Instituto Nacional de Aprendizaje, Costa Rica
ISCED	International Standard Classification of Education
MDGs	Millennium Development Goals
NER	Net Enrolment Rate
OECD	Organisation for Economic Co-Operation and Development
OJT	On-the-Job Training
PTVE	Percentages of Technical/Vocational Enrolment
SENA	Servicio Nacional de Aprendizaje, Colombia
SENAI	Serviço Nacional de Aprendizagem Industrial, Brazil
SPM	Sijil Pelajaran, Malaysia
SPVM	Sijil Pelajaran Vokasional, Malaysia
TGPI	Transformed Gender Parity Index
TVET	Technical and Vocational Education and Training
UIS	UNESCO Institute for Statistics
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO-UNEVOC	UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training
UOE	UNESCO/OECD/Eurostat
UVT	Unemployed Vocational Training
VGER	Vocational Gross Enrolment Ratio
WEI	World Education Indicators

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* **Note:**

For Figures 2, 3, 5, 7, 9:

Thick black bars are medians.

Boxes' upper ends - 3rd quartile. Boxes' lower ends - 1st quartile. Boxes' heights - inter-quartile ranges.

Circles - outliers (between 1.5 and 3 inter-quartile ranges away from the box's upper end).

Stars - extreme cases (over 3 inter-quartile ranges away from the box's upper end).

For illustrative purposes some outliers and extreme cases have been labelled with their country names, but overlapping labels have been suppressed.

Signs (stars and circles) may also overlap whenever two or more countries have very similar values. For a particular country's value on an indicator, see statistical tables in this report.

For Figures 4, 6, 8, 10, 11, 12, 13, 14, 15, 16:

Labels provide some countries' approximate location in the chart, for illustrative purposes only. Not all countries are labelled, since overlapping labels have been suppressed. For a particular country's value on an indicator, see statistical tables in this report.

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1. INTRODUCTION

1.1 Background and rationale

Young people and adults increasingly recognise that vocational skills are needed for participation in the world of work. For governments, public technical and vocational education and training (TVET) is seen as essential for enhancing economic competitiveness and for contributing to social inclusion, poverty reduction and sustainable development. As well as responding to labour market trends, public TVET is expected to equip learners with basic skills and to support personal and social development. Employers are increasingly emphasising the need for new "soft" skills, such as communication, negotiation and team working, in addition to technical knowledge and ability.

The 2001 UNESCO and ILO Revised Recommendation concerning Technical and Vocational Education uses "technical and vocational education" as:

> "a comprehensive term referring to 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"[1].

The Revised Recommendation understands technical and vocational education as:

> "(a) an integral part of general education;
> (b) a means of preparing for occupational fields and for effective participation in the world of work;
> (c) an aspect of lifelong learning and a preparation for responsible citizenship;
> (d) an instrument for promoting environmentally-sound sustainable development;
> (e) a method of facilitating poverty alleviation."

It includes "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].

Such a comprehensive vision makes TVET qualitatively different from general education systems, which mainly consist of the familiar institutions of schools, colleges and universities, in which age and educational level correspond more closely than in TVET. This difference is most clearly reflected in the broad formulation of Education for All Goal 3 of the Dakar Framework for Action:

> "to ensure that the learning needs of all young people and adults are met through equitable access to appropriate learning and life skills programmes" [3].

Whilst a holistic vision of TVET is welcome, and it is consistent with the lifelong learning agenda, this vision presents both conceptual and administrative challenges to education planners, and statisticians in particular, when it comes to monitoring progress. As demonstrated above, TVET is complex and multifaceted. Unlike general education, TVET is not organised as a "system" per se. In most countries there are a wide range of TVET institutions including state, non-governmental and private providers, each with differing interests, administrative structures and traditions. Public formal TVET often overlaps awkwardly with the school and tertiary education systems, and Ministries of Education often share responsibility for TVET policy with Ministries of Labour and/or Employment among others. [4]

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1 UNESCO and ILO, 2002
2 Ibid
3 UNESCO, 2000
4 Holmes, 2003, p. 2

At the national level, many countries are now establishing bodies to coordinate TVET planning based on analysis of statistical data and projections which take account of labour market trends and to ensure complementarities between education and employment policies. Even so, national statistics on access to TVET are often not available, and even when they are, their quality is variable. Furthermore, whilst these data may meet some national information needs, they can rarely be used for cross-national comparisons. Despite growing international recognition of the importance of skills for development, it is difficult to get a global picture of the current situation.

Together, UNESCO-UNEVOC and the UNESCO Institute for Statistics (UIS) have responded to the paucity of TVET data available on a global basis through the production of this report. The lack of reliable global information on TVET and an increasing interest by policymakers and donors in international and comparative studies of TVET have provided the impetus for this survey of formal TVET in the world.

1.2 Scope of the report

This report is intended as a first step in addressing this gap in knowledge and as an initial exploration of how TVET data might best be used. As for any new research, the preparation of this report has been a learning experience. It is part of ongoing efforts by UNESCO to strengthen its capacity, and the capacity of its Member States, for the collection and analysis of TVET data.

The report is to be read primarily as an initial survey of the available data. It is not a comprehensive description of what is actually going on "out there". Indeed, the report stresses the gaps in data, the reliance on estimates and the shortcomings of applying conventional educational indicators in the TVET arena. This report is therefore a modest first step in using statistics on access to formal TVET and exploring their potential to better inform policy at national and international levels.

As the survey points out, data on non-formal and informal TVET are not readily available. Indeed, participation in these activities is difficult to quantify in the normal ways. What does exist for many countries are data on enrolments in public general and vocational education programmes, disaggregated by ISCED level, age and gender. Whilst recognising that enrolment in formal TVET programmes is only a small percentage of overall participation in TVET (especially in developing countries), the scope of this survey is limited to formal TVET.

This report addresses three main questions:

1. What statistical data currently exist on formal TVET in the world?
2. What are the potential benefits and limitations of statistical analyses of existing data?
3. What are the next steps towards the improvement of TVET data collection and analysis?

At the outset, the challenges of global monitoring in the field of TVET are discussed. There is not only an absence of data in many countries, but the boundaries between TVET and general education differ from place to place. Statistical indicators developed for general education assume a far closer correspondence between age and education than exists in TVET, which not only takes place prior to entry to the labour market but includes deferred initial training, updating, upgrading and retraining. This therefore presents the long-term methodological challenge of developing new indicators that encompass public and private formal, non-formal and informal TVET.

1.3 Structure of the report

This report is organised according to the following structure. It begins with a discussion of the challenges of monitoring TVET on a global basis and introduces the main sources of data and organisations involved in its collection and analysis. Some trends and issues across the world are discussed to highlight some tenden-

cies within the various levels of TVET, including the massification of upper secondary TVET. The reform of apprenticeships and measures to enhance parity of esteem between TVET and general education are also discussed.

A section on regional diversity gives particular attention to trends and issues in TVET in sub-Saharan Africa, based on a review of recent literature and available data. The question of the place of vocational education within education systems as a whole remains a matter of scholarly debate.

The next section offers a statistical overview of formal TVET enrolments across ISCED levels from a global perspective and some regional patterns emerging from the data are discussed. Enrolments in TVET at the secondary and post-secondary levels are also discussed using Vocational Gross Enrolment Ratios (VGER). Limitations of VGERs are described and it is argued that they should be complemented by another measure, the "Percentage of Technical/Vocational Enrolment". This is plotted against GDP per capita and against the Gross Enrolment Ratio in upper secondary education to test hypotheses concerning the relationship between the two. Whilst the findings are not conclusive, this exercise illustrates how the availability of TVET data enables possible associations of this kind to be explored. Similarly, the Percentage of Technical/Vocational Enrolment is plotted against the respective Gender Parity Indices to provide a visual representation of a possible association. In this case, the relationship between gender and TVET is shown to be complex and likely to vary considerably across regions and countries.

1.4 The contribution of this report

The most valuable part of the report is the presentation of the statistical tables. These tables provide the clearest picture yet of what national-level data currently exist to describe access to formal TVET programmes by level, age and gender. Despite the shortcomings in the coverage, reliability and comparability of these data, this report is nevertheless one of the most comprehensive statistical analyses to date of enrolment in formal TVET in the world.

This report demonstrates how taking a statistical perspective towards TVET can provide helpful descriptions and analysis. It has also shown how data collection and analysis can reveal complexities which point to the need for more attention to methodological work and the development of more appropriate indicators for TVET. Indeed, the conclusions of the report give a clear indication of what needs to be done. Whilst statistics are important, they may not reveal significant differences between countries in the way that TVET is organised and managed. Relationships between variables can often be better understood when statistics are complemented with qualitative narratives that can put "flesh on the bones" by illuminating historical, cultural and contextual factors.

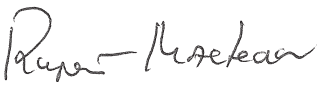
As this report shows, the use of statistical data can reveal some of the distinctive features of TVET. It also shows how TVET statistics can be approached in a critical way, which can assist in the development of more relevant and appropriate indicators and analytical tools. It is hoped that this report will stimulate dialogue with UNEVOC Centres on the potential and limitations of statistics in TVET. Support from UNEVOC Centres can help to improve the supply and coverage of statistical data, both geographically and in terms of levels and types of TVET. They also have a key role to play in improving the quality, reliability and comparability of TVET data. UNEVOC Centres can also help to ensure that TVET is included in national and international reports on education. By looking at TVET from a research perspective, UNEVOC Centres have much to offer this emerging field of enquiry.

Not only is the report's focus limited to formal TVET, it is also restricted to issues of access and participation in it. The survey does not comment upon such factors as the quality of TVET, the internal efficiency of providers, the relevance of programmes and the contribution that TVET makes to individuals, or indeed what it contributes to wider development objectives. These dimensions are clearly important and suggest a rewarding future agenda for TVET research.

Quality, for example, is now recognised as an integral part of Education for All, and the 2004 Bonn Declaration on "Learning for Work, Citizenship and Sustainability" notably states that TVET can "help improve the quality of life for all and help achieve sustainable development" [5]. As the lead agency for the United Nations Decade for Education for Sustainable Development, UNESCO has a crucial role to play, through its Institutes and Centres, in strengthening the capacity of Member States to analyse the relationship between TVET and sustainable development.

Monitoring progress towards Dakar EFA Goal 3 is also an important challenge that will require concerted efforts and coordination between relevant authorities in coming years. At the heart of the monitoring challenge appears to be the emphasis on outcomes rather than inputs within definitions of TVET. This underlies the need for more appropriate qualitative and quantitative indicators that recognise contextual differences on one hand while enabling international comparisons on the other.

As the so-called "knowledge economy" gives rise to new occupations, especially in service industries, a more integrated approach to education, training and employment is emerging in many countries. With increased convergence between TVET and general education and growing attention to "skills development" and "lifelong learning", TVET itself is changing. Indeed, with the shift in focus from teaching to learning, education and training are becoming inseparable. In the medium to long term, it will be necessary to ensure that indicators in both TVET and general education keep pace with such developments, while permitting meaningful comparisons to be made over both time and space. This initial survey makes an important contribution.



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[5] UNEVOC, 2004

2. THE CHALLENGES OF TVET GLOBAL MONITORING*

Global statistical monitoring of TVET is faced with several particular challenges:

- Improving coverage by ensuring that all forms of TVET are included: education and training; formal education, non-formal education and informal learning; public and private sector or community provision.
- Distinguishing TVET from other types of education, such as general and pre-vocational education; or adult education. A related challenge would be clarifying sponsorship of TVET programmes by Ministry, public or private provision, etc.
- Classifying TVET programmes by ISCED level and type of subsequent education or destination.
- Counting enrolments in these programmes, while dealing with the issue of part-time and short courses in order to avoid double counting of those taking several part-time courses simultaneously or several short courses back to back in the same year.
- Developing indicators (such as Gross Enrolment Ratios and Net Enrolment Rates) or other appropriate indicators for monitoring participation in TVET.

The following sections will assess our readiness to face each of these challenges in the current stage of development of TVET monitoring.

2.1 Education and training (UNESCO/ILO)

Technical and Vocational Education and Training is a central item on the agendas of both UNESCO and ILO. "UNESCO's concern is centred on technical and vocational education, which the Organization considers an integral part of the global Education for All initiative. The ILO focuses on training for employment, decent work and the welfare of workers, in the context of the Global Employment Agenda. However, the two Organizations are aware that education and training are rapidly becoming inseparable, especially as the notion of a job for life is being replaced by the necessity for lifelong learning."[6]

A clear-cut division between the two concepts is hard to establish: "Education cannot be separated from training. Basic and secondary education is the foundation on which an effective vocational education and training system should be built. Good quality basic education and initial training, availability of adult and second chance education, together with a learning culture, ensure high levels of participation in continuous education and training."[7] Recent trends seem to blur this distinction even further: "Some countries have introduced TVET reforms that endeavour to integrate workplace-based learning and training into the vocational education curriculum."[8]

In practice, the educational component of TVET is obviously the one closer to the formal education system, while the training component is more closely linked to the labour market. Still, there is a thin line between education and training, made even thinner by such diverse examples as the German dual system, England's modern apprenticeships or the Botswana Brigades. Consistent with its aforementioned focus, UNESCO mainly collects data on the formal education component of TVET, which are the data presented in this report.

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* This report was written by Manuel Cardoso of the UIS, under the direction of José Pessoa and Simon Ellis. Chapter 3 was extracted from a report written for the UIS by Andy Green, Moses Oketch and John Preston from the Institute of Education at the University of London. That commissioned report was also the source for some ideas that were used in other chapters. The author would like to thank Rupert Maclean, David Wilson and Keith Holmes for their comments and suggestions, as well as Michael Bruneforth, Alison Kennedy and the Survey Operations team at the UIS for their support.

6 UNESCO/ILO, 2002, p. 3

7 Ibid, p.57

8 Ibid, p. 2

2.2 Formal, non-formal or informal TVET?

The distinction between formal, non-formal and informal learning is also a matter of much debate. In the past this distinction would be applied to education, but the current trend calls for a wider look at "learning activities", many of which occur outside the realm of educational institutions.

Table 1 shows the perspectives of three recent sources on the issue, revealing that, despite minor variations, there is a fundamental consensus in defining formal education as the type of learning activity that takes place within traditional education centres. Eurostat's definition in the Classification of Learning Activities (CLA) includes two aspects that may seem obvious but will be essential to us: the "ladder", that is, the idea that one formal education level leads to the next; and the idea of the "dual system", meaning that formal education can also partially happen in the workplace. The data presented in this report refer only to formal education.

Table 1: An overview of different conceptions of "formal", "non-formal" and "informal", as applied to education and learning

	Formal Education	Non-Formal Education	Informal Learning
Green, Oketch, Preston, November 2004	" 'organised' and 'intentional' learning whose outcomes are accredited"	"results from organised activities within or outside the workplace which involve significant learning which is not accredited"	"that which occurs 'unintentionally' or as a by-product of other activities. OECD (2003) Beyond Rhetoric: Adult Learning Policies and Practise, 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." See below.
Tight, 2002	"Formal education 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 accumulates 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 of five to seven and continuing up to 20 or 25 years old. In some countries, the upper parts of this "ladder" are organised programmes of joint part-time 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.'* "

2.3 General, pre-vocational or vocational TVET?

The distinction between (a) general; (b) pre-vocational and pre-technical; and (c) vocational and technical education is well-established in theory, but in practice, its application may become ambiguous. These categories are defined in ISCED 1997 under the "programme orientation" label, but the UNESCO Institute for Statistics has partially redefined the first two categories by introducing minor changes that are shown in Table 2.

It is often unclear whether pre-vocational and pre-technical enrolment should be counted towards general or vocational and technical enrolment (it is even possible that the very concept of pre-vocational and pre-technical education is not universally understood among practitioners and data providers). Different international sources have different standards in this regard: the UNESCO/OECD/Eurostat (UOE) and the World Education Indicators (WEI) data collection[9] procedures include pre-vocational under the general education label; it is not entirely clear how this distinction is handled in other countries. This hampers comparisons between developed and developing countries; as well as between middle-income and the least-developed countries. It is possible that pre-vocational programmes are infrequent in developing countries, but actual data on this cannot be produced at this point.

This problem is likely to worsen as, at least in developed countries, vocational and technical education is becoming less occupationally-specific and increasingly subdivided into stages: "the divide between academic and vocational training is becoming more blurred. The practitioners we train require not only skills that are immediately applicable to work, but also a knowledge base that will enable them to adapt as products and production methods change."[10] (In addition, many nations have differentiated TVET upwards to higher levels of their educational systems.)

Counting pre-vocational enrolment together with general programmes is not the best alternative if we intend to forecast flows through the education systems. The ideal would be, of course, to have pre-vocational programme enrolment as an entirely separate item, but if we take into account that these totals are usually accompanied by gender and age breakdowns, countries may be unwilling to introduce a third category, which in the pertinent levels would increase substantially the level of data disaggregation. Faced with the choice of counting pre-vocational with either vocational or general, it seems clear that the former option would allow for better forecasting of future vocational enrolments.

[9] These two data collection operations include mostly OECD and European Union countries, as well as the 19 middle-income countries of the World Education Indicators project.

[10] Hernes, 2004, p. 2

Table 2: Definitions of programme orientations according to ISCED and the UIS

ISCED	UIS
GENERAL	
Similarities	
• Designed mainly to lead pupils to a deeper understanding of a subject or group of subjects, especially, but not necessarily, with a view to preparing pupils for further education at the same or a higher level. • Typically school-based.	
Differences regarding labour market-relevant qualifications	
• Successful completion of these programmes may or may not provide participants with a labour market-relevant qualification at this level.	• They do not typically allow successful completers to enter a particular occupation or trade or class of occupations or trades without further training.
Other differences	
• Programmes with a general orientation and not focusing on a particular specialisation should be classified in this category.	• Successful completion of these programmes may or may not lead to an academic qualification. • May or may not contain vocational elements. • General education has a technical or vocational content of less than 25%, but pre-technical/pre-vocational programmes (i.e. programmes with a technical/vocational content of more than 25% that do not lead to a labour market-relevant vocational or technical qualification) are typically reported with general programmes.
PRE-VOCATIONAL	
Similarities	
• Mainly designed to introduce participants to the world of work and to prepare them for entry into vocational or technical education programmes. • Successful completion of such programmes does not yet lead to a labour market-relevant vocational or technical qualification. • For a programme to be considered as pre-vocational or pre-technical education, at least 25% of its content has to be vocational or technical.	
Differences	
• This minimum is necessary to ensure that the vocational subject or the technical subject is not only one among many others.	
VOCATIONAL	
• Designed mainly to lead pupils to acquire the practical skills, know-how and understanding necessary for employment in a particular occupation or trade (or class of occupations or trades). • Successful completion of such programmes normally leads to a labour-market relevant vocational qualification recognized by the competent authorities (e.g. Ministry of Education, employers' associations, etc.) in the country in which it is obtained.	

2.4 Measurement problems

This section outlines some of the major measurement problems faced when collecting data and developing indicators for TVET.

2.4.1 Adult population in TVET

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. Moreover, many TVET programmes effectively started to attract this population by specifically designing programmes that are tailored to their needs: part-time programmes that do not force them to leave their jobs; short programmes focusing on skills needed in particular trades and new occupations; etc. (e.g. *Post-Diploma Programmes* in community and technical colleges).

This poses two kinds of problems. First, international organizations have in theory chosen to separate adult education programmes from the rest and face definitional problems with *continuing education*; but the question remains as to how this should be done in practice. Second, there may be discrepancies in the treatment of these data; that is to say, different sources of data deal with this issue differently, which introduces systematic biases:

> "ISCED does not classify education programmes by participants' age. For example, any programme with a content equivalent to primary education, or ISCED 1, may be classed as ISCED 1 even if provided to adults. However, the guidance provided by the UIS for respondents to the regular annual education survey requests countries to exclude 'data on programmes designed for people beyond regular school age'. The guidance for UOE and WEI questionnaires states that 'activities classified as "continuing", "adult" or "non-formal" education should be included' if they 'involve studies with subject content similar to regular educational programmes' or if 'the underlying programmes lead to similar potential qualifications' as do the regular programmes.
>
> As a result of these distinctions, data from WEI countries and countries completing the UOE questionnaires, particularly concerning secondary education, may include programmes for older students. Despite instructions, data from countries in the regular UIS survey may also include pupils who are substantially above the official age for basic education." [11]

The reader should bear this problem in mind because it will have direct consequences on some of the analyses presented here, raising question about cross-regional comparability. However, this situation is about to change for the better: UOE has introduced a modification in its data collection procedures that will facilitate netting out adult education programmes. Consequently, the differences between UOE and UIS procedures will be significantly reduced.

In the long run, nevertheless, the next ISCED reform should include this issue as part of its agenda.

2.4.2 The complexities of applying ISCED to TVET

Vocational programmes are often harder to classify by ISCED[12] levels than general programmes, due to their greater heterogeneity, shorter average duration and higher specificity. Due to their comparatively low enrolment and lack of parity of esteem, they are usually not regarded as part of the mainstream and, as a result, some of the student "flows" from and to other educational programmes (be they vocational, pre-vocational or general) are not as clearly established as between general programmes. As a result, they may be misclassified, and later reclassified. Several countries have recently reclassified programmes from ISCED 3 or 5B to level 4,

[11] UNESCO, 2004b, p. 248-9

[12] The International Standard Classification of Education (1997) will be explained in detail at the beginning of Chapter 3.

as they become more aware of this level's intended profile. Obviously, even though the end result may be more accurate, these modifications work to the detriment of national time series analyses, because it is sometimes difficult to reassign enrolments for previous years. Moreover, this also hinders regional comparisons because each country tends to react to these "trends" at its own pace.

Also, the occasional mismatches between international and national classification systems have led to the emergence of what might be called ISCED "mixed" programmes: a particularly illustrative example of this situation is a Russian Federation programme that has recently been reclassified as 3B+5B, meaning that students in the programme's first two years 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 community or technical college.

An additional complexity is the combination of programme orientations (general; pre-vocational or pre-technical; and vocational or technical) and types of subsequent education or destination. Type A programmes are on a pathway that leads directly to tertiary education, whilst Type C programmes usually lead to the labour market and Type B programmes may lead either to the labour market or to tertiary education, depending on level.

The "programme orientation" criterion is used at levels 2 through 4, but not at level 5. As a result, we are faced with a dilemma: if the "vocational", "general" and "pre-vocational" categories do not apply to ISCED 5, does that mean that tertiary education is uniformly general? Clearly, that is not the case. Many programmes at this level are described as "technical" or "vocational" by the national educational authorities themselves, as well as by the UOE data collection manual. 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.

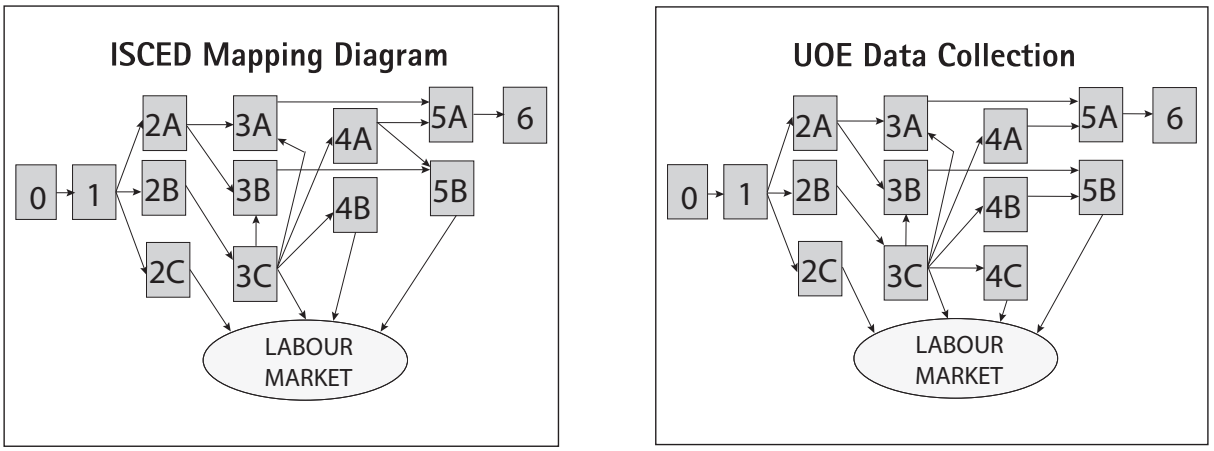
At levels 2 through 4, vocational education is defined (as opposed to general education) as the kind that leads "to a labour market-relevant qualification". At the tertiary level, though, the distinction between "general" and "vocational" becomes blurred because tertiary programmes tend to be specialised regardless of whether their contents are theoretical or practical, academic or technical; therefore, it is difficult to think of tertiary education as "general". Furthermore, even academic-oriented programmes lead to labour market qualifications at the end of tertiary education.

Despite these difficulties, acknowledging TVET's undeniable presence at the tertiary level is a necessary step towards achieving parity of esteem with general education. Therefore, throughout this report we will present data on ISCED 5B programmes, without assuming that they are vocational, in order to emphasise this presence, even though current classification systems do not identify it in a precise way.

Finally, the "type of subsequent destination" criterion is applied at levels 2 through 5, but not in the same way throughout (see **Figure 1**):

- At ISCED levels 2 and 3, there are three types: A, B and C.
- At level 4, there are only two ISCED types: 4A and 4B. However, the UOE data collection subdivides ISCED 4A (which provides entry to ISCED 5) in two types, calling them "4A" (which provides entry to ISCED 5A) and "4B" (which provides entry to ISCED 5B), while labelling ISCED 4B (designed for direct labour market entry) as "4C".
- At ISCED level 5, there are also only two types, 5A (which provides entry to ISCED 6) and 5B, which are not modified by UOE data collection.

Figure 1: ISCED mapping diagram showing levels and destinations, and UOE's modified version



In summary, the fact that ISCED uses different criteria or categories to subdivide each level seems to have less impact on the analysis of general education than on Technical and Vocational Education and Training, which should be another central focus of a future ISCED reform. Indeed, this discussion may address ISCED as a whole as much as the place of TVET within the classification.

2.4.3 Part-time and short courses

Part-time courses, as well as courses that last for less than one year, tend to be more a feature of TVET than general education. As a result, the gap between the outcomes of "headcounts" and "full-time equivalent" approaches is much wider in the former case, which makes the decision to use one or the other much more critical.

The headcount approach has two main advantages: its simplicity and the fact that it gives a straightforward measure of impact in terms of students "reached" by the education system in a given year. On the other hand, it can lead to a certain amount of double counting, for instance, two apparently different students in two consecutive semester-long courses might turn out to be the same person.

The full-time equivalent approach produces a more refined outcome that may be better integrated into a cost-benefit analysis. However, as we will see below, finance data are often unavailable for TVET programmes; without the cost side of the equation the benefit side becomes less relevant for this particular purpose.

All enrolment figures presented in this report have been calculated by using the headcount approach. This might be one of the reasons why some countries that offer a wide range of part-time and semester-long courses (e.g. Australia) appear to have the highest levels of TVET participation, part of which could be due to double counting. This undoubtedly constitutes a drawback that in the future should be overcome by addressing the challenge of applying the full-time equivalent, which would become much more useful if separate finance data were also available. (Another available measure is the Pupil-Hour approach that quantifies the delivery of TVET and can be used to track expenditures as well.)

2.4.4 Why the standard tools may not work

Many of the tools that tend to be commonplace in describing the reach and assessing the impact of educational programmes seem to be less appropriate in the case of technical and vocational education and training. The following sections review some of the most commonly-used educational indicators and explain why some cannot be used for the moment for TVET global monitoring, or why some others should be used in a very cautious way.

2.4.4.1 Gross Enrolment Ratios and Net Enrolment Rates

The Gross Enrolment Ratio (GER) is defined as the "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."[13] Meanwhile, the Net Enrolment Rate (NER) is defined as the "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."[14]

The theoretical age group is critical in order to calculate both indicators: for a given ISCED level this is in theory determined by the general programme with the highest level of enrolment. Typically there are no other general programmes at the same level, or they tend to be much smaller than the main one. Thus, determining the denominator for enrolment ratios and rates is relatively straightforward in the case of general programmes, and the resulting figure is by and large consistent with the typical ages of a programme that represents, if not all, at least an important share of the enrolment.

This is not the case with TVET, where heterogeneity is the norm: usually several programmes with different theoretical school-age groups coexist at the same level, each of them having a relatively small share of the total vocational enrolment. As a result, the theoretical age group for a given level is unlikely to be defined by vocational programmes even if the sum of their enrolments were higher than those of the most popular general programme. Moreover, theoretical age groups for vocational programmes are often ambiguously or broadly defined: the "typical" starting age for many of these programmes is often, rather than an individual age, a range that can be as wide as 25 years. [15] Therefore, depending on whether the theoretical age group for the (usually general) programme that defines the level is narrower or wider than the vocational programme's, its Gross Enrolment Ratio will be respectively overestimated or underestimated.

Also, TVET enrolments by age are not available as often as their general education counterparts. Even when available, they are more likely to include ages that fall outside the range defined in the questionnaires (for instance, more than 24 years for secondary education). Furthermore, TVET enrolment is not reported by age and grade, which in the case of general education is frequently used for consistency analysis. Consequently, the numerator of the Net Enrolment Rate is, to some extent, more likely to include missing data or inaccuracies for TVET than for general education. Therefore, Net Enrolment Rates have not been calculated for this report.

On the other hand, despite the problems with the theoretical age groups, Gross Enrolment Ratios have been calculated for TVET at all the relevant ISCED levels. Even though these measures should be treated with caution for all of the abovementioned reasons, they are probably the most basic indicator currently available that can be used to compare TVET participation in countries with populations of widely varying sizes, therefore becoming indispensable for our purposes.

2.4.4.2 Measures of progression and completion

Measures of TVET completion, such as graduation rates, are sometimes of little relevance because of the immense variety of programmes of different durations: a country may have, at the same ISCED level, several TVET programmes with durations ranging from six months to four years, and all of these programmes may lead to a certificate.

The most usual measures of progression (such as survival to a given grade or repetition) are either unfeasible or irrelevant (or both):

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[13] UIS, 2006, p. 183

[14] Ibid p. 183

[15] Prior Learning Assessment and Recognition (PLAR) mechanisms may enable different starting ages and different entry levels in TVET, making it even more flexible.

- Survival to a given grade cannot be calculated simply because TVET enrolments are not available by grade.
- Repetition seems to be less frequent in TVET than in general education; in some programmes it may even be inapplicable, or at least avoided whenever possible. Some TVET programmes target students who repeated one or more grades in general education and are regarded as prone to dropping out as a result.

Therefore, no measures of completion or progression are presented in this report.

2.4.4.3 Transition

Transition rates (e.g. from primary to secondary education) cannot be calculated because technical and vocational programmes are sometimes "terminal" in the sense that they prepare the student to leave the education system and enter the labour market. Nevertheless, we should not identify vocational with terminal: it would be incorrect to classify a programme as vocational just because it its terminal, or vice versa; classification should be based, among other criteria, on programme content. Yet, current trends suggest that articulation between formerly-terminal programmes and continuing education may erode this distinction in future.

In addition, transition rates are most often calculated for the passage from primary to secondary education, and TVET programmes as such do not exist at the primary level. Consequently, no transition rates will be provided here.

2.4.4.4 Finance

In most cases, it is extremely difficult to distinguish the resources devoted to TVET from those allocated to general education. This is particularly hard to achieve when the same educational institutions are responsible for offering general and vocational programmes, which is the case in many countries at several ISCED levels. Also, TVET may obtain resources from the private sector, sometimes in informal ways (such as equipment donations). Employers' levy (taxes on payrolls) is another quasi-governmental source of public formal TVET financing.

The future availability of disaggregated finance data should be a priority, since TVET has a reputation for being very expensive (owing to the necessary consumable materials, expensive equipment, equipment and facility maintenance obligations, and perceived low pupil-teacher ratios), a notion that has recently been challenged by several authors writing on the subject.

2.4.4.5 Outputs and outcomes

The achievement of TVET's expected outputs is hard to measure for a number of reasons, including: they tend to be practical skills that may be hard to measure by using standardised tools; and programmes are extremely heterogeneous both between and within countries, as are the skills they develop.

However, students attending vocational streams are usually included in international assessment programmes, such as the Programme for International Student Assessment (PISA). This has been a source of much controversy, among other reasons because these assessments focus on general rather than vocational skills. Not surprisingly, given the aforementioned difficulties, no large-scale attempts have been made yet to assess the development of vocational skills on a comparative, cross-national basis. Here, guidance can be obtained by examining two- or three-country comparative studies of TVET.

The measurement of TVET outcomes also poses a problem. For instance, when programmes seek to improve labour market access, data on their success rate are usually not accessible to the education system, and in many cases, especially in developing countries, they are not collected at all. Paradoxically, when graduates' employment data are available, TVET outcomes are easier to measure than those of general education, which are

often less clearly defined. However, when we regard employment as a consequence of training, the timeframe issue becomes critical: in some cases, people are hired before they are trained (employers expect employees to get training and hire them on that condition); in the opposite situation, several months can elapse before a graduate finds a job. Therefore, assessments of TVET outcomes, in terms of its impact on employment, should be carefully designed. Surrogate indicators are available from "tracer studies."

To sum up, there are several difficulties and limitations in the work with TVET data that, rather than lead us to inaction, should prompt creative data treatment and analysis, together with caution in drawing conclusions.

3. TYPES AND LEVELS OF TVET PROVISION

3.1 Defining TVET

Technical and vocational education and training (TVET) refers to a range of learning experiences which are relevant to the world of work and which may occur in a variety of learning contexts, including educational institutions and the workplace. It includes learning designed to develop the skills for practising particular occupations, as well as learning designed to prepare for entry or re-entry into the world of work in general. In both cases the learning may be intended to lead to direct labour market entry or to act as a foundation for entry into further education and training for specific occupations. TVET includes both initial vocational training undertaken by young people prior to entering the labour market and continuing vocational training undertaken by adults whilst in work or during periods when they are economically inactive. In other words, it encompasses both initial skills development and various forms of "re-skilling" and "up-skilling". Training for the unemployed is sometimes considered as a separate category and designated "Unemployed Vocational Training" (UVT).[16]

Most TVET data available is on "formal learning" – i.e. "organised" learning whose outcomes are accredited. However, TVET also encompasses "non-formal learning" and "informal learning". Non-formal learning results form organised activities within or outside the workplace which involve significant learning which is not accredited. Informal learning is less organised and less structured, and usually occurs outside educational institutions.[17] Much of what is often referred to as work-based training, and particularly on-the-job training (OJT), is either non-formal or informal in character and constitutes a large part of the vocational learning that occurs in most societies. Increasingly, informal learning is being accessed through websites, documents and discussion groups accessed through the internet.

By definition, TVET thus covers a diverse spectrum of learning activities that are hard to capture in any single classification. Although some efforts have been made to categorise types of non-formal and informal learning, particularly in relation to forms of on-the-job training,[18] the full range of these learning types are clearly beyond comprehensive categorisation. However formal TVET, and OJT which includes periods of formal TVET, can be – within limits – classified into different types. Classification can be made, *inter alia*, by mode of learning (whether full-time, part-time or block/day release and whether in the classroom or by distance learning, etc.); by type of provider (i.e. school, college, institution of higher education, training centre, community centre, enterprise, etc.); by level; by content type or programme orientation; and by the intended destinations of learners. New classifications of learning activities are currently being developed for the EU Adult Education Survey and these will complement ISCED classifications.

Different forms of TVET are traditionally described with reference to the types of institutions that provide them and, which is often related, to the mode of study involved. Thus at the initial level of TVET, which in most countries follows compulsory schooling, it is common to distinguish between school- or college-based vocational education and training and work-based vocational training.[19]

College- or school-based provision (i.e. *l'ecole des ponts et chauseés* in the 18th century and the trade school in the 19th century as early examples[20]) frequently involves a combination of general educational study in core subjects (such as Maths and Languages); study of the theoretical foundation of the occupation for which training is provided; and the development of practical competences for occupational proficiency. Such

16 Green, Hodgson, and Sakamoto, 2000

17 OECD, 2003. New classifications of learning activities have just been developed for the EU Adult Education Survey and these form a good companion to ISCED definitions for informal and non-formal learning, especially for the developed world.

18 See: Ashton and Green, 1996; Ashton, Green, James, and Sung, 1999; Brown, Green and Lauder, 2001; Crouch, Finegold and Sako, 1999; Koike and Inoki, 1990

19 See: OECD, 1985

20 Green, 1995

courses are often an integral part of upper secondary education. They tend to be provided in graded sequences corresponding to levels in upper secondary general education and sometimes involve general education requirements shared in common with the more academic courses. These programmes are sometimes certificated through a common framework of examinations, as with the general, technical and vocational systems of *baccalauréat* qualifications in France.[21] The provider institutions are most usually monotechnic in nature (i.e. agricultural or horticultural schools in many countries) or they cater to a range of occupations within a particular sector (i.e. vocational high schools for construction or engineering in the Republic of Korea). However, in some cases school- and college-based initial vocational training occurs either in general purpose vocational institutions or in comprehensive or integrated upper secondary institutions. England provides a large part of its initial vocational training in general purpose Further Education Colleges.

In other countries, initial vocational training programmes are offered alongside general upper secondary courses in combined institutions, such as the *lycées polyvalents* in some areas of France or the integrated high schools (*sogo gakko*) in certain districts in Japan.[22] Contrary to trends in Europe, Sweden has a complete system of integrated general and vocational high school (*gymnasieskola*).[23] Vocational provision in upper secondary vocational schools and colleges tends to be workshop- and classroom-based, sometimes interspersed with periods of on-the-job work experience in enterprises. Such institutions may also offer parts of their courses by distance learning or correspondence.

Work-based initial vocational training refers mainly to apprentice training where young people are employed on recognised training contracts which include the provision of specified forms of occupational training and a trainee wage. This will often be on a Dual System basis, as in Austria, Germany and Switzerland, where trainees combine supervised on-the-job and off-the-job training in the workplace with periods of study in public vocational colleges or apprentice centres organised on a day release or block release basis.[24] The latter will typically include study of both general subjects and vocational theory. In many countries, however, where apprenticeship systems are less organised and regulated, apprentices will not have formal agreements with their employers to receive training at work and will make more *ad hoc* provision for themselves as regards gaining school-based theoretical knowledge. In recent years, a number of countries – such as Denmark – have experimented with more hybrid kinds of apprenticeship systems where, for instance, a public agency takes responsibility for finding the employment placements and for monitoring the apprentice contract. In Denmark the organising authority is the vocational college and in England, with the so-called Modern Apprenticeship, it is the local Learning and Skills Council.[25] The SENAI model in Brazil has been in operation since 1941, under the aegis of the Federation of Brazilian Industries.

The nature of initial work-based training varies substantially across countries in the degree to which it is organised and regulated, in the level of training and proficiency of the instructors, and in the status attached to the qualifications, if any, which can be gained through participation in it. It should also be noted that formalised apprenticeship systems are on the whole rather less extensive in countries in Asia and Africa than they are in northern Europe.

Initial vocation education and training is, of course, also provided at a higher level in a range of public and private higher education institutions (HEIs) in most countries. Preparation for the so-called "high skills" professions is often offered in general universities, and most countries also have a range vocational universities and polytechnics with professional-level vocational preparation. In addition, training for certain occupations may occur in specialised institutions - as with schools of nursing, which may be outside the mainstream university structure. TVET at this level will normally involve a preponderance of general and more theoretical study in the first stage, which may be complemented by occupationally-specific skills development in post-graduate courses or professional training programmes, as typically in some countries with training for professions such as Medicine, Law, Architecture and Engineering.

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21 Green, 1998

22 Green, 2000a

23 Boucher, 1982

24 Brown, Green and Lauder, 2001; Crouch, Finegold and Sako, 1999

25 Green, 2000b

Continuing Vocational Education and Training (CVET) provision for adults in the labour market is highly diverse in most countries and often less regulated than TVET provision at the initial level. It can be designed to serve four major purposes - deferred initial training, updating, upgrading and retraining.[26] Much CVET is probably provided by private employers in many countries, although the data in this area are often so incomplete that we cannot be sure of the exact proportions of training which are provided or funded respectively by the state, the enterprise or individuals. Many countries will have a mix of provision, such as: government-funded skills centres for upskilling and re-skilling adult workers (including for the unemployed and those in risk of losing their jobs); private training institutions for acquisition of skills and qualifications in specific occupational areas (as with the pervasive business, commercial and I.T.-related schools); and also more- or less-organised programmes of continuing training in enterprises. Community and technical colleges in the United States have entered this "market" with the provision of *Post-Diploma programmes* that enrol both diploma and B.A.-holders.

Eurostat conducts research on training in large- and medium-sized firms in the European Union (EU) through the Continuing Vocational Training Survey (CVTS).[27] The International Adult Literacy Survey (IALS)[28] also collected data on types and frequency of adult learning, as do the national Labour Force Surveys in some countries. However, little is known about the frequency of work-based training for countries outside the EU, and there are relatively little internationally comparable data on forms of work-based learning. We do know that levels and quality of training in enterprises varies significantly, not only between countries but also within countries, not least by sector and size of enterprise.[29] Larger firms typically provide more training than smaller firms. Firms which seek long-term employment for core workers, as with many of the large multinational corporations, tend to develop internal labour markets which are often associated with higher levels of training than where firms recruit mostly through external labour markets thus buying in rather than generating the skills they need.[30]

3.2 The ISCED 1997 Classification System

The most widely used set of international educational classifications – the ISCED 1997 developed by UNESCO – is designed to provide an integrated and consistent framework for the collection and reporting of internationally comparable education statistics. To achieve this comparability, it adopts a taxonomy essentially based on programmes of "organised" learning, thus limiting the coverage of the framework to forms of learning with "established aims and curricula" which are planned and executed by an "educational agency".[31] Data collected through the UOE (UIS/OECD/Eurostat) surveys thus exclude learning which is solely work-based as well as learning which is primarily for leisure or recreational purposes. Data collected by UIS/OECD/Eurostat for OECD and WEI countries include adult education programme enrolment, whereas data collected by the UIS for the remainder of Member States, do not. ISCED 97 categorises programmes primarily by level, intended destination and programme orientation, the latter characterised as "general education", "pre-vocational" and "vocational" education. Both pre-vocational and vocational learning fall within the definition of TVET adopted in this report.

ISCED levels are, in principle, based on the "complexity of the content" of programmes.[32] However, in practice, given the lack of international standards on levels of educational complexity, they rely on a number of programme characteristics which are used as proxies. These relate to: 1) typical starting ages; 2) duration of programmes; 3) entrance requirements for programmes; 4) intended destination of graduates; and 5) types of qualifications awarded. The ISCED levels ascend from Level 0 to Level 6, where Level 0 refers broadly to pre-

[26] Green, Hodgson and Sakamoto, 2000
[27] European Commission, 1999
[28] OECD/Statistics Canada, 2000
[29] European Commission, 1999
[30] Ashton and Green, 1996
[31] UNESCO, 1997 and OECD, 2004
[32] UNESCO, 1997 and OECD, 2004

primary education, Level 1 to primary education and Level 6 to advanced research qualifications. The remaining levels, which correspond to this report, ascend broadly from lower secondary (2), to upper secondary (3) to post-secondary non-tertiary (4) to first stage tertiary (5). These levels are further subdivided on the basis of the destination for which the programmes have been designed to prepare the students. The ISCED levels relevant here are defined as follows.[33]

ISCED Level 2 programmes (usually designated nationally as lower secondary) are those which start when education begins to be organised into a more subject-oriented pattern. Level 2A programmes are designed to prepare students for entry to Level 3A or 3B programmes, which may in turn lead to tertiary education. Level 2B programmes are designed to provide access to Level 3C programmes, which will lead to direct entry to the labour market. Level 2C programmes are designed primarily for direct access to the labour market.

ISCED Level 3 programmes correspond to the upper secondary phase of education, normally require completion of ISCED Level 2 for admission (or its equivalent for adults) and typically run between two to five years. Level 3A programmes are designed to provide direct access to Level 5A programmes. Level 3B programmes are designed to provide direct access to Level 5B programmes. Level 3C programmes are designed to lead directly to the labour market, to Level 4 programmes or to other Level 3 programmes.

ISCED Level 4 programmes are significantly more advanced than the Level 3 programmes and are typically attended by students who are older than those at Level 3. Students will normally have completed a programme at 3A or 3B to gain admission and the course will last between six months and two years. Level 4A programmes are designed to provide direct access to Level 5A programmes. Level 4B programmes are designed to provide direct access to Level 5B programmes. Level 4C programmes are designed to lead to direct entry to the labour market or to other Level 4 programmes.[34]

ISCED Level 5 programmes represent the first stage of tertiary education, are significantly more advanced than Level 4 programmes and normally require successful completion of programmes at Level 3A, 3B, 4A or 4B for entry. Level 5A programmes are largely theoretically-based, involve at least three years of learning at tertiary level and are intended to provide sufficient qualifications for entry into advanced research programmes or professions with high-skill requirements. Those involving three to five years of study are classified as Medium; those with five to six years as Long. Level 5B programmes are more practically-oriented and occupationally-specific than 5A programmes, last at least two years and do not prepare students for direct access to advanced research programmes. Courses lasting for less than three years are categorised as Short. Those lasting from three to five years are categorised as Long.

Additionally, programmes can have three types of programme orientation at Levels 2, 3 and 4:

Type 1 (general) covers education which is not designed specifically to prepare participants for a specific class of occupations or for entry into further vocational or technical education programmes. Less than 25% of the programme content is vocational.

Type 2 (pre-vocational) covers education that is mainly designed to introduce participants to the world of work and to prepare them for entry into further vocational or technical education programmes. Successful completion does not lead to a labour market-relevant vocational qualification. For a programme to be considered as pre-vocational, it should comprise at least 25% vocational or technical content.

Type 3 (vocational or technical) covers education that prepares participants for direct entry into specific occupations and successful completion leads to a labour market-relevant vocational qualification.

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[33] UNESCO, 1997 and OECD, 2004

[34] Note: UNESCO ISCED 1997 does not have a 4C category and this is a modification introduced by OECD. UOE data collection for OECD and WEI countries includes a 4C category, but data collection by the UIS for the rest of the world, does not. While the UOE data survey for OECD and WEI countries collects data on enrolments by level and categories A/B/C, the UIS survey for other countries does not. The UOE survey collects data by types 1, 11 and 111; the UIS survey for non-OECD/WEI countries collects data by type 1 and types 11 and 111 combined.

The ISCED classifications cannot provide a complete framework for classifying TVET learning across the globe. They do not seek to cover many aspects of non-formal and informal learning, which may have vocational content, and such is the diversity of forms of provision in different countries, that the criteria for level and type cannot be applied in a mechanical fashion in all cases. Mapping programmes into the ISCED levels is essentially an exercise of judgement that may involve a variety of different considerations, which is often difficult.

The boundary between Level 2 and Level 3, for instance, is somewhat blurred, making it problematic to determine whether a given programme should be at the higher or lower level. This is especially the case where, in a given country, the institutional divisions between lower and upper secondary education occur at untypical ages by comparison with the international averages (as in England where upper secondary institutions take students aged 16, rather than 15 as is more typical internationally) or where (also as in England) students take selective rather than grouped examinations which can lead to the accumulation of different numbers of "passes" by different students rather than one single qualification.[35] In such cases it is hard to determine whether "more passes" means a higher level. Differentiation between Type B and C programmes can also be difficult, particularly at Level 3 where a programme may be designed for direct labour market entry but also allows progression to 5B courses for those who complete at a high level (as may be the case with the Dual System apprenticeships in Germany[36] and with the college-based *baccalauréat professionnel* courses in France[37]). The distinction between pre-vocational and vocational courses is also becoming increasingly unclear as more countries introduce generic types of vocational course which prepare for a set of occupations rather than a single occupation, but which nevertheless provide vocational qualifications which can be used for labour market entry. Further erosion of these differences is likely to result from the convergence of "academic" and TVET programmes intended to educate "knowledge workers".

The ISCED criteria do, nevertheless, provide a basis for classifying the more formalised TVET programmes across the world in a standardised fashion. The analysis which follows here, therefore, utilises ISCED 1997 as the initial basis for describing TVET provision in countries and ISCED-based indicators for its statistical overview of TVET participation and outcomes.

3.3 Types of TVET provision in different regions

3.3.1 Lower secondary level (ISCED 2)

TVET at lower secondary level has traditionally been taken by "less academic" students opting for a more vocational track in the secondary school or leaving the school system early and transferring to specialised vocational programmes or early apprenticeships. This type of provision has been phased out in recent years in many countries, particularly in the more-developed regions, as governments have sought to introduce universal general education through the primary and lower secondary years. Developing nations, e.g. Indonesia, have recently replicated these trends. However, some provision at this level does remain in both OECD and non-OECD countries and is variously classified into either Level 2A, 2B or 2C.

Within OECD countries, there are a number of examples of vocational or pre-vocational provision at Level 2A. The *Berufsvorbereitungsjahr* in Germany is a pre-vocational programme taken in a vocational school designed for students with nine or ten years of general education who have not obtained an apprentice contract in the

[35] The United Kingdom argues for ISCED classification at Level 3 for a number of programmes (such as GCSEs and GNVQ Foundation and Intermediate) which are classified below Level 3 in the national qualifications framework and which often involve less than two years of participation after lower secondary completion, on the grounds that the upper secondary curriculum actually starts at 14 years not 16 when young people move to upper secondary institutions (like further education and sixth-form colleges).

[36] Dual System apprenticeships lead, in the vast majority of cases, to direct entry to the labour market, but are classified at Level 3B on the grounds that some apprentice graduates progress to Level 5B programmes.

[37] The baccalauréat professionnel programmes are designed for direct entry to the labour market but are classified at Level 3B because a minority of graduates progress to Level 5B IUT programmes.

Dual System. The programme lasts one year and prepares participants for vocational training at ISCED 3B. The *enseignement technique* programme in secondary schools in the French community in Belgium is a two- to three-year vocational programme for those who have successfully completed the first two-year cycle of secondary schooling. This programme aims to provide direct entry to the labour market or to further training.

TVET at ISCED 2B in OECD countries also includes both pre-vocational and vocational programmes. The pre-vocational *Brobygning* (bridge-building) course in Denmark was introduced to facilitate the transition from basic school to the vocational training system for those who have not yet decided on their type of further education. Likewise, the *classe préparatoire à l'apprentissage* in France is a one-year programme usually taken in a secondary school (*collège*) designed for students at approximately 14 years to help them decide on future training. Examples of vocational courses at this level would be the lower secondary vocational courses (LSBS – *lagere secundaire beroepsleerganagen*) and lower secondary technical courses (LSTL: *lagere secundaire technische leergangen*) under the social advancement programme (*secundair onderwijs voor sociale promotie*) in the Flemish community in Belgium.

Level 2C pre-vocational and vocational courses that prepare directly for the labour market are fairly rare in Western Europe, but there are a number of examples in other OECD countries. The National Vocational Qualification List programmes in Hungary are designed as pre-vocational programmes which require less than ten years of completed general education and can lead directly to the labour market. Lower secondary job training programmes in Mexico (CONALEP) are vocational and designed to prepare for work. They are taken by young people and adults and are typically four-year vocational courses.

Within the non-OECD countries there are only a small number of pre-vocational and vocational programmes that have been officially mapped at Level 2. The two-year Tunisian apprenticeship designed for 15- to 17-year-olds provides one example of a programme at Level 2C. There are various other programmes which have not been ISCED-mapped and might fall into one of the Level 2 categories. Ghana has junior secondary technical schools, both public and private, which offer broadly pre-vocational training as well as more occupational training programmes. China also has a large number (1477 according to the UNESCO Profile) of junior secondary technical schools in its rural areas that are designed to provide work preparation for primary graduates. The Directorate of Non-Formal Education in Indonesia offers what it calls "out-of-school" (kejar package B) programmes for 13- to 15-year-olds which provide a mixture of general and vocational content. These could probably be classified as Level 2B or 2C pre-vocational.

3.3.2 Upper secondary level (ISCED 3)

Upper secondary is probably the most common level for initial TVET to start in most countries around the world, and certainly in countries within the OECD. The upper secondary vocational school or college course which combines general and vocational learning is probably the most common format, but there is a wide variety of others, including various forms of apprenticeship.

Courses at Level 3A offer progression to ISCED 5A tertiary courses and must therefore provide a strong academic foundation. This tends to mean that they are more general in nature rather than vocational, but there are a few examples of both pre-vocational and vocational courses of this type. Examples of 3A pre-vocational courses in the OECD exist in both Hungary and Ireland. Upper secondary level education with pre-vocational elements in Hungary (*Szakközépiskola nappali képzés 9-12 évfolyam*) is designed to prepare students for the Maturity Examination. The Leaving Certificate Vocational Programme in Ireland combines both general and vocational subjects, including languages and work experience, and leads to an employment-targeted Leaving Certificate, but these courses have nevertheless been mapped to 3A. Such courses are less easy to identify in non-OECD countries, although the Tunisian and Lebanese technical *baccalauréat* courses probably fit into this category.

Courses at Level 3B are designed to lead to the usually vocational ISCED 5B courses at tertiary level and include many that are vocational in nature and rather fewer that are pre-vocational.

Hungary and Iceland offer pre-vocational programmes mapped at Level 3B. In Hungary, *Felnottek szakközépiskolája 9-12* is a part-time secondary course which has general and pre-vocational elements and leads to the Maturity Examination. In Iceland, *Listnám á framhaldsskólastigi* includes Fine and Applied Arts programmes at the upper secondary level which are designed to provide access to Fine Arts programmes at ISCED 5B. There are no programmes mapped at this level for non-OECD countries. However, the Malaysian vocational upper secondary courses which include general and broad vocational education elements designed to lead to polytechnic courses might be classified here (although they have been officially mapped at 3C). Malaysia has also had an upper secondary VET examination, *Sijil Pelajaran Vokasional Malaysia* (SPVM), fully equivalent to its O-Level academic leaving examination *Sijil Pelajaran Malaysia* (SPM), since the 1970s.

Vocational programmes at Level 3B are relatively common both within the OECD and outside. OECD maps the Dual System apprenticeships in Austria and Germany and the *baccalauréat professionnel* in France at this level, as well as the Australian skilled courses for recognised trades, because such programmes can lead to level 5B programmes in some cases. However, the vast majority of graduates from these courses go direct to the labour market, which suggests that they might be more accurately mapped, on the destination criterion, as Level 3C provision.

Programmes at this level in non-OECD countries can also be hard to classify. The Thai vocational upper secondary courses for 15- to 18-year–olds, in both public and private institutions, lead to a vocational education certificate. Most graduates go straight to the labour market, but the programmes are officially mapped at Level 3B. Many other countries in Asia have programmes of this type although they have not been officially mapped. China, Indonesia, Japan, Malaysia and the Republic of Korea, all have two- to three-year upper secondary vocational schools which provide a combination of general education and broad vocational training. In most cases, graduates proceed directly to work, although in some countries progression to tertiary levels is possible. On the basis of comparability with Thailand, these courses could be mapped at Level 3B, although they mainly prepare for labour market entry and on these grounds could be classified as 3C. Tunisia's school-based craft courses can provide progression to advanced craft level training and have been mapped at Level 3B, even though they are certificated by the CAP exam which is based on the equivalent French qualification which is mapped at Level 2.

ISCED Level 3C programmes are designed to lead directly to the labour market and probably represent in practice the most common form of vocational training at Level 3 in both OECD and non-OECD countries. Courses at this level are almost all vocational rather than pre-vocational (in fact, by definition 3C pre-vocational is a contradiction in terms since C designates labour market destinations whereas pre-vocational designates further training destinations).

OECD examples of ISCED 3C vocational programmes include both school-based provision and apprenticeship type programmes. The *Erhvervsfaglige uddannelser* in Denmark includes 86 types of three- and four-year programmes in various trades and technical fields which are all designed for labour market entry. The apprenticeship system in the Flemish community in Belgium (*opleidingen in de leertijd georaniseerd door het VIZO*) is aimed at 15- and 16-year-olds and involves four days of learning on the job and a fifth day in a VIZO training centre taking additional general, vocational and social courses. Since most apprenticeship programmes are aimed at direct labour market entry, there are many other programmes which could be classified here.

Many examples of programmes at this level are outside of OECD countries. Apprenticeship programmes aimed at lower secondary graduates exist in, amongst other places, Botswana, Ghana, Indonesia and Zimbabwe. The apprentices in Ghana typically spend 15 to 17 weeks in college, and Zimbabwean apprentices also receive college tuition. More school-based provision at this level also exists in a number of countries. China has numerous three- to four-year specialised vocational secondary schools for junior secondary graduates which prepare for jobs at craft or technician levels. Ghana has a National Vocational Training Institute which offers various two- to four-year courses for junior secondary graduates which comprise 75% occupational training and leads to direct labour market entry. Zimbabwe offers upper secondary vocational college courses for those with an O-level entry standard which lead to National Certificate qualifications in different occupational areas, including engineering, construction, horticulture, leather work, textiles and woodwork. Further examples of terminal TVET courses at

Level 3 are provided by the many maritime and agricultural colleges in the Pacific Islands which, in many cases, represent the highest level of vocational education that can be gained without leaving the islands.[38]

The OECD has created a new category of Short Level 3C programmes to cover those which do not easily fit into the standard definitions. These last more than one year but are shorter than the typical programmes at Levels 3A and 3B. Programmes in this category include the pre-vocational General National Vocational Qualification (GNVQ) Foundation Level courses in England which normally last for one year and aim to give a broad introduction to general vocational fields, such as Commerce, Manufacturing and Retailing and Distribution. GCSE courses undertaken in England which lead to less than five passes at higher A* to C grades have been classified at 3C Short as well as Level 2. Other examples of vocational Short 3C programmes in the OECD would include the BEP (*brevet d'études professionnelles*) programmes in vocational *lycées* in France and the f*ormazione professionale regionale* (FPR) in Italy. The BEP programmes typically start between 15 and 17 years of age, last two years and comprise substantial elements of general education with work experience (the *stage*) and vocational training in broad occupational fields. They can lead either directly to the labour market or to higher-level training. The FPR is also a two-year programme at the end of compulsory schooling which trains skilled workers for various sectors of the economy.

The grouping together of such courses at a new Level 3C certainly raises some questions about comparability of levels of difficulty. Whereas the French BEP courses qualify students for skilled jobs or progression to Level 3 *Baccalaureat Professionel* and *Baccalaureat Technologique* courses which can give access to higher education, GNVQ Foundation Level is a basic introductory course which would not normally qualify for skilled work and which gives access to Level 3 GNVQ advanced courses – the qualification normally considered comparable with the French *Baccalaureat Professionel* - only via a further GNVQ intermediate course. GCSEs with less than five high-grade passes are also difficult to equate with the BEP. GCSEs can be re-taken at the end of lower secondary schooling, but the vast majority of students take them initially at the end of lower secondary schooling and they are the terminal assessment for this stage. The BEP, on the other hand, is clearly at a higher level than the French lower secondary qualification, the *brevet*, and requires the latter for entry. See for instance Prais and Wagner (1985) for an analysis on the comparability of standards.

3.3.3 Post-secondary non-tertiary level (ISCED 4)

ISCED Level 4 programmes are post-secondary but non-tertiary, straddling the boundary between upper secondary and post-secondary education from an international point of view, although they might be considered as either upper secondary or post-secondary programmes in a national context.[39] As such, they are intermediary and transitional and can be difficult to classify. Level 4A programmes typically lead to Level 5A programmes; 4B programmes to 5B programmes; and 4C programmes to the labour market.

Examples of vocational Level 4 programmes in the OECD would include the following. The third year of the third stage of vocational upper secondary education in the Flemish community in Belgium (*gewoon secundair onderwijs – 3de leerjaar van de 3de graad BSO*) gives access to higher education and is classified as a vocational 4A type programme. Second cycle Dual System apprenticeships in Germany give access to *Fachschulen* (5B) programmes and are classified as vocational Level 4B.

A number of examples can be given of Level 4 vocational courses in non-OECD countries. Tunisia has two-year BTS (*brevet de technicien superieur*) courses for *baccalauréat graduates* which are classified as vocational Level 4B. They can lead to technician-level employment or to higher-level training. Peru's post-secondary vocational programmes (*escuela de sub oficiales*) require Level 3 completion for entry and lead to technical certificates. They are classified by OECD as Level 4C. Malaysia's one- and two-year skills training courses for post-secondary students are also classified as Level 4C. Sri Lanka's two-year technical college programmes, open to those with six or more O-levels, lead to national certificate qualifications which give access to skilled

[38] See list of maritime colleges at: http://www.spc.org.nc/coastfish/Reports/Training_Directory/Centents.htm

[39] OECD, 2004

jobs and to Level 5B training. These can be taken either full-time or part-time and are classified as Level 4C vocational programmes.

Participation in Level 4C courses appears to be particularly high in Nordic and central European countries, as our analysis in Section 2 shows. Asian countries typically classify all of their Level 4 provision as terminal, as for instance in China. It seems likely that there is a large and growing number of vocational courses of the 4C type run by private institutions in many countries. Such provision is not always licensed and data not always recorded.

3.3.4 Tertiary level (ISCED 5)

Vocational provision at the tertiary level is classified at ISCED Level 5B. Programmes in this category have to be at least two years in length and must focus on occupationally-specific skills. Those lasting two to three years are designated "Short", and those lasting three to five years, "Medium".

OECD countries provide many examples of short cycle ISCED 5B programmes. The Finnish vocational colleges (*ammatillinen opisto*) run two- to three-year advanced vocational programmes leading to Diplomas and the title of technical engineer and are classified as Level 5B courses. The two-year IUT courses (*institut universitaire de technologie*) in France and the two-year Higher National Diploma programmes in England are also considered as Level 5B Short. Mexico's two-year vocational associate degree programmes for qualified technicians are classified likewise. The French BTS, also a two-year programme, is placed here, interestingly, although its Tunisian equivalent is placed at 4C.

Examples of Short 5B programmes in non-OECD countries would include the short-cycle vocational degrees in China's universities, as well as the two-year vocational programmes in Thailand which lead to Vocational Education Certificates. Ghana's Higher National Diploma courses offered in polytechnics might also be included here.

ISCED Level 5B Medium courses in OECD countries include the following. Vocational programmes in the German *Fachschulen*, which are attended after apprentice graduation and several years of subsequent qualified work experience, can vary in length from two to four years; the longer of these are classified as Medium 5B programmes. New Zealand's two- to three-year vocational programmes which lead to National Diploma qualifications are also classified as Level 5B Medium. In the Czech Republic there are three-year university programmes leading to the *bakalar* (bachelor's degree) which may be classified as 5B where they do not lead to Master's programmes.

Outside the OECD, there is also a wide range of polytechnic type courses which could be classified as Level 5B Medium. Malaysia's polytechnic courses last between two and four years and would therefore classify as 5B Medium. Sri Lanka's vocational college courses for A-level graduates run between one and four years. The longer of these would classify as 5B Medium.

3.4 Trends and issues across the globe

This report does not seek to provide a systematic analysis of global trends in TVET. The UIS does not have enough historical data, which are in any case too limited for many countries to provide a statistical basis for such an analysis. Moreover, inter- and intra-regional differences in TVET provision are too complex for it to be possible to generate any comprehensive analysis of such trends within a report of this scope. Although descriptive, qualitative accounts of TVET provision exist for many countries, creating an internationally comparable and systematic synthesis out of these would be a task of Herculean proportions. Here also, two- and three-country comparative studies of TVET may provide an indication of these trends.

Nevertheless, it is possible to draw attention to some of the more common trends in TVET development for certain regions which have been well-analysed in the comparative literature. It is also possible to note some of the more pervasive differences in the context for TVET provision which exist across regions and particularly

between the more-developed OECD countries, the medium-income WEI countries and the low-income non-WEI countries. In this section, we concentrate on initial TVET, since data on continuing TVET are so limited for many regions that an overview would not be possible.

3.4.1 Some widespread tendencies in TVET

Global demands for skills have increased substantially in recent years as a result of scientific and technological advances, rapidly changing markets and the intensified global economic competition due to accelerated globalisation.[40] Such changes have not, of course, affected all countries and all regions of the world equally. The most economically globalised regions, including North America, Europe and East Asia, have experienced the most dramatic increases in the demand for skills, not least as a result of the rise of the so-called knowledge economy. In other less-developed regions of the world, where many countries are still only marginally engaged in the global economy, changes in these demands have been less dramatic. Nevertheless, all regions feel the effects of global economic transformation and an increasing proportion of countries are in direct competition in trade for more advanced goods and services within the global economy.

Creating the "high-skills" economy used to be the policy ambition of only the most-developed countries. At the beginning of the 21st century it is not only the mature industrialised economies that seek to maintain their prosperity through shifting their economies into the high value-added, high-skills areas of production and services which generate the highest profits on the world markets. Newly industrialised countries and even many of those only just beginning to industrialise, also increasingly adopt long-term policies designed to promote high skills and the knowledge economy.[41] In all countries and regions, at whatever level of development, economic survival depends on the generation and maintenance of human capital.

More advanced technologies and changing patterns of work organisation have transformed demand for skills in a number of ways. On the one hand, increasing proportions of the workforce are required to have more advanced "basic" or "core skills".[42] These include not only functional levels of literacy and numeracy. They also now involve: the ability to communicate effectively in different registers, contexts and sometimes languages; basic competence in the use of information and communications technologies; problem-solving techniques of various kinds; and not least, the skills and personal attributes needed to work autonomously, respond flexibly to new situations in rapidly changing work environments, participate in work teams, and above all, to learn continuously.[43] In many of the world's societies now, to lack these more advanced basic skills is to be increasingly marginalised from the labour market. On the other hand, technological advance is also increasing the demand for highly-specialised skills based on high levels of knowledge in specific fields or even at the intersections of fields, as in areas like biotechnology.[44] Such requirements exist only for the elites in many countries, but the required size of these elites is growing rapidly.

The extent of these new skills demands, of course, varies hugely across countries and regions, and the so-called knowledge economy is only on the distant horizon in many less-developed countries. Nevertheless, some new skills, and particularly those involved in basic computer and ICT functions, are beginning to be important for a significant number of employees and private citizens even in rural areas of less-developed countries. It is increasingly evident to more and more of the world's population, for instance, that to be I.T. illiterate is to be marginalised from the world of global communications. In the face of these new realities, benchmarks are being set in many countries for levels of education and training thought necessary to function in the modern

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40 The SKOPE project based at Oxford and Warwick Universities provides evidence of how demand for skills has increased across a range of European countries.

41 Brown, Green and Lauder, 2001

42 One definition of the 'New Basic Skills' is provided in European Commission, 2001. In terms of key competences the following are useful: Rychen and Salganik, 2001 and Rychen and Salganik, 2003.

43 For those in the more high skilled jobs – including the professionals Robert Reich, 1990, classifies as the 'symbolic analysts' – a wider set of core skills are required which increasingly involve complex system analysis and the manipulation of abstract and symbolic languages.

44 European Commission, 1995

world. These allow us to analyse, albeit in very general terms, some of the common trends in TVET provision across regions of the world.

A number of quite common trends in initial TVET are apparent in the more-developed countries and at least emergent in some of the less-developed countries.

3.4.2 The massification of upper secondary TVET

The baseline level of TVET is changing. Until relatively recently, say until the mid-1970s, the most typical age for entry into the labour market in more-developed countries was at the end of compulsory schooling, usually after graduating from lower secondary school. The transition to work was sometimes via an apprenticeship, but in many cases it was directly into full employment. Clearly this has now changed. In many OECD countries, between one-third and one-half of young people go through some form of tertiary education. For the remainder, it has become typical to continue in education and training at least until the end of the upper secondary stage. Level 3 qualifications are increasingly seen as the minimum necessary to ensure reasonably good prospects in the labour market in most OECD countries. In North America, Eastern and Western Europe, and East Asia, the vast majority now continue in education and training until the end of this stage. Uniquely, in Germany many Dual System participants are now enrolling in universities after completing their apprenticeships. Many middle-income countries, particularly in Asia, are seeing similar patterns. This change has a number of important consequences for TVET.

First, Level 2 TVET is being gradually phased out in many regions. Policy in many states is now for comprehensive general education to last at least until the end of compulsory schooling to ensure the acquisition of the new basic skills to an adequate level. Many countries will still offer some vocational options for students during the lower secondary phase, and a few of the OECD countries have some kind of vocational track at the lower secondary level but this is increasingly rare. In less-developed countries, vocational tracks in lower secondary schools are more common, as is the post-primary apprenticeship system. The United States has addressed the secondary school dropout problem by creating the TechPrep programme, which provides a seamless transition between the final two grades of secondary school and the first two years of post-secondary education in community and/or technical colleges.

Second, as upper secondary education becomes a mass phenomenon, its character changes. On the one hand, it is bound to become more diverse. Meeting the learning and qualification needs of a larger and more differentiated group of participants requires a wider range of provision. On the other hand, as it becomes more diverse, it becomes more complex and prone to internal tensions and strains. This leads to demands for new measures to restore the transparency of systems and to ensure greater linkages and parity between its different parts.

3.4.3 The creation of broad vocational tracks

Changing technologies and work organisation require workers with multiple skills and the ability to adapt rapidly through continuous learning. This has led to demands for broader forms of initial vocational training which lay the foundation for further learning. The response to this in many countries has been to readjust some of the Level 3 vocational programmes to contain a larger element of general education and more generic forms of vocational preparation, where the latter prepares participants for a cluster of occupations in a given sector rather than for a single one. The trend can be seen in the creation of vocational programmes with enhanced general education content, such as the *baccalauréat professionnel* in France and the MBO programmes in the Netherlands created during the 1980s where up to one-half of the course is based on general education.[45] It can also be seen in the development of very broad vocational programmes, such as the General National Vocational Qualification programmes set up in England in the 1990s which were divided into only 12 broad fields. A somewhat different response, as in the case of the German and Austrian apprenticeships, has been to

[45] See Green, Wolf and Leney, 1999

maintain occupational training but with enhanced general content and slightly broader vocational fields, so that the overall list of vocational qualifications is reduced.

This shift towards broader initial vocational training programmes has been quite marked in Europe. However, it is not necessarily so evident in other regions. Some East Asian states, for instance, already had a broad concept of upper secondary vocational education. The vocational high schools in Japan, Republic of Korea, and Thailand have traditionally offered rather broad initial vocational training which usually involved around 30 to 50% of the curriculum time being devoted to a wide range of general education subjects. Academic and vocational widening has not therefore been a priority here.[46] On the other hand, in regions where upper secondary education is still the preserve of the minority, there have not been the same pressures to develop these intermediary type programmes. Those continuing in upper secondary education have been usually on an academic track and have taken general subjects. Where students have stayed in upper secondary level TVET, it has usually been through apprenticeships or vocational courses geared towards traditional crafts and trades which have not changed in such a way as to require more generic forms of training. The rise of more service sector employment opportunities in these countries may, however, encourage a similar trend in time.

3.4.4 The reform of apprenticeships

The apprenticeship systems have faced potential decline in a number of developed countries. There are a number of causes which have undermined the relevance and popularity of the traditional style of apprenticeship. They have typically been associated with the older industries which, in many cases, are now in decline. Where the apprenticeship system has not successfully embraced new areas of employment, it is facing increased marginalisation. In addition to this, labour process change and continuous redefinition of jobs has argued for broad-based training that focuses on transversal skills and broadly applicable theoretical knowledge. In its traditional form the apprenticeship can be seen as relatively rigid and inflexible, preparing young people for specific occupations which may soon disappear. The German Dual System has had apprenticeships in service, social and economic occupations for several decades and participation has increased in these fields, whilst declining in occupations more directly related to industrial production or agriculture.

Speed of occupational change may be one reason why the apprenticeship still remains relatively sparse in the growing high-tech areas of production and services in some countries.[47] Another reason may be that in high-tech production, with its hugely expensive equipment and integrated processes, it is more difficult to utilise trainees, especially when there is a high price to be paid for the repairs and down-time that may result from trainee errors. More generally, there may now be a tendency for larger firms to develop systems of continuous in-company training, which make the apprenticeship as such redundant. This is particularly the case where the competitiveness of a firm depends to a large degree on its proprietary knowledge, which may be leaked to competitors through apprentices who are subsequently employed elsewhere. Also, where the necessary level of investment in continuous training increases, a logical course is for companies to gear their training towards internal labour markets and core long-term employees, as in Japanese corporations, rather than to invest in an apprentice system which is geared towards occupational labour markets and inter-firm mobility.

These and other issues have led many countries to reform their apprenticeship systems in recent years.[48] Generally, these reforms have sought to make the apprenticeship more flexible, to increase its reach across sectors and to raise its status in the eyes of young people. Greater flexibility has been sought by extending the upper age limits for apprentices, modularising programmes and broadening training through reduced specialisations and enhanced general education. Extending the range of apprenticeships has involved seeking to establish programmes in new sectors and implementing various measures to encourage more of the very

[46] The UIS data on enrolment by programme orientation mask these comparisons as Asian countries tend to categorise all of their vocational Level 3 provision as vocational rather than pre-vocational, despite the fact that much of it is very broad in nature.

[47] CEREQ, 2004

[48] Denmark and Greece in 1989; Luxembourg in 1990; Portugal in 1991/92; France in 1992/93; Ireland and the Netherlands in 1993; Spain and the United Kingdom in 1994 – see Ibid.

large and the very small employers to get involved (as, in the latter case, with joint training centres). Various strategies have been employed to raise the status of the apprenticeship. One has involved improving the quality and consistency of training through tightening up apprentice contracts and further formalising the roles of the social partners in standard-setting, monitoring and evaluation. Another has involved developing better progression routes for apprentices to high-level education and training. New forms of hybrid apprenticeship have also been developed in England (the Modern Apprenticeship) and Denmark (EFG), where public agencies (the college in Denmark and the local Learning and Skills Council in England) take over the primary organising responsibility from the employers.

In non-European countries, similar changes in apprenticeship systems are not so evident. This is partly because the formalised apprenticeship system has generally not been so well developed in regions outside of Europe and preference has been given to promoting school-based initial TVET routes, as in the Asian states. Where apprenticeship systems have formed an important part of the albeit limited vocational provision, as in some African countries, they have generally served the more traditional craft occupations which have not changed in such a way as to put pressure on the system to reform.

3.4.5 Measures to enhance parity of esteem for TVET

Diversification of post-compulsory provision has inevitably led to concerns about status differentiation between the different tracks, particularly in those countries with weak or low-status apprentice systems and largely school-based provision.[49] Upper secondary education has tended historically to be associated with university entry preparation through general academic study, and this has tended to remain the pathway which holds the highest status. Vocational courses have been more or less successful in gaining public credibility, depending on how highly employers regarded the qualifications to which they lead and what opportunities they open up to the young people who take them. Generally, though, they are less highly valued than their academic counterparts and, therefore, in some countries at least tend to recruit those students who are unable to enter into academic programmes. There has, consequently, been widespread concern by governments and educationalists, particularly in the northern European states but also in other regions, to find ways of improving the status and employment value of these courses.

Various strategies have been attempted to achieve this. Vocational qualifications have been given names which stress their affinity with traditional academic qualifications (the vocational or applied A-level in England and the *baccalauréat professionnel* in France); formal entitlements to enter higher education have been accorded to graduates of certain vocational programmes (the *baccalauréat professionnel* in France and the vocational lines in Swedish upper secondary education); and increased possibilities for transfer between vocational and academic courses have been developed. Most noteworthy in recent years perhaps has been the widespread policy in Europe of building improved progression routes into, and out of, the vocational tracks.

It remains to be seen whether any of these measures will do much to erode the status differentials between the academic and vocational tracks. Whatever may be the case, there is a growing tendency amongst policy-makers, particularly in northern Europe, to increase the alignment between different programmes and therefore to bridge the gap between vocational and academic learning. In some cases this has involved policies to create overarching qualification frameworks - sometimes involving modular courses and credit accumulation and transfer - which make it easier for students to combine elements from different pathways or to transfer between pathways. In those and other cases, policies have been proposed which would fully unify qualification systems creating common certificates embracing all the various programmes and programme combinations. The policies followed have differed in systems where school-based provision dominates and in systems where the apprenticeship system dominates.

In systems where school-based TVET dominates, raising the status of vocational tracks has often proved particularly problematic. Vocational provision exists alongside general or academic provision in the same or

[49] Lasonen, 1996

similar institutions and has generally been judged by the standards of the academic tracks. For the most part, comparisons with the academic tracks have proved unfavourable and the courses have been less esteemed as a result. As mentioned earlier, one response to this endemic problem in many countries has been to seek to enhance the general content of the vocational track, in some cases designing this as common with the core components in the general tracks. Where the latter has occurred, as with the *baccalauréat professionnel* in France, the vocational tracks have been incorporated into the same overarching qualification system as the general tracks. A further development has been to devise progression routes for the vocational tracks so that successful students may have further access to tertiary level education and training.

The results of such reforms have been mixed. In some countries, the academic enhancement of the vocational tracks has led to greater progression possibilities (e.g. GNVQ in England and vocational lines in Sweden) that has raised their prestige and popularity. However, this has often come at the price of eroding the essentially vocational nature of these tracks so that they become less useful as a preparation for direct labour market entry. The overall result has been to accelerate the already strong trend towards "academic drift" which can be seen in many developed countries. In as much as changes in the labour market require higher proportions of more-educated graduates in the workforce, this may not be seen as a big problem. However, in some countries it has led to a shortage of skills at craft levels, as well as an oversupply of graduates with non-marketable degrees. In this case those on the vocational track who have progressed to higher education may find that they have not improved their labour prospects very much because they are in a weaker position than those who have gained degrees through conventional academic routes, which are more prestigious. The response in some countries has been to seek to channel the Level 3 vocational students into shorter vocational higher degrees (like the Foundation Degree in England) which meet a labour market demand and may win a distinctive niche in the labour market.

In systems where the apprenticeship dominates in Level 3 TVET provision, different solutions have been sought to the problem of parity of esteem. Since the popularity of apprenticeships has been very dependent on their close links with the labour market and on their ability to guarantee their graduates entry into skilled jobs, it has been important to maintain the occupational credibility of their qualifications in the labour market. This has meant that apprentice training has had to remain relatively occupationally-specific. However, many young people who contemplate taking an apprenticeship have also wanted to keep their options open as regards going straight into employment or progressing to higher levels of training. To make the apprenticeship more attractive, therefore, it has been felt desirable in a number of countries to create progression routes to programmes of further training at Levels 4 and 5. This has been achieved in part in Austria and Germany by strengthening the general components of the Dual System programmes and by creating new "dual qualification programmes" whereby, with an extended period of study, students can gain both an apprentice qualification and a qualification which gives them access to higher education.[50] Due to these changes, Dual System apprenticeships now tend to be mapped at Level 3B rather than 3C and, in the cases of the advanced apprenticeships, at Level 4.

Problems of parity of esteem for the vocational tracks have not only concerned policymakers in European countries; they have been an issue for many years in several Asian countries. This has not been in relation to apprentice training, since that has tended to remain underdeveloped, but in relation to provision in the vocational high schools which, as elsewhere, are held in rather lower esteem than general upper secondary education. Countries such as Japan, and the Republic of Korea have experienced continuing academic "drift" in upper secondary participation as young people increasingly opt for the general tracks which give access to tertiary education and to better paying and more secure professional jobs in prestigious larger companies. Such has been the trend in Japan, for instance, that the vocational high school is now often seen as a deadend by many students because it may only give access to skilled craft and operative jobs in smaller companies. East Asian states have adopted a number of different strategies for dealing with this problem. This "academic drift" is often accompanied by a "mission drift".

Japan and the republic of Korea, for instance, were not able to impose quotas on entry to high school so that the vocational high school maintained a fixed proportion of places whatever the preferences of young people,

[50] See Green, Brown and Lauder, 2001

partly because they had a very large number of private high schools which could not be effectively subjected to these policies in the same way.[51] Alternative means have therefore been sought to make the vocational high schools more attractive. These have mainly involved, as in Europe, attempts to create progression routes to vocational tertiary study for graduates from vocational high schools. To date, such efforts have not been notably successful. However, more will certainly have to be done in this area. There is already a considerable oversupply of higher education graduates in non-vocational areas in both Korea and Japan, which can only be ameliorated by strong measures to limit the current trend of academic drift.

Parity of esteem for vocational tracks is most certainly also a problem in other regions of the world, including in Africa. In most African states young people who are able to, or prefer to, enter the general upper secondary programmes which give access to higher education. However, many of these will not find jobs commensurate with the graduate qualifications they may achieve. Raising the quality and attractiveness of the upper secondary vocational programmes must be a high priority here as well, although the issue arises only for a minority who have access to provision at this level at the present time.

3.4.6 Diversifying higher level TVET

Employment in technical, managerial and professional occupations is rising in most industrialised countries. This has created a rising demand for skills and qualifications at ISCED Levels 4 and 5 which are designed for these levels of employment. This has given rise to several trends which apply, in varying degrees, to richer OECD countries and middle-income countries alike.

As the demand for enrolment at post-secondary and tertiary levels has increased in most countries, the pressure has grown for diversification of the types and modes of provision at these levels. In many countries this has led to proliferation of new vocational programmes both at Levels 4 and 5. Many two-year "colleges" in Japan, which catered exclusively to women, have either closed or converted to four-year institutions as the "glass-ceiling" in the labour market changes.

The definition for programmes at Level 4 is extremely broad, and there is a wide range of programme types which may be classified here, ranging from short pre-employment courses to longer courses oriented towards higher-level education and training. One area where there has been a marked rate of growth in participation across regions is in the provision of skills training programmes for lower- and middle-ranking administrative and technical occupations and particularly those involving business, administrative and ICT skills.

A comparable diversification has occurred in vocational tertiary programmes. As demand for tertiary education has increased, many countries have substantially extended the range of short- and medium-length vocational programmes available at ISCED 5B. These have included developing skills for a large number of occupations which previously did not exist or for which there was previously no higher-level qualification. In some case these new programmes have been offered in traditional university environments, but for the most part they have been developed in polytechnic type tertiary vocational institutions. Community and technical colleges in the United States have developed *Post-Diploma* programmes to deliver such "newer" skills to both degree and non-degree graduates, as well as for those wishing to upgrade skills.

At the same time, as the range of types of programme has increased in terms of content and intended labour market utility, so has the range of types in terms of provider institutions and modes of delivery. Many countries, notably Malaysia and the Republic of Korea, have developed very extensive systems of open university distance education provision both in general areas and TVET, although the latter is largely limited to what can be learnt without highly specialised and expensive equipment. The United States has also developed "open college" TVET programmes. It is interesting to note that much of the new programmes are delivered by private providers, especially in Asia, although they are often licensed and subsidised by the state but increasingly they also include entirely independent providers, particularly at Level 4.

[51] Ashton, Green, James and Sung, 1999

3.5 Regional diversity

In the above section we have noted some of the trends in types of provision which appear to be common across many countries in different regions. However, it is also apparent that the nature and quality of TVET provision vary substantially between regions, even where it may appear possible to identify similar classes of provision according to the ISCED typology. The reasons for this are obvious but bear re-stating. Firstly ISCED types refer to the intended and formally-declared characteristics of programmes but do not necessarily capture the quality characteristics of the actual learning experiences which determine their outcomes. Secondly, whilst the range of types of TVET provision may look in many ways similar across different regions, the incidence of participation in them is most clearly not.

Many less-developed countries face multiple problems in delivering effective TVET provision and in ensuring high-level participation, over and above those experienced in the most-developed countries. These include in many cases problems of supply in terms of:

- lack of public finance for physical infrastructure and equipment;
- lack of adequately trained instructors;
- problems of communication and coordination, particularly in remoter areas;
- inadequate ICT infrastructures;
- inadequate system capacity in terms of central planning agencies, research and development capabilities, standard setting bodies, etc.; and
- lack of finance and/or capability to undertake routine and preventive maintenance of the physical plant and equipment.

Barriers to access on the demand side may be equally problematic in many of the poorer countries including:

- low levels of literacy which impede participation in TVET;
- lack of resources to pay for TVET tuition and materials;
- inadequate information and counselling with regard to what is available; and
- traditional attitudes which constrain female access to TVET.

Richer and poorer regions vary enormously in terms of these basic contextual factors which shape the quality of TVET provision and, consequently, the levels of participation and successful completion. By way of illustrating these differences, we include in the sections following an analysis of some of the specific contexts and trends which characterise TVET provision across the African continent based on our 17 interviews with returning officers in Africa and a selection of secondary commentaries on TVET in the region.

Africa has been singled out for special emphasis in this report, because it holds many of the world's least-developed countries and is the focus of intensive aid policy in which TVET might be expected to play a part.

3.5.1 Trends and issues in TVET in Africa

One dilemma which has preoccupied many African countries for a long time is whether to concentrate investment in general or vocational education. In human capital terms, general education creates "general human capital", and technical and vocational education leads to "specific human capital"[52]. The former has the advantage of flexibility and therefore portability over one's life and from one job to another, while the latter does not.[53] In this regard, many view general education as a more suitable type of education that is capable of responding to economic and labour force changes in society; but technical and vocational education also has the advantage of imparting specific job-relevant skills making the worker more readily suitable for a given job and more productive.[54] Hence, both are important and education systems in Africa,

[52] Becker, 1964
[53] Tilak, 2002
[54] Ibid

where economic development is highly sought, include both general and vocational streams of education in varying proportions.

In most cases, school systems lead to two paths: general education which enables pupils who gain access to them to continue in their schooling to higher levels and vocational education for those who opt to focus on immediate employment or those who, due to limited access to education opportunities, are crowded out of the general education ladder. Some countries have "pathways" to give the latter group access to higher education. However, in most countries, pupils who opt for vocational schools will arrive at a deadend as far as higher education is concerned.[55] While general education is currently directed towards the goals of Education for All (EFA) and Millennium Development Goals (MDGs), there is a more diverse pattern of emphasis and provision of TVET across the continent.

In most cases, the mode, functioning and content of TVET systems have been influenced and still retain patterns initiated by the former colonial powers, resulting in significant differences in patterns of delivery, levels of participation and general organization of TVET. Sharp contrast can be seen between Francophone and Anglophone African countries.[56] Key areas of difference will be discussed in later sections. In general, however, at least two major forms of provision can be identified across the continent. The first of these involves TVET provision in formal education systems at lower secondary (ISCED Level 2) and upper secondary (ISCED Level 3), post-secondary non-tertiary (ISCED Level 4), and provision at first stage tertiary level (ISCED Level 5). The second involves training outside of the formal education system. This can be in the form of informal apprenticeships or traditional forms of training offered at artisan workshops owned by master craftspeople. These forms of training usually prepare participants for trades, such as carpentry, masonry, auto-mechanics welding, foundry, photography, tailoring, dressmaking, cosmetics, etc. Some of these informal types of training are provided on the basis of family ties, and operators tend to exhibit creativity but lack the necessary technological knowledge related to their skills and the capital to expand their enterprises.[57] In Kenya, for instance, this informal sector has grown in importance and acquired its popular Swahili name, "jua kali".

3.5.2 To vocationalise or not to vocationalise?

TVET is primarily regarded as occupational education and was initially thought to be undesirable in most African countries which felt the need to emphasise academic education as one of their independence pledges. However, soon after independence many countries turned to TVET to solve emerging urban unemployment problems which were blamed on rural-urban migration. It was felt that TVET would be an appropriate measure to stabilise traditional agricultural life and to curb educational "over-production" - the tendency for individuals from rural areas to continue in school past the capacity of labour markets to absorb them.[58]

During the early post-independence years, arguments were advanced in favour of TVET, and leaders – such as the late Julius Nyerere of Tanzania – were quoted in support of TVET.[59] But TVET was not necessarily favoured by all, and Philip Foster's arguments in 1965 added international confusion to what had already been a dilemma to many of these newly-independent African nations. In his often-quoted piece on the "vocational school fallacy", Foster exploded the vocational school myth. Mark Blaug followed later in 1973 with an argument that vocationalisation cannot be a remedy for educated unemployment: it cannot prepare students for specific occupations and reduce mismatch between education and the labour market; and in general, individuals could tell that academic streams promised higher wages than vocational education and vocational education was only for those with less aspiration for better paying jobs.[60] But such strong arguments have not deterred African countries from continuing vocational education programmes. A few countries may have momentarily given up their initial efforts to develop elaborate systems of TVET following these debates of the 1960s and

55 Atchoarena and Delluc, 2002
56 Ibid, p. 33
57 Ibid
58 Tilak, 2002
59 Ibid
60 Foster, 1965; Blaug, 1973

early 1970s, but going by evidence of developments in subsequent years, TVET seems to have maintained its inherently powerful but sometimes paradoxical appeal in Africa's education systems. Many countries have fared well and set ambitious targets but the challenges are also enormous. A few countries, e.g. Botswana, have added emphasis on entrepreneurship and self-employment in TVET institutions to address the over-subscription of occupations, such as tailoring, dressmaking, auto mechanics, etc.

3.5.3 ISCED levels of entry into TVET

For the most part, the education systems can be divided into four levels[61]:
- Primary education – with a duration of six to eight years;
- Lower secondary education - with a duration of three or four years;
- Upper secondary education - with a duration of two to three years; and
- Higher education - with a duration of an average of four years.

The emphasis placed on TVET at each level varies from country to country in accordance with the importance which each assigns to TVET. In some countries, TVET forms a separate system that parallels the general education system, with its own institutions, teachers, programmes, etc. In most cases, however, TVET is offered alongside general education in integrated schools forming a dual-tracked school system. In many countries, TVET begins at ISCED Level 2. There are, however, two types of provision: one in secondary institutions and another in post-primary non-secondary training institutions. Examples of the latter include the National Youth Service in Kenya, Village Technical Training Institutes and Botswana Brigades. Other countries where the latter applies include Burkina Faso, Congo and Uganda.[62]

Post-primary vocational schools mostly exist in countries where primary school education expanded rapidly and the demand for secondary education far exceeds the available capacity. Those unable to secure entry into secondary education join these post-primary non-secondary TVET institutions as the only option available to them. However, there are also some cases, especially among poor families, where the high cost of attending secondary education and the desire or pressure to join the informal labour market immediately has led to pupils opting for TVET schooling upon completion of primary education. Yet, most of the training at these non-secondary institutions entails learning craftsmanship either through apprenticeships within family businesses or in formalised village polytechnics. Such learning usually leads to trade and craft certifications.

In some countries, e.g. Ghana, Guinea, Mali, Nigeria and Swaziland, for example, the choice to enter TVET programmes may be made at the end of ISCED Level 2 (lower secondary). The differences in institutional types can make classification of Level 2 and Level 3 courses more difficult, and in some cases, the boundary between these two levels can be blurred. Yet, in other countries, e.g. Cameroon and Côte d'Ivoire, pupils enter TVET programmes after one or two years of lower secondary schooling. This reflects the pressure on access to higher levels of general education. Given the limited access to secondary education in many countries, it is not surprising that TVET is offered as an option early enough in the education system.

3.5.4 Patterns of TVET delivery

There is an obvious distinction to be made between the way TVET is organised in Francophone and Anglophone African countries. This, as noted earlier, is due to the influence and patterns initiated during the colonial period. TVET in Francophone countries, such as Algeria, Morocco, Senegal and Tunisia, still has a large amount of general education content, as it does in France. This may imply that programmes have not been linked to the specific skills needed in the mostly informal local labour markets. For example, in their case study of TVET in four Francophone Africa countries (Côte d'Ivoire, Madagascar, Mali and Senegal), David Atchoarena and André Delluc (2002) found that the inherent deficiency in TVET programmes and their patterns of delivery is

61 Atchoarena and Delluc, 2002
62 UNEVOC, 1996

the fact that they ignore the informal sector, especially the artisans' micro-enterprises. Originally modelled on the French school system, TVET in these countries has often not fully taken into account the possibilities of the traditional apprenticeship for meeting the needs of the artisan sector which both provides jobs and often stands in need of improvement.[63] This is mainly because their TVET programmes have maintained a fairly large amount of general content that is not relevant to the specific skills required for the informal sector.

In contrast, as revealed by the same authors, the Anglophone countries have more experience in dual forms of public sector training and artisan sector training.[64] In these forms of provision, the vocational aspect tends to be more dominant and general education plays a smaller part. One disadvantage of this is that it makes progression between vocational and general courses more difficult and hence, for the most part, those who enrol in TVET have no way of advancing their educational level – which leads to it being perceived as a "deadend" type of education. Nevertheless, some countries in Africa, like Botswana, Ghana and South Africa, have advanced further in modernising traditional apprenticeship schemes to integrate them into a national training system. This will hopefully lead to both lateral movement and progression between various ISCED levels.

Another notable contrast between the Francophone and Anglophone countries is the place of TVET within in the education system, as well as its situation in the world of work. Atchoarena and Delluc observe that despite certain national specificities, Francophone countries often seem to encounter difficulties of the same nature, especially when trying to balance supply and demand.[65] This can be attributed to unclear demarcation of how much general content should be in TVET programmes. Maintaining a large amount of general content can lead to difficulty in balancing demand and supply.

3.5.5 Levels of participation in TVET

TVET generally occupies a small - if not marginal - position in school systems in Africa, expressed as a percentage of enrolment in secondary education. However, Atchoarena and Delluc note that problems of data collection at national level and lack of consistency across countries make comparative analysis difficult.[66] As observed from our country interviews and noted by Atchoarena and Delluc, there are data problems resulting from both collection and classification which make it difficult to analyse the precise nature of TVET provision in different countries. Broad differences between Francophone and Anglophone systems are more easily observed than the finer distinctions in countries within each of these groupings.

A further problem results from the fact that much of the private provision and, indeed, some of the public TVET provision, are not captured in the national data gathering exercises. Programmes under the aegis of Ministries of Labour, Ministries of Agriculture, etc. are rarely captured in TVET statistics. As a result, the official statistics reported in the UIS *Global Education Digest* (GED) most probably underestimate enrolment in TVET. Figures in the GED show that the weight of TVET varies considerably from country to country. Overall, there seems to be a decline in the share of TVET as a percentage of enrolment in secondary education. This trend, according to Atchoarena and Delluc, signals the uncertainties in the effectiveness of TVET matching the requirements of the labour market.[67]

Despite the problems with the data, Atchoarena and Delluc have analysed the country patterns and grouped countries into three categories which we find relevant for this report. In the first category are the countries in which the proportion of TVET enrolment in general secondary education is under 2%. These include Eritrea, Ethiopia, Malawi, Namibia, Niger and South Africa. The presence of South Africa in this category is surprising given its well-known, although rapidly declining, Technikons. In these countries, TVET did not receive sustained

63 Atchoarena and Delluc, 2002
64 Ibid
65 Ibid
66 Ibid, p. 39
67 Ibid

attention from governments for several complex reasons which vary from one country to another.[68] In Malawi, for example, where 90% of the population lives in rural areas, the entire school system is relatively poor and priority has been given to meeting the international goal of expanding access to basic education, particularly primary education. Niger is another of the African countries where the enrolment rate for children aged 7 to 12 years is still very low (29%). Other countries where the proportion of TVET is close to 2% of total secondary enrolment include Algeria (2.8%), Chad (2.2%), Lesotho (1%), and Senegal (1.9%).[69]

The second category contains countries where the proportion of TVET enrolment in general secondary education has been between 5% and 9% over the past few years. Examples include Botswana, Burkina Faso, Côte d'Ivoire, Morocco, Mozambique, Togo, Tunisia and Uganda. In Morocco and Tunisia, for example, the figures were 6.4% and 6.9% respectively in 2000/2001.

The third group includes countries where the share of TVET enrolment in general secondary education is over 10%. This includes Cameroon, Congo, Egypt, Gabon and Mali.[70] In Egypt, the share of TVET in 2000/2001 was 29%. In Mali, the share has stood at about 10% to 11% since the early 1970s, reflecting the Malian government's attachment to this type of education, which it considers as an important factor in the development of an industrial fabric. When the *Etats Généraux de l'Education* were held in 1990, the Malian government took several initiatives to raise both the quality of TVET and the number of TVET institutions.[71] In Cameroon, TVET formed substantial part of overall secondary education, with a 26.8% share of enrolment up until 1980. Beginning in the late 1980s, however, its share began to decrease, falling to 16.6% in 1994. The share of TVET in Gabon also fell sharply over time, from 19.6% in 1985 to 9.4% in 1995. In Congo, TVET share has fluctuated somewhat over the past 30 years, reaching a high of 11.7% in 1996 and a low of 6.5% in 1991. This confirms the failure of the TVET effort and the disillusionment in the "people's school" which was supposed to train the qualified personnel needed for the development of Congo's economy.[72]

Generally speaking, the low proportion of TVET in general secondary education is partly due to public opinion towards this branch of learning, which is usually regarded as leading to low-status occupations and lacking progression to higher levels of education.[73] Moreover, pupils who enrol in this kind of education are considered to be those who have failed in general education. This results in a contradiction between the generally negative image of TVET and the strategic role it is supposed to play in the economy both as regards the important, if fluctuating informal sector, and as regards the sectors more integrated into the global economy.[74]

From the data presented, it can be seen that the provision of TVET only reaches a small part of the school-age population since access is still limited in most countries in Africa. In many cases, pupils who choose the TVET route consider themselves lucky for having passed the difficult hurdle of admission to any type of secondary school. In many countries, the vast majority of pupils who do not have access to secondary education have only one source of vocational training: the traditional apprenticeship.[75]

If this general picture is grim, it is even grimmer for girls. Generally, female access to secondary education is comparatively limited, which is reflected in the gender inequalities in TVET. Even more complex is the fact that often when TVET is already seen as less prestigious, women outnumber men in enrolment.

Countries where women account for fewer than 15% of TVET enrolment include Eritrea, Ethiopia, Malawi, Namibia, Niger and Uganda. For this group of countries, the share of TVET enrolment in overall secondary enrolment is less than 2%, and the proportion of girls is low not only in technical and vocational education but throughout the entire education system.[76] In other countries, such as Benin, Botswana, Chad, Guinea,

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68 Ibid
69 Ibid, p. 41. The figure for Algeria is based on calculation from GED for 2000/2001 year.
70 Ibid
71 BREDA, 1994
72 Ibid, p. 42
73 Ibid
74 Ibid
75 Ibid
76 Ibid, p. 42

Mauritania, Mozambique, Senegal and Togo, the proportion of girls in TVET stood at about 30% to 35% in 1995/1996.[77] By 1998/1999 and 2000/2001 the figures for Botswana, as reported in the GED, declined to 27% and 28% respectively. In many cases, the proportion of girls enrolled in TVET has hardly reached figures close to 50%. Among the few high cases for 2000/2001 were Kenya and Egypt, where the figures were 40% and 45% respectively, although these figures should be regarded with caution because they are estimates - and again as noted by Atchoarena and Delluc, only a low percentage of girls reach the secondary level in many countries in the region.

3.5.6 Some recent concerns over formal TVET in Africa

Aside from the early criticisms by Philip Foster (1965) and Mark Blaug (1973), numerous concerns over TVET have been voiced over the past decade. Atchoarena and Delluc[78] summarise in terms of:

- poor quality;
- very high cost;
- training not suited to actual socio-economic conditions;
- disregard of the needs of the informal sector; and
- disregard of the labour market and high unemployment rate among graduates.

In view of the changes in the labour market, the objectives of technical and vocational education have become more diverse: they are no longer simply economic but also social, including the fight against poverty and the integration of young people into the working world, all in line with the articulations in the Millennium Development Goals (MDGs).[79] Given the prevailing economic trend, two other major objectives have been identified and must now be pursued: 1) to train the workforce for self-employment; and 2) to raise the productivity of the informal sector.[80] But lack of resources is seen as a hindrance to pursuing these new critical objectives; even more so given that TVET is an expensive form of education and expanding it without necessary and adequate facilities and equipment does not lead to productivity in the long run. Yet, at the same time, criticisms of TVET have led to cuts in the volume of training provided in public institutions and a call for the mostly family-run informal enterprises in countries, such as Kenya, to take on more of the responsibility for providing TVET. A look at the funding of TVET can shed light on the contradiction between the emphasis for skills and the limited funding that governments are willing to commit to TVET. Moreover, the international pressure on countries to meet their EFA goals by 2015 has meant that more resources have been shifted, both within national budgets and international aid assistance, to realising universal primary education; yet, the rhetoric over skills and the value of TVET continues.

3.5.7 Financing of formal TVET in Africa

As is the case with provision, delivery patterns and levels of participation, the financing of TVET as percentage of public education expenditures varies considerably from country to country. It ranges from a low of 0.9% a decade ago in Ethiopia to 12.7% in Gabon in the same period.[81] In our case studies, getting the financial breakdown for TVET is difficult because in many countries allocation is done at ISCED level rather than by programme. Many countries are therefore unable to provide accurate expenditure on TVET. Difficulties in specifying spending on TVET are compounded by the fact that provision in the private sector and by other Ministries is hardly captured in the data. As interview respondents suggested, many of the private providers do not want to provide their financial information and in cases where they do, the figures are often inaccurate. Nevertheless, **Table 3** below can shed some light on the levels of financial allocation to TVET in selected countries. In further analyses, the distinctions between central government finance of TVET, payroll levies and other sources of TVET finance should be considered.

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77 Ibid, p. 42
78 Ibid, p. 38
79 Ibid, p. 38
80 Caillods, 1994
81 Atchoarena and Delluc, 2002

Table 3: Percentage of technical and vocational education expenditures in total education expenditures

Country	%	Year	Country	%	Year
Benin	3.3	1995	Guinea	7.5	1993
Botswana	5.5	1991	Lesotho	3.3	1994
Chad	2.0	1994	Malawi	1.1	1992
Congo	4.9	1980	Mali	9.1	1995
Côte d'Ivoire	4.8	1994	Mauritania	2.3	1995
Eritrea	1.6	1994	Mozambique	6.2	1990
Ethiopia	0.9	1993	Namibia	2.0	1995
Gabon	12.7	1992	Senegal	2.7	1990
Ghana	4.9	1990	Togo	3.7	1994

Source: ILO, World Employment report 1998/1999 cited in Atchoarena and Delluc, 2002, pp. 45.

Generally TVET is expensive since facilities, material, equipment and maintenance have a high cost. Yet, without such equipment, training yields poor results and graduates are unable to find jobs. It has been recommended that to help alleviate this financial problem in TVET more private provision should be encouraged. At the same time, it has been recommended that a closer relationship between the business community and TVET institutions should be established which would involve employer investment in training, including donations of equipment. In the years following independence, TVET in Africa was financed almost exclusively by governments and by multilateral and bilateral aid agencies, which regarded TVET as a potential factor of modernisation for African societies. For example, from 1964 to 1969, secondary TVET was the second-largest recipient of World Bank loans for education, accounting for nearly 20% of the total amount lent. However, the technical education share of the World Bank education loans was cut to 10% in the late 1970s and has decreased steadily since then, falling to 6% in the 1993 to 1998 period.[82]

3.5.8 Future issues

There is no doubt that TVET is important in Africa's development. Some authors argue that, from the analysis of trends and issues in the region, the key point is to transform TVET to reflect the prevailing reality in the labour market and that this transformation must begin with TVET shedding its traditional mold and taking as its objective the need to link itself to the informal sector, including in agriculture and fisheries. In UNEVOC's view, however, this approach does not seem to have been successful in Botswana, Kenya, Ghana and elsewhere in Africa.

In any case, more data should be collected to monitor patterns of provision in both government and private institutions. Ideally, data should be available to publish indicators on the proportion of secondary enrolment in TVET by level, destination and orientation types and gender and on net enrolments rates in TVET by level, types and gender. Data on the percentage spent on TVET as proportion of total education expenditure could also be helpful if they can be collected by countries. Without adequate data and clear classification, progress in monitoring the impact of TVET can be hampered.

[82] Atchoarena and Delluc, 2002, p. 47

4. STATISTICAL OVERVIEW OF TVET ACROSS ISCED LEVELS

After an overview of the issues in measuring TVET and current trends in its provision, this section presents analysis of the data that are available at the global level. The data come from the UIS regular annual survey which usually draws upon Ministries of Education. Data used in the survey are transformed from national programme structure to ISCED and are applied to the UN population estimates to make education and demographic data consistent and comparable. The data are, as stated earlier, confined to enrolment in the formal education system. They cannot, therefore, be used to present a complete picture of TVET. However, given the debate presented above on the extent to which TVET should be provided by the formal education system in developing countries, it is useful to examine the overall level and nature of this provision across the world.

4.1 Global overview: TVET programmes across ISCED levels

This section presents an overview of technical/vocational and other related programmes at each of the four applicable ISCED levels (lower secondary, upper secondary, post-secondary non-tertiary and tertiary) and their combinations, both globally and by region. The reason for excluding the remaining levels is straightforward: even though some primary school curricula may feature some vocational content, there are no vocational programmes at pre-primary (ISCED 0) and primary (ISCED 1) and there are no such programmes either at the other end of the educational system - the second stage of tertiary education (ISCED 6). Therefore, these three levels are omitted from the discussion. The section begins by dealing individually with the four pertinent levels in ascending chronological order.

Among those levels that do offer vocational programmes, lower secondary (ISCED 2) is the least frequent: 125 countries do not report enrolment in such programmes, while 49 countries do. In some regions, this may be regarded as too early a stage to offer TVET; other countries, however, offer vocational programmes within compulsory education ages as a way to provide marketable skills to children who may not pursue further studies. In developed countries, pre-vocational may outnumber vocational programmes at this level, but, since they are included with general programmes, they remain undetected for purposes of international statistics.

Table 4: TVET provision by level and ISCED 5B programmes (number and percentage of countries)

		No	Yes	Data not available	Total
Vocational enrolment at lower secondary (ISCED 2)	N	125	49	33	207
	%	60.4%	23.7%	15.9%	100.0%
Vocational enrolment at upper secondary (ISCED 3)	N	29	136	42	207
	%	14.0%	65.7%	20.3%	100.0%
Vocational enrolment at post-secondary non-tertiary (ISCED 4)	N	79	80	48	207
	%	38.2%	38.6%	23.2%	100.0%
Enrolment at tertiary ISCED 5B	N	43	104	60	207
	%	20.8%	50.2%	29.0%	100.0%

Source: UNESCO Institute for Statistics database, 2005.

Upper secondary education (ISCED 3) on the other hand, is by far the most ubiquitous form of vocational education provision: 136 countries report enrolment in vocational programmes at this level. In most countries, this stage follows the end of compulsory education and may thus be regarded as a suitable point for curriculum diversification.

Enrolment in vocational programmes in post-secondary non-tertiary education (ISCED 4) is reported in 80 countries. Vocational provision at this level, even though still rare, has recently been growing as a result of the creation of new programmes and the reclassification of existing ones, which were formerly labelled ISCED 3 or 5B.

Finally, ISCED does not apply the "programme orientation" criterion at the tertiary level; therefore, ISCED 5B programmes are not formally classified as vocational, despite being defined as "practically-oriented/occupationally-specific". These programmes are quite widespread: 104 countries report enrolment.

In addition to looking at the distribution of programmes at each ISCED level by country, it would be useful to consider the vocational education sub-systems as such: by combining three of the previous four criteria (presence or absence of enrolment in vocational programmes at each of ISCED Levels 2 through 4), it is possible to create an index of diversification that ranges from 0 (in those countries that do not offer vocational education at all) to 3 (in those that offer this stream at all three levels). This index has been calculated for the 143 countries with valid information on vocational enrolment for all ISCED Levels 2 (lower secondary) through 4 (post-secondary non-tertiary).

Box 1: Are technical/vocational programmes terminal?

Technical and vocational programmes are often seen as leading exclusively to the labour market. ISCED does not formally classify programmes as "terminal", but uses the "type of subsequent education or destination" criterion (applied regardless of the programme's general or vocational orientation). While other programmes (classified as Type A or B in secondary, and just as Type A in post-secondary non-tertiary) qualify their graduates to enter programmes at the subsequent educational level, we can think of Type C programmes at Levels 2 and 3 (secondary) and Type B programmes at Level 4 (post-secondary non-tertiary) as leading directly to the labour market, therefore being the closest to "terminal" programmes:

- "2C: programmes primarily designed for direct access to the labour market at the end of this level (sometimes referred to as 'terminal' programmes). (...)
- 3C: programmes at level 3 not designed to lead directly to ISCED 5A or 5B. Therefore, these programmes lead directly to labour market, ISCED 4 programmes or other ISCED 3 programmes. (...)
- 4B programmes not giving access to level 5 (primarily designed for direct labour market entry)."[83]

Are all vocational programmes "terminal"? No. The following table shows, for ISCED Levels 2 through 4, the distribution of general and vocational programmes by type of subsequent education or destination:

				Orientation			
				General		Vocational	
				Count	%	Count	%
Level	Secondary (ISCED 2 & 3)	Destination	A	531	89%	119	26%
			B	34	6%	115	25%
			C	33	6%	221	49%
			Total	598	*100%	455	100%
	Post-secondary non-tertiary (ISCED 4)	Destination	A	88	72%	62	28%
			B	34	28%	157	72%
			Total	122	100%	219	100%

Source: UNESCO Institute for Statistics database, 2005.

* Due to rounding, percentages may appear not to sum exactly to 100%.

At the secondary level (both lower and upper, ISCED 2 and 3) about one-fourth of vocational programmes (26%) are Type A, another one-fourth (25%) are Type B, while about one-half (49%) are Type C or "terminal". As for general programmes, about 9 out of 10 (89%) are Type A, and the rest are split equally between Types B and C (6% each). In summary, at the secondary level about one-half of all vocational programmes are "terminal" (Type C), while only about 1 out of 20 general programmes are "terminal" (Type C).

At the post-secondary non-tertiary level (ISCED 4) about one-fourth (28%) of vocational programmes are Type A and three-fourths (72%) are Type B. Among general programmes, the distribution is reversed: about three-fourths (72%) of vocational programmes are Type A and one-fourth (28%) are Type B.

In conclusion, even though vocational (as opposed to general) programmes are more likely to be "terminal", not all vocational programmes fall into that category. In fact, Type C programmes comprise only about one-half of vocational programmes at the secondary level and about three-fourths of those at the post-secondary non-tertiary level.

[83] International Standard Classification of Education, pp. 19, 23, 26

Table 5 presents the distribution of this index by region, showing that:

- Out of 143 countries, only 22 report enrolment in vocational programmes at all three ISCED levels considered; one-third of these are in Europe and the rest are scattered across all other regions.
- Almost one-half of all countries (67 out of 143) provide vocational education enrolment at two different ISCED levels; once again about one-third of these countries are in Europe.
- Almost one-third of all countries (46 out of 143) supply vocational education enrolment at one ISCED level; about 40% of these (17) are in the Asian region.
- Only eight countries report null vocational education enrolment at all three ISCED levels.

Table 5: Index of diversification of TVET programmes, by region (number of countries)

Index of diversification of vocational programmes	Region						Total
	Africa	North America	South America	Asia	Europe	Oceania	
No programmes	0	2	1	2	1	2	8
1 level	8	9	6	17	6	0	46
2 levels	14	9	2	16	23	3	67
3 levels	4	5	2	3	8	0	22
Total	26	25	11	38	38	5	143

Source: UNESCO Institute for Statistics database, 2005.

Some important regional variations are also clear in Table 5:

- Europe has the highest and most homogeneous level of diversification: the vast majority (more than four-fifths) of countries report vocational education enrolment at two or more ISCED levels.
- In Asia and South America, the level of diversification is noticeably lower since one-half or less of each region's countries report vocational education enrolment at two or more ISCED levels. However, both regions have viable non-formal TVET institutions.
- North America is the most heterogeneous region.
- Africa is the only region where vocational enrolment is reported at least at one level for all countries with available data.

Additionally, it is possible to create a typology that would consider the number of levels that feature vocational programmes and each particular combination of levels, resulting in a classification that would allow the identification of different patterns of vocational education provision. **Table 6** shows the distribution of this typology by region (once again, it only includes the 143 countries with valid information on vocational enrolment for ISCED Levels 2 through 4).

Table 6: Typology of TVET provision, by region (number of countries)

Typology of countries according to TVET provision by ISCED levels	Region						Total
	Africa	North America	South America	Asia	Europe	Oceania	
No programmes	0	2	1	2	1	2	8
ISCED 2	1	0	0	0	0	0	1
ISCED 3	4	6	6	16	5	0	37
ISCED 4	3	3	0	1	1	0	8
ISCED 2 + 3	7	4	1	2	2	2	18
ISCED 2 + 4	1	3	0	0	0	0	4
ISCED 3 + 4	6	2	1	14	21	1	45
ISCED 2 + 3 + 4	4	5	2	3	8	0	22
Total	26	25	11	38	38	5	143

Source: UNESCO Institute for Statistics database, 2005.

The most common pattern of vocational education provision combines the two most-advanced levels: upper secondary (ISCED 3) and post-secondary non-tertiary (ISCED 4). Out of 45 countries, 21 are European, 14 are Asian and 6 are African:

- The European group includes: all Scandinavian countries but Denmark; four former Soviet republics (Belarus, Estonia, Russian Federation and Ukraine); and five other Eastern countries (Hungary, Poland, Romania, Slovenia and The former Yugoslav Republic of Macedonia); as well as several Central or Western European countries (Austria, France, Germany, Liechtenstein, Luxembourg and Switzerland,); plus Mediterranean Greece and Italy.
- The heterogeneous Asian group includes, among others, four former Soviet Republics: Armenia, Azerbaijan, Kazakhstan and Tajikistan.
- The African countries include, among others, partially Anglophone neighbours: Botswana and South Africa.
- The North American group is entirely English-speaking: Belize, Grenada, and Turks and Caicos Islands.
- South America and Oceania have each only one country in this group, respectively: Uruguay and New Zealand.

The second most recurrent pattern is circumscribed to the most frequent level: upper secondary (ISCED 3). Out of 37 countries, 16 are Asian. Out of five European countries, three are Eastern (Albania, Croatia and Republic of Moldova).

The third most common pattern is truly all-encompassing: it involves ISCED Levels 2 through 4. Out of these 22 highly-diversified vocational education systems, eight are European. In this group we can find five Eastern European countries (namely Bulgaria; Czech Republic and Slovakia; and Baltic republics Latvia and Lithuania), as well as neighbours and long-time economic partners Belgium and the Netherlands, plus Malta.

The fourth most frequent mix combines lower and upper secondary (ISCED 2 and 3) and is present in 18 countries. Even though there is no clear pattern, these include: two neighbouring European countries, Spain and Portugal; former Portuguese colonies in Asia (Macao, China) and Africa (Mozambique); and three Spanish-speaking countries in North America (Mexico, Costa Rica and Nicaragua). Also included in this group are former Dutch colonies, Aruba and Suriname. We can also find former French colonies in Africa (Burkina Faso, Djibouti, Mauritania and Tunisia) and Asia (Lebanon). Uganda is the only English-speaking country in the group.

Conversely, all four countries that report vocational education at the lower secondary (ISCED 2) and post-secondary non-tertiary (ISCED 4) levels are English-speaking: Swaziland, Dominica, Saint Lucia and Saint Vincent and the Grenadines (the last three are from the Caribbean).

Box 2: Are technical/vocational programmes shorter than general programmes?

Technical and vocational programmes are generally perceived as being of a shorter duration than general programmes. The following table shows summary statistics for programme duration in years, by orientation within each relevant ISCED level (2 through 4).

				N	Mode	Median	Mean	Standard deviation
Level	2	**Orientation**	General	281	3	3	3.25	.99
			Vocational	122	3	3	2.75	1.04
	3	**Orientation**	General	317	3	3	2.88	.94
			Vocational	333	3	3	2.69	.97
	4	**Orientation**	General	122	2	2	1.82	.69
			Vocational	219	2	2	2.03	.86

Source: UNESCO Institute for Statistics database, 2005.

The modes and medians are the same for both orientations within each ISCED level: in lower and upper secondary, the mode and median are three years, regardless of programme orientation. At the post-secondary non-tertiary level, the mode and median are two years for both orientations.

As for the means, the differences between general and vocational are far from impressive. Furthermore, in the particular case of post-secondary non-tertiary education (ISCED 4), vocational programmes are actually longer, on average, than general programmes.

In summary, contrary to a widespread notion, vocational programmes are not necessarily shorter than general programmes, and at some ISCED levels, they tend to be slightly longer on average.

It is also possible to define sub-regional or cross-regional clusters of countries by taking historic and cultural factors into account in order to reveal additional patterns. The Spanish- and Portuguese-speaking countries of Europe and the Americas, which often identify themselves as "Iberoamerica", would be an example of a cross-regional cluster (a group of countries from different regions that nonetheless share some relevant traits). They seem generally disinclined to provide TVET programmes at the post-secondary non-tertiary level (ISCED 4). Only four countries (Cuba, Panama, Paraguay and Uruguay) report such enrolment, while fourteen others (Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Mexico, Nicaragua, Peru, Portugal, Spain and Venezuela) do not. However, 21 nations in Latin America and the Caribbean have non-formal TVET systems that are at least as viable as the formal systems in these nations. In fact, in Brazil the government contracts with SENAI to run its TVET schools.

Aside from the fact that combinations of programmes at different ISCED levels are more frequent in some regions than others, it is also worth noting that these combinations themselves do not just occur at random: the presence of TVET enrolment at one given level seems to be associated with their presence at other levels. In particular, having TVET enrolment at the upper secondary (ISCED 3) level would decrease the likelihood of having them also at the post-secondary non-tertiary (ISCED 4) level, as **Table 7** shows (presenting 116 countries with data on 5B enrolment and thorough information on TVET enrolment at Levels 2 through 4).

Table 7: Vocational enrolment at ISCED 4 by vocational enrolment at ISCED 3

			Vocational enrolment at ISCED 4		
			No	Yes	Total
Vocational enrolment at ISCED 3	No	N	2	11	13
		%	15.4%	84.6%	100.0%
	Yes	N	44	59	103
		%	42.7%	57.3%	100.0%
Total		N	46	70	116
		%	39.7%	60.3%	100.0%

Source: UNESCO Institute for Statistics database, 2005.

ISCED 5B programmes are also associated with TVET programmes, even though they are not necessarily vocational. They are more likely in countries with upper secondary TVET and less likely in countries with post-secondary non-tertiary TVET.

As we see in **Table 8**, only 13 countries have no TVET enrolment at the upper secondary (ISCED 3) level. Of those, more than one-half do not have enrolment at ISCED 5B either. However, 84 out of 103 countries with TVET enrolment at the upper secondary level also have ISCED 5B enrolment. Therefore, having TVET enrolment at the upper secondary level increases the likelihood of having also ISCED 5B enrolment.

Table 8: Vocational enrolment at ISCED 5 by vocational enrolment at ISCED 3 and 4

			Enrolment at ISCED 5B		
			No	Yes	Total
Vocational enrolment at ISCED 3	No	N	7	6	13
		%	53.8%	46.2%	100.0%
	Yes	N	19	84	103
		%	18.4%	81.6%	100.0%
Vocational enrolment at ISCED 4	No	N	8	38	46
		%	17.4%	82.6%	100.0%
	Yes	N	18	52	70
		%	25.7%	74.3%	100.0%
Total		N	26	90	116
		%	22.4%	77.6%	100.0%

Source: UNESCO Institute for Statistics database, 2005.

On the other hand, the vast majority of countries without TVET enrolment at the post-secondary non-tertiary level (38 out of 46, or 82.6%) nevertheless have ISCED 5B enrolment. Out of 70 countries with TVET enrolment at the post-secondary non-tertiary level, only 52 (or 74.3%) have enrolment at ISCED 5B. Thus, having TVET enrolment at the post-secondary non-tertiary level actually reduces the likelihood of also having ISCED 5B enrolment.

Therefore, ISCED 5B programmes and TVET programmes at ISCED 3 and 4 seem to follow a peculiar pattern:

- ISCED 3 vocational programmes and ISCED 5B programmes are very likely to appear in tandem. One reason for this is that some ISCED 3 TVET programmes are specifically designed to lead to ISCED 5B programmes.
- Meanwhile, ISCED 4 is less likely to be present if either ISCED 3 vocational or 5B are, and it is even less likely if both are present. One possible reason for this is that some countries may opt for introducing ISCED 4 programmes that (even though they evidently require upper secondary completion) fill to some extent the void that in other countries is occupied by a combination of ISCED 3 vocational and 5B programmes. (Another possibility is that non-formal TVET programmes exist in many of these nations.)

In summary, TVET provision is more frequent at the upper secondary (ISCED 3) level and less so at the post-secondary non-tertiary (ISCED 4) and lower secondary (ISCED 2) levels. The degree of TVET diversification varies substantially across regions, with the highest levels in Europe. Out of the many theoretically-possible combinations of programmes by ISCED levels, some are much more frequent than others; these also vary systematically across regions. Finally, TVET provision in upper secondary education is positively associated with ISCED 5B presence, while they are both negatively associated with TVET provision at the post-secondary non-tertiary level.

4.2 Formal TVET enrolment across ISCED levels

In the following sections, we will take a more in-depth look at enrolment in vocational programmes at each ISCED level by region.

For this purpose, we will use an indicator specifically designed to measure participation in vocational education: Vocational Gross Enrolment Ratio (VGER), which is a fundamental indicator for formal education. This indicator is analogous to the already standard total Gross Enrolment Ratio. The Vocational Gross Enrolment Ratio is the number of pupils enrolled in vocational or technical programmes in a given level of education, regardless of age, expressed as a percentage of the population in the theoretical age group for the most important TVET programme at that same level of education. For the post-secondary non-tertiary level, the population used is the age group that comprises the two years following on from the secondary school leaving age, since that is the typical duration for these programmes.

Further analyses will then be conducted specifically for the secondary level: these will include a second participation indicator (Percentages of Technical/Vocational Enrolment or PTVE) and involve country-level contextual variables, namely Gross Domestic Product (GDP) per capita and total Gross Enrolment Ratio.

Finally, the relationship between TVET and gender will be explored in some depth for the upper secondary level.

4.3 TVET at the secondary level (ISCED 2 and 3)

As shown in the previous section, secondary education includes both the least- and the most-widespread types of vocational programmes at its lower and upper levels, respectively. For this reason, this section presents information on enrolment separately, rather than jointly, for these two levels.

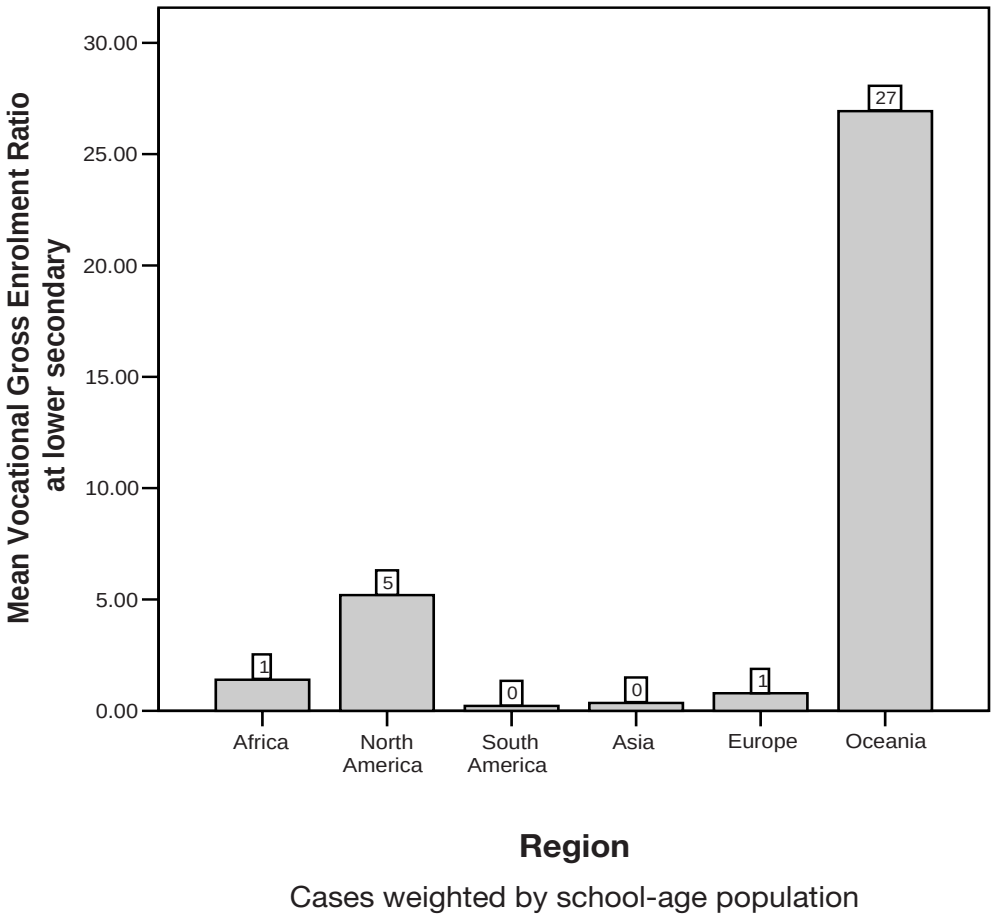
There are fewer countries with enrolment at the lower than at the upper level and the average level of enrolment tends also to be higher in the latter, even if we focus solely on the countries that do have programmes at each level. However, there are some exceptions where countries concentrate their secondary TVET enrolment at the lower rather than at the upper level.

For both levels, there are important variations in enrolment across regions and countries within each region. As for the regional differences, Oceania has fairly high mean VGERs at both lower and upper secondary education, while Europe has the highest at the upper level but has relatively little vocational enrolment at the lower

level. North America is the one region with a higher mean VGER at the lower level. Some differences among regions can be explained by the asymmetries within each region, because some countries may stand out due to their larger size or a markedly different distribution of TVET enrolment by level, or a combination of both (e.g. Australia in Oceania; Mexico or the United States in North America). In other cases, a regional average truly reflects a relatively homogeneous pattern in that area of the world (e.g. Europe).

Figure 2 presents regional averages for VGER at the lower secondary level (calculated by weighting each country's VGER by its school-age population size; thus, countries with bigger school-age populations have stronger impact on regional means). It shows that Oceania has the highest mean, followed by North America.

Figure 2: Regional averages for Vocational Gross Enrolment Ratios at ISCED 2, 2002*



Source: UNESCO Institute for Statistics database, 2005.

* For explanation please see p. xi of this report.

Asia and South America have the lowest average VGER at this level, which is remarkable in the case of the latter because this region has the highest average total Gross Enrolment Ratio,[84] even higher than that of Europe. The average for Africa, however, is a UIS estimate and should be interpreted with caution.[85]

While most countries do not have technical/vocational programmes at this level, **Table 9** shows that a few countries report high participation levels.

Table 9: Highest Vocational Gross Enrolment Ratios at ISCED 2, 2002

Region	Country	Vocational Gross Enrolment Ratio at lower secondary
Europe	Belgium	64.54
Oceania	Australia	60.58
North America	Netherlands Antilles	45.51
South America	Suriname	33.14
North America	Saint Vincent and the Grenadines	30.75
Europe	Netherlands	30.40
North America	Panama	27.70
North America	Mexico	14.17
North America	Costa Rica	12.40
Africa	Mauritius	10.13

Source: UNESCO Institute for Statistics database, 2005.

Australia's exceptionally high VGER explains in part the high regional average of Oceania. However, the country with the highest VGER at this level is located in Europe: Belgium shows consistently high participation in vocational education at all levels. Its neighbour and main long-time economic partner, the Netherlands, has the second-highest European VGER at this level; while two former Dutch colonies, Suriname and Netherlands Antilles, also show very high VGERs at the lower secondary level.

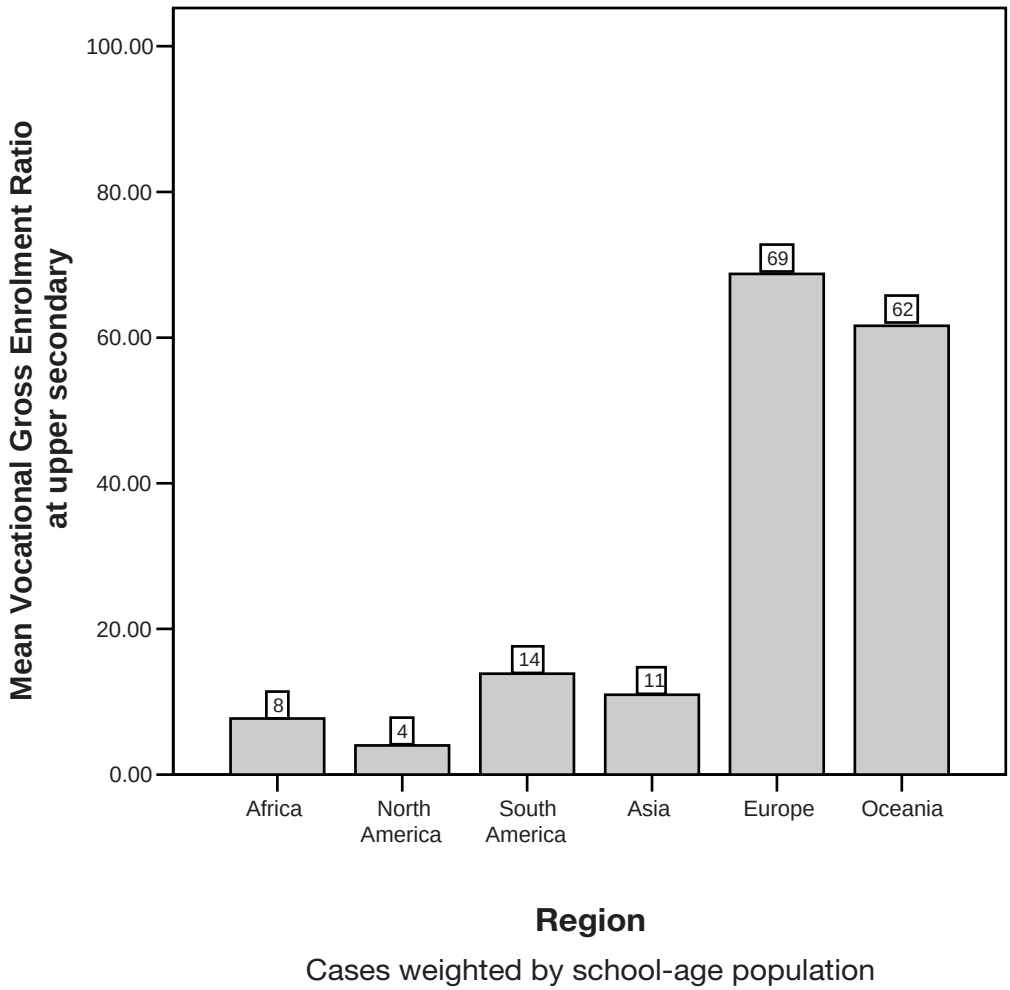
At the regional level, North America stands out with five out of the ten countries with the highest VGERs.

[84] According to UNESCO Institute for Statistics, 2005, South America's average total GER is 110 (p. 78) while Europe's is 100 (p. 80). However, total Gross Enrolment Ratios are sensitive to repetition rates, and these tend to be higher in South America than in Europe.

[85] It includes non-publishable estimates for a set of countries that represent more than 25% of the region's school-age population. These estimates usually fill the gaps generated by countries failing to submit reliable data in a timely manner. In some cases, data are not submitted due to extreme conditions in those countries, such as political upheaval or natural disasters.

Figure 3 shows that Europe has the highest average VGER at the ISCED 3 level, closely followed by Oceania.

Figure 3: Regional averages for Vocational Gross Enrolment Ratios at ISCED 3, 2002*



Source: UNESCO Institute for Statistics database, 2005.

The most outstanding feature of Figure 3 is North America's low average participation in vocational education at ISCED 3, which is even lower than at ISCED 2. This is partly due to Mexico's VGER in lower secondary (14.2%) being more than three times as high as in upper secondary (4.3%).

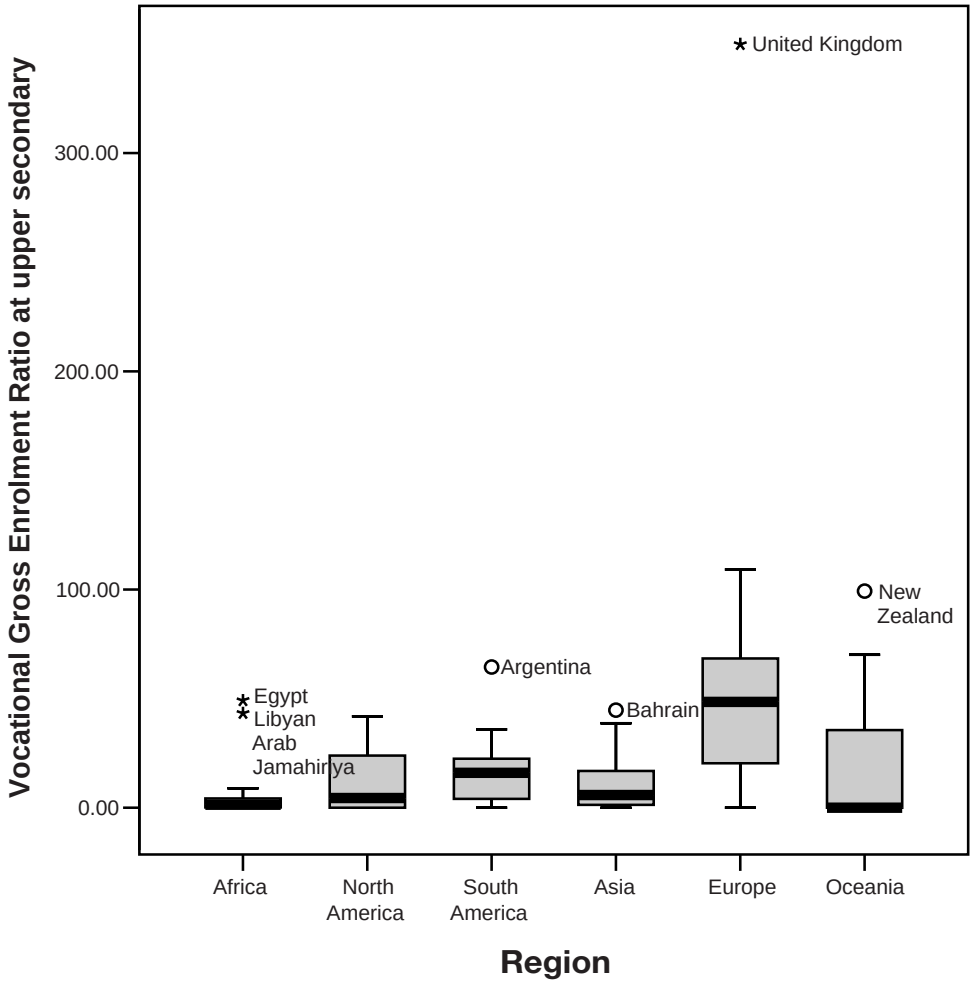
The African average is a UIS estimate and should be interpreted with caution.[86]

[86] It includes non-publishable estimates for a set of countries that represent more than 25% of the region's school-age population.

* For explanation please see p. xi of this report.

Figure 4 is a box plot that shows the distribution of VGERs for each region and displays the extreme cases and outliers - the countries with exceptionally high VGER as compared to other countries in their region. The distributions of VGER show important variations among regions at the upper secondary level. Europe's median is close to 50%; while Oceania's is exactly 0% (meaning one-half or more of countries have no vocational enrolment at his level). Africa's median is close to 0%, and with two exceptions, all countries have relatively low VGERs at this level.

Figure 4: Distributions of Vocational Gross Enrolment Ratios at ISCED 3, 2002*



	Africa	North America	South America	Asia	Europe	Oceania
Valid	34	26	12	45	41	9
Total	53	31	12	50	44	17

Source: UNESCO Institute for Statistics database, 2005.

The United Kingdom has the highest VGER overall, which can be partially explained by the fact that 68% of all secondary TVET students are over 24 years old. In both Africa and Asia, the highest VGERs at this level are found in Arab states, namely Egypt, Libyan Arab Jamahiriya and Bahrain.

The following sections provide analogous information for the subsequent ISCED levels (4 and 5) while a more in-depth analysis of the association between secondary TVET enrolment and other variables will be presented later.

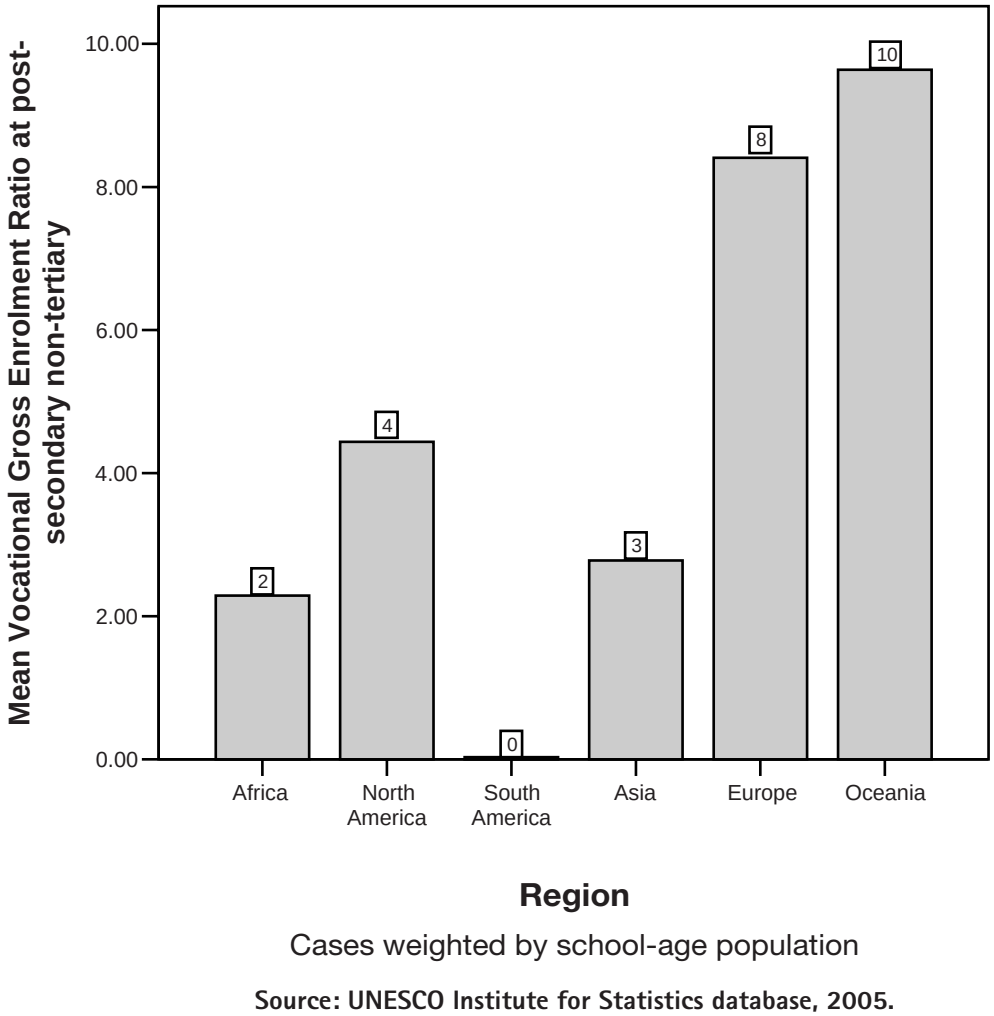
* For explanation please see p. xi of this report.

4.4 TVET at the post-secondary non-tertiary level (ISCED 4)

TVET at Level 4 shows notable variations from one region to the next. Some countries embrace it as their main form of TVET provision, while others seem to ignore it altogether. This section presents a proxy of VGER at this level, calculated by dividing the number of students in TVET programmes at the ISCED 4 level by the "post-secondary school-age population" - since most countries failed to provide data for entrance ages and duration of post-secondary non-tertiary vocational programmes, the population used is the two-year age group[87] following on from the secondary school leaving age.

Figure 5 shows that Oceania has the highest regional average (please note that this is a UIS estimate and should be interpreted with caution[88]). South America on the other hand, stands out for having by far the lowest regional average (only three countries report vocational enrolment at this level). The African average is also a UIS estimate.

Figure 5: Regional averages for Vocational Gross Enrolment Ratios at ISCED 4, 2002*



Source: UNESCO Institute for Statistics database, 2005.

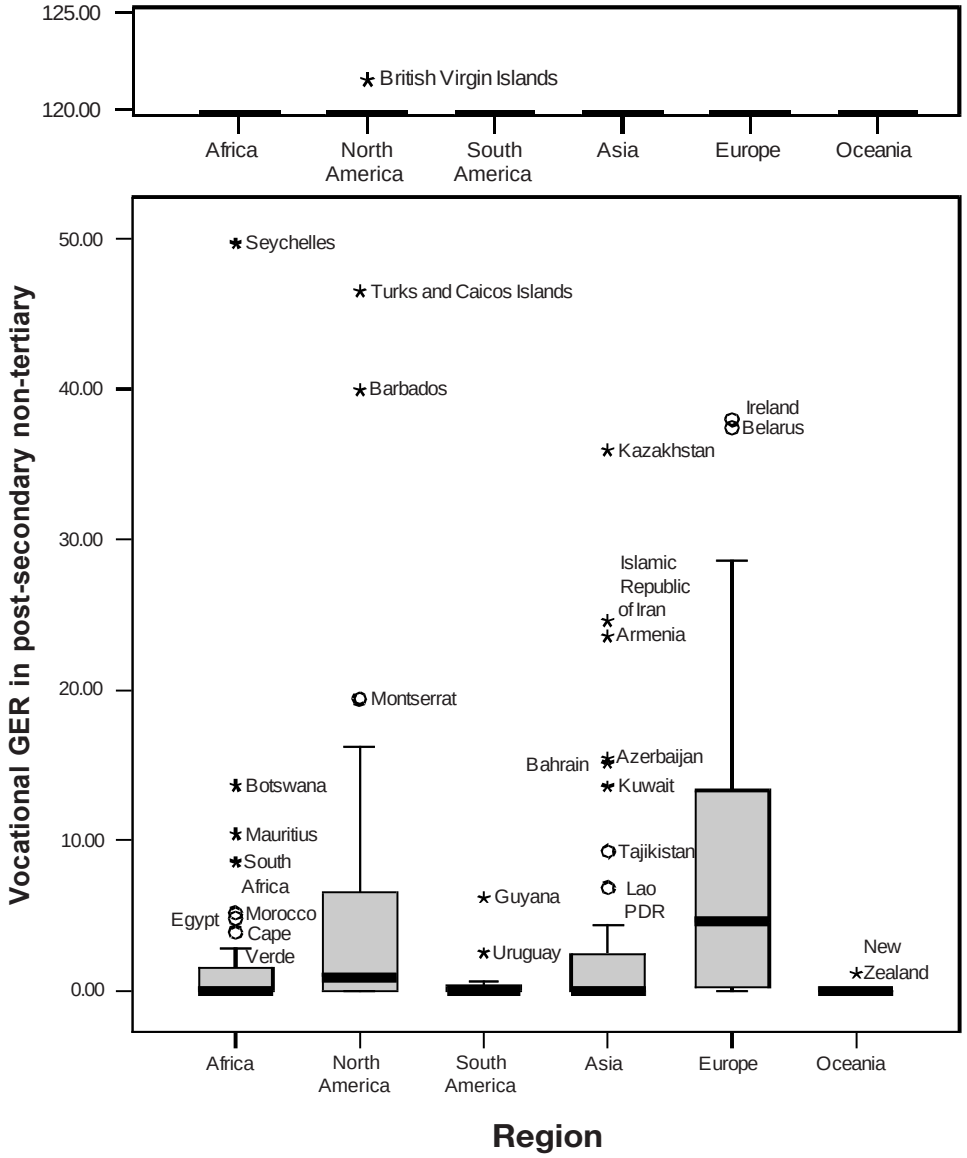
Figure 6 shows very important regional variations in VGER distributions at this level. Europe has the highest median, followed by North America. The other four regions have medians of 0%, which means that one-half or more of the countries in each of them have no enrolment in vocational programmes at Level 4.

[87] Two years is a typical value (both the mode and the median) for the duration of vocational programmes at the post-secondary non-tertiary level.

[88] It includes non-publishable estimates for a set of countries that represent more than 25% of the region's school age population.

* For explanation please see p. xi of this report.

Figure 6: Distributions of Vocational Gross Enrolment Ratios at ISCED 4, 2002*



	Africa	North America	South America	Asia	Europe	Oceania
Valid	40	26	11	39	39	8
Total	53	31	12	50	44	17

Source: UNESCO Institute for Statistics database, 2005.

Of note are the following cases:

- The five overall highest VGERs are found in English-speaking island states with virtually no tertiary level education in their own territories,[89] and in three cases, no upper secondary vocational education.[90] Four of these are Caribbean countries or territories (British Virgin Islands, Saint Kitts and Nevis, Turks and Caicos Islands and Barbados).

[89] Commonwealth Caribbean states organise tertiary education regionally through the University of the West Indies, which has campuses in Barbados, Jamaica and Trinidad and Tobago. Turks and Caicos Islands, however, has a VGER of 0.7% at ISCED 5B.

[90] British Virgin Islands and Turks and Caicos Islands do have upper secondary vocational programmes.

* For explanation please see p. xi of this report.

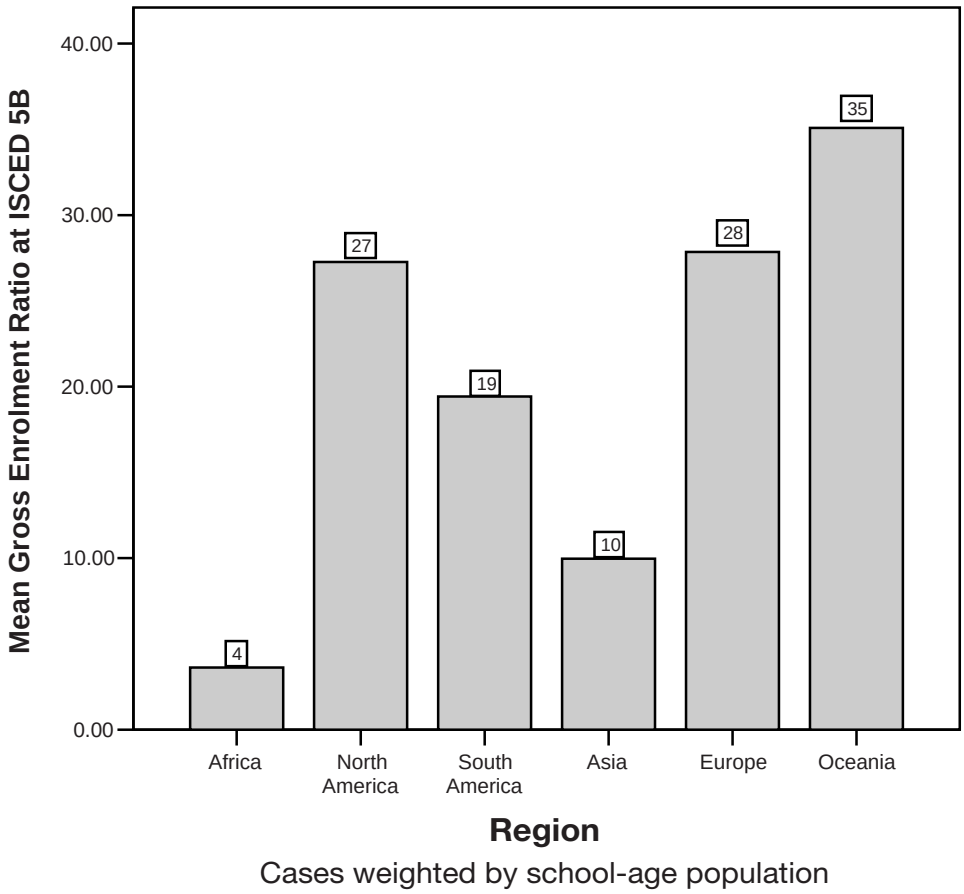
- In Africa, the four most outstanding VGERs are found in countries that are at least partially Anglophone: island states, Mauritius and Seychelles, and southern tip neighbours, Botswana and South Africa.
- One European and three Asian outstanding VGERs are found in former Soviet republics: Armenia, Azerbaijan, Belarus and Kazakhstan.
- New Zealand has the highest VGER in Oceania at ISCED 4.[91]

4.5 Enrolment in ISCED 5B programmes

Although as mentioned before, ISCED does not apply the programme orientation criterion at the tertiary level, the UOE data collection manual uses the terms "technical" or "vocational" to describe most of the ISCED 5B programmes it presents as examples. Even though ISCED 5B is not strictly part of TVET, this report would not be complete without it. This section presents a proxy of Gross Enrolment Ratios in ISCED 5B programmes, calculated by dividing the number of enrolees by the two-year age group[92] following on from the secondary school leaving age.

ISCED 5B programmes also show important variations across regions, as shown in **Figure 7**: Oceania has the highest regional average GER in these programmes, followed by Europe and North America; while Africa has the lowest average (please note that the figure is a UIS estimate and should be interpreted with caution). South America's average GER for Level 5B is also a UIS estimate.[93]

Figure 7: Regional averages for Gross Enrolment Ratios at ISCED 5B programmes, 2002*



Source: UNESCO Institute for Statistics database, 2005.

[91] Australia's vocational enrolment at this level is confounded with general enrolment. This situation makes it impossible to calculate VGERs.

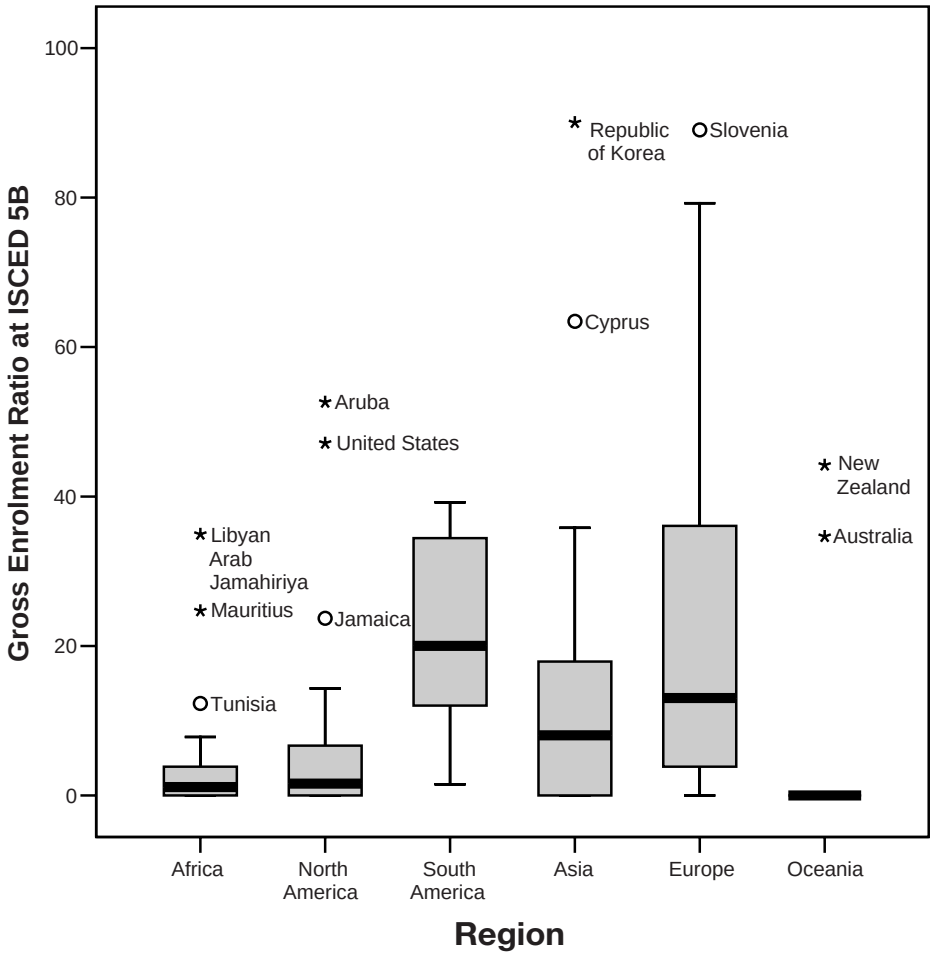
[92] Two years is the mode for duration of ISCED 5B programmes.

[93] These include non-publishable estimates for a set of countries that represent more than 25% of each region's school-age population.

* For explanation please see p. xi of this report.

As **Figure 8** shows, South America has the highest median, the most symmetric distribution, is relatively homogeneous and does not have extreme cases. Meanwhile, Europe has the second-highest median but a different, more skewed distribution, with Slovenia as the only extreme case. Asia has the third-highest median and an even more heterogeneous distribution, with the Republic of Korea and Cyprus as extreme cases.

Figure 8: Distributions of Gross Enrolment Ratios at ISCED 5B programmes, 2002*



	Africa	North America	South America	Asia	Europe	Oceania
Valid	28	23	8	44	43	17
Total	53	31	12	50	44	17

Source: UNESCO Institute for Statistics database, 2005.

Oceania has a median GER of 0, which means that at least one-half of the region's countries have no enrolment in these programmes; on the other hand, Australia and New Zealand have relatively high GERs. North America also has a low regional average, but Aruba, the United States and - to a lesser extent - Jamaica show high GERs. Meanwhile, Africa also has a low mean and two out of its three highest GERs are found in Arab states (Libyan Arab Jamahiriya and Tunisia).

* For explanation please see p. xi of this report.

4.6 The limitations of VGER and the need for an additional indicator: Percentage of Technical/Vocational Enrolment

In the previous sections we have used VGER at the lower and upper secondary levels as measures of participation in these educational streams. They provide valuable information that allows for comparison regions and countries.

However, secondary VGERs could be regarded as an ambiguous indicator because they depend on two different factors:

1. What proportion of the population attends secondary school?
2. What proportion of those who attend secondary school do so in vocational rather than general programmes?

Therefore, the differences across regional averages might be due to: (a) total participation in schooling; (b) relative weights of general and vocational programmes; or (c) a combination of both of the above.

For instance, as seen in **Table 10**, Guatemala and Ukraine have similar VGERs at the upper secondary (ISCED 3) level: 21.4% and 21.5%, respectively. However, these figures mask two very different situations: Guatemala has a total Gross Enrolment Ratio of 35.3%, while Ukraine has a Gross Enrolment Ratio of 103.6%. But in Guatemala, roughly 9 out of 10 (89%) students who attend upper secondary school do so in vocational programmes, while in Ukraine only 1 out of 5 students at this level do so. Therefore, VGERs give only a partial view of the state of TVET in a given country and should be complemented by another measure that accounts for the proportion of students that, at a given level, attend vocational rather than general programmes. This measure is called here "Percentage of Technical/Vocational Enrolment": technical/vocational enrolment as a percentage of total enrolment at that level. It is defined as the "number of students enrolled in technical/vocational programmes at a given level of education as a percentage of the total number of students enrolled in all programmes (technical/vocational and general) at that level."[94]

Table 10: Comparison of Vocational Gross Enrolment Ratios and Percentages of Technical/Vocational Enrolment for selected countries, 2002

Country	ISCED 3 vocational GER	ISCED 3 total GER	ISCED 3 Percentage of Technical/ Vocational Enrolment
Guatemala	21.4	35.3	89.4
Ukraine	21.5	103.6	20.8

Source: UNESCO Institute for Statistics database, 2005.

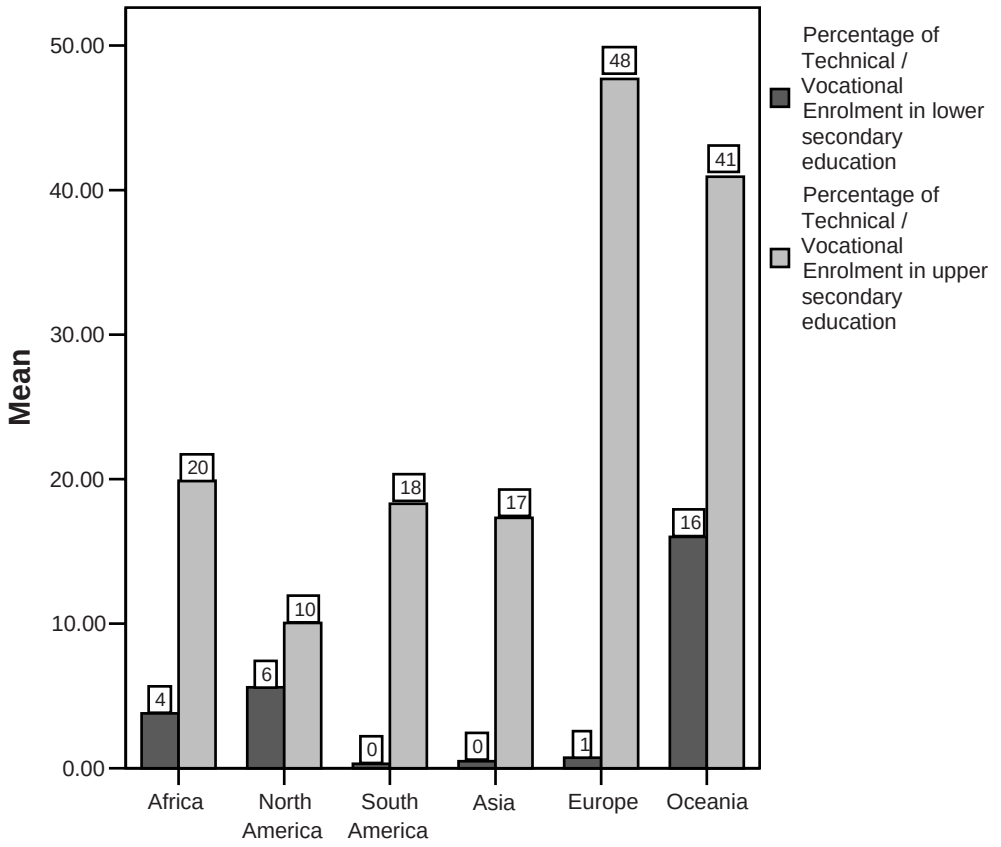
Regional averages for Percentages of Technical/Vocational Enrolment, tend to vary along the same lines as regional averages for VGERs at this level. We will see, however, that this is not necessarily the case at the national level.

Figure 9 shows regional averages for the Percentage of Technical/Vocational Enrolment at the lower (ISCED 2) and upper (ISCED 3) secondary levels. At the lower secondary level, Oceania has the highest mean, followed by North America. South America and Asia have the lowest means. At the upper secondary level, Europe has the highest mean, followed by Oceania. The African averages, however, are UIS estimates and should be interpreted with caution.[95]

[94] UNESCO Institute for Statistics, 2006, p. 184

[95] They include non-publishable estimates for a set of countries that represent more than 25% of the region's school-age population.

Figure 9: Regional averages for Percentages of Technical/Vocational Enrolment in secondary, 2002*



Source: UNESCO Institute for Statistics database, 2005.

Under various names, this measure has been used at least as early as 1983. In a pioneering article, Benavot (1983)[96] focuses on this variable and postulates its association to economic development and total secondary enrolment. These two hypotheses, slightly modified, will guide our analysis in the remainder of this section.

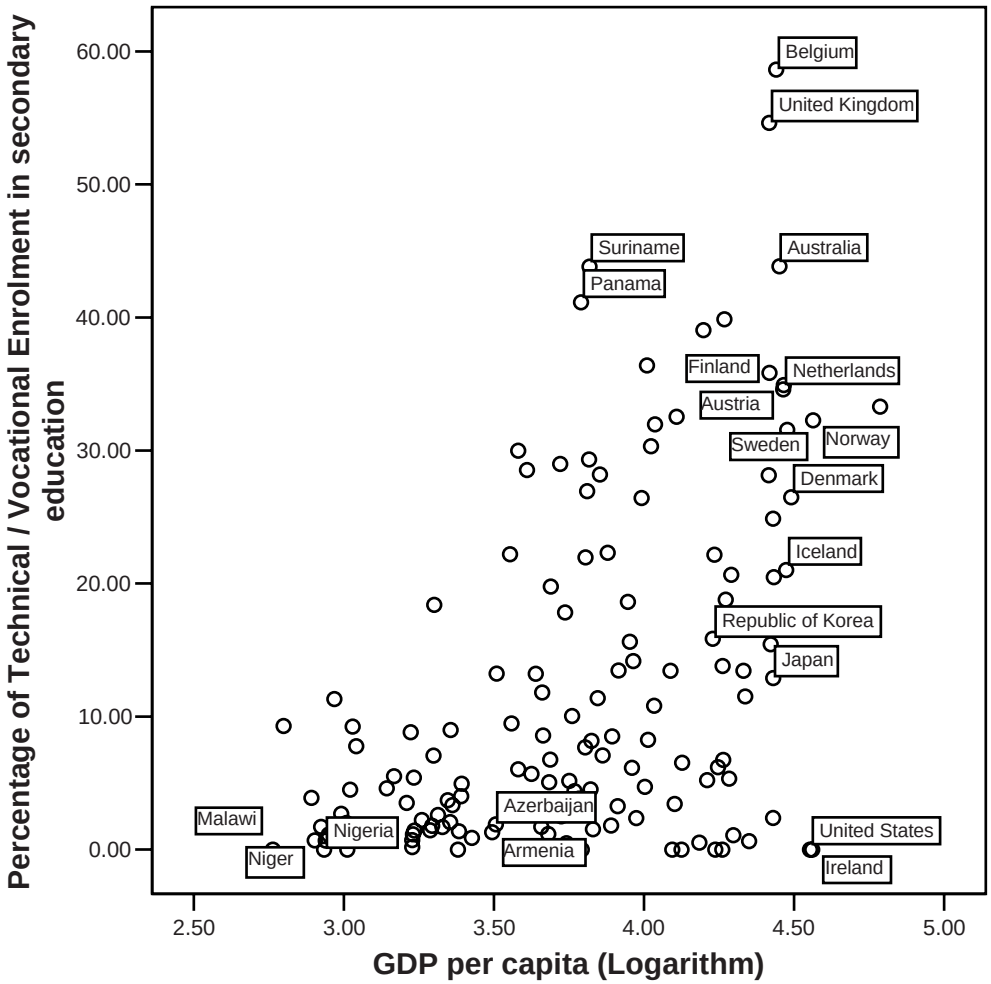
In explaining the rationale for his first hypothesis, Benavot suggests that "those economies with a greater proportion of skilled jobs would tend to expand practical vocational programmes tailored to the needs of industry".

[96] Benavot, 1983, p. 71

* For explanation please see p. xi of this report.

Figure 10 shows that the greater a country's Gross Domestic Product per capita, the greater its secondary Percentage of Technical/Vocational Enrolment. For instance, the three countries with the highest PTVEs - Australia, Belgium and the United Kingdom - also have very high GDP per capita; meanwhile, Malawi, Niger and Nigeria have low values for both GDP per capita and PTVEs.

Figure 10: Percentages of Technical/Vocational Enrolment in secondary by GDP per capita (logarithm), 2002*



Source: UNESCO Institute for Statistics database, 2005.

Some neighbouring and/or relatively homogeneous countries tend to cluster, e.g. all five Nordic countries have high income levels and PTVE between 20% and 35%; Japan and the Republic of Korea have similarly high income and PTVE around 15%; and Armenia and Azerbaijan have lower income and very low PTVE.

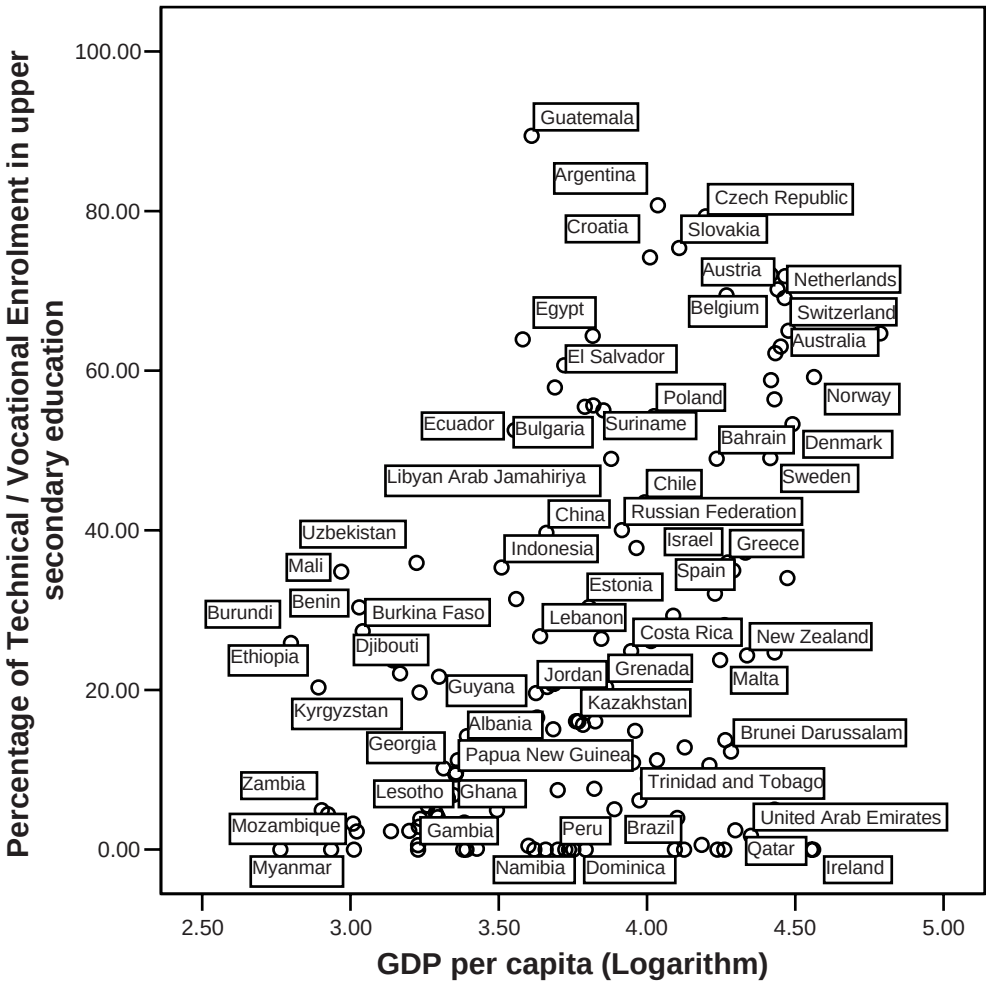
There are exceptions, however. The United States and Ireland[97] do not have secondary vocational education despite their high GDP per capita. In contrast, Suriname and Panama are middle-income countries with very high PTVE.

[97] In the United States, a high proportion of the population completes secondary and continues to tertiary education - more students enrol in ISCED 5B programmes here than in any other country. At the same time, the United States has no vocational education at the secondary (either lower or upper) level. It is possible that, in this case, the separation between vocational and general education occurs after secondary school rather than during it. This has been called the upward differentiation of TVET in North America to community and technical colleges.

* For explanation please see p. xi of this report.

A similar (even though not as strong) association is found when analysis is restricted to upper secondary education only, as shown in **Figure 11**.

Figure 11: Percentages of Technical/Vocational Enrolment in upper secondary by GDP per capita (logarithm), 2002*



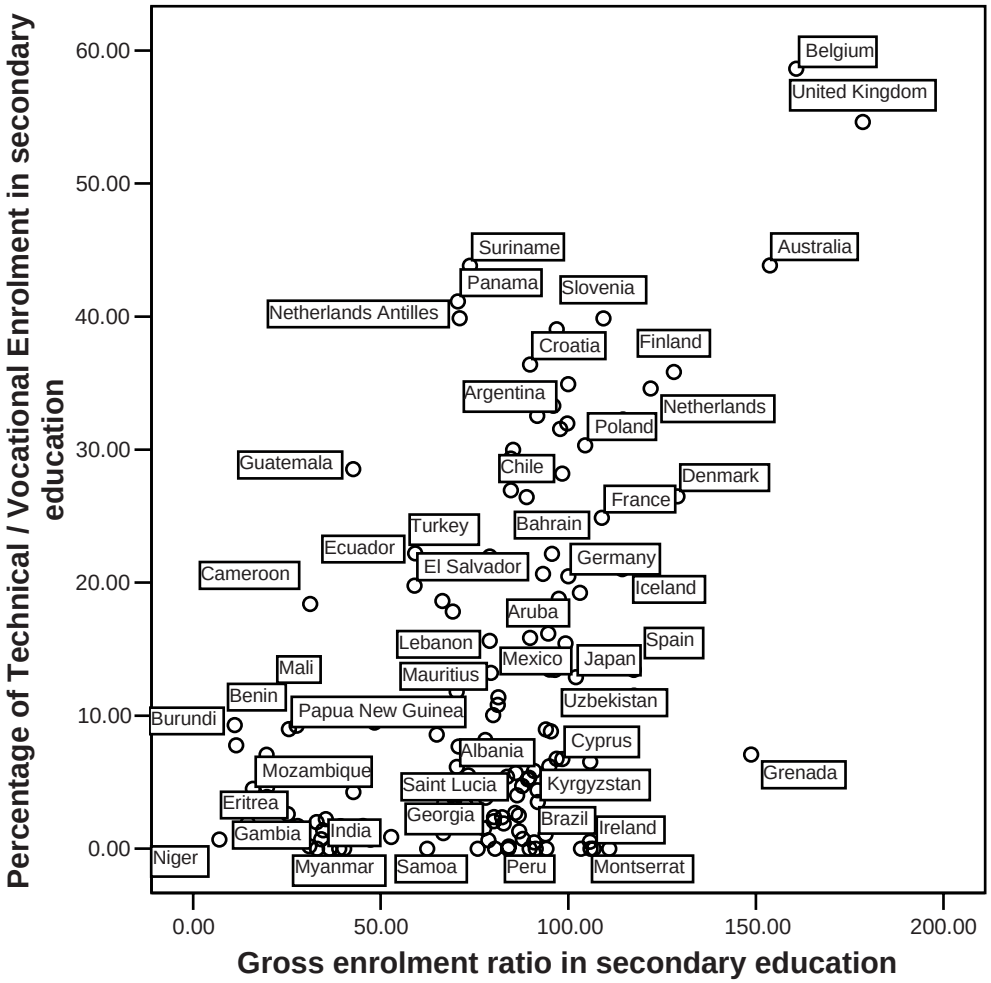
Source: UNESCO Institute for Statistics database, 2005.

The most striking difference between Figures 10 and 11 is the location of Guatemala, which has the highest Percentage of Technical/Vocational Enrolment at the upper secondary level despite a relatively low GDP per capita. Conversely, Belgium appears closer to the mainstream in Figure 11, because an important proportion of its secondary TVET enrolment is concentrated at the lower level.

* For explanation please see p. xi of this report.

Figure 12 shows that the greater a country's secondary Gross Enrolment Ratio, the greater its Percentage of Technical/Vocational Enrolment at the secondary level.

Figure 12: Percentages of Technical/Vocational Enrolment in secondary, by overall secondary Gross Enrolment Ratio, 2002*



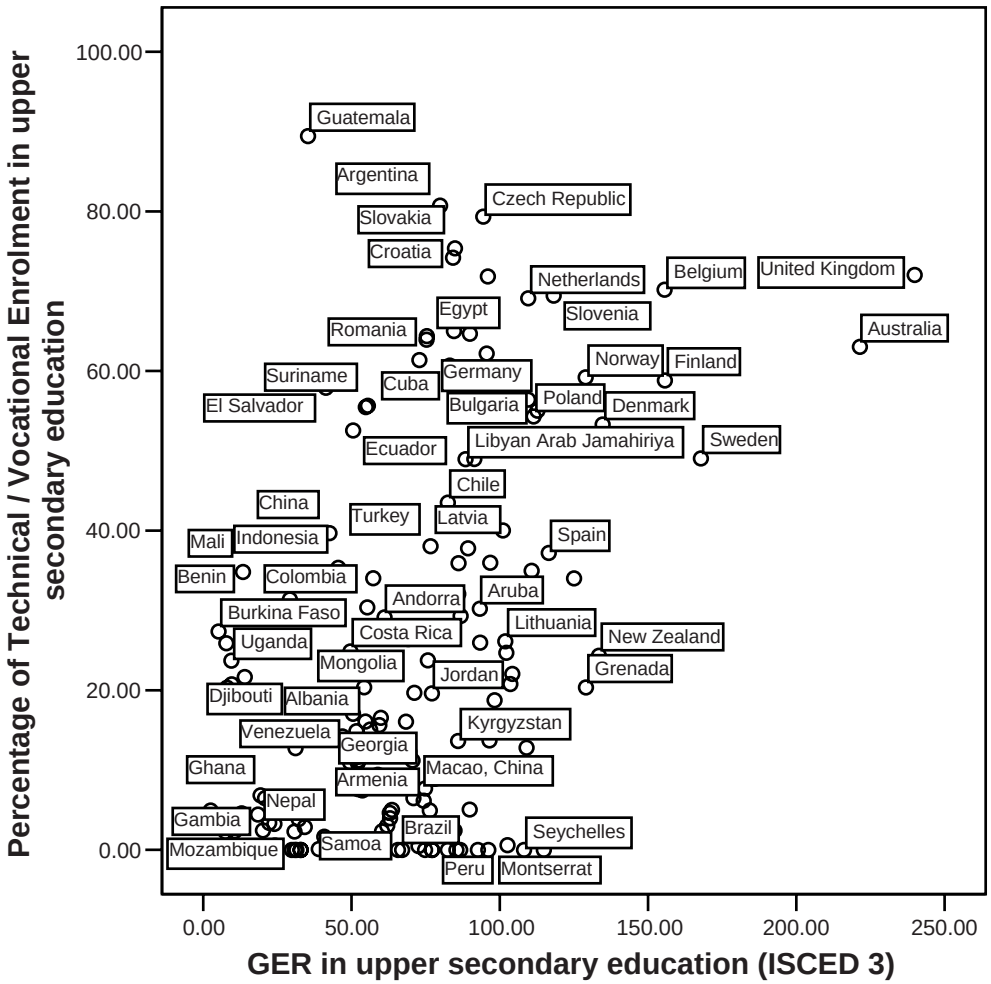
Source: UNESCO Institute for Statistics database, 2005.

Australia, Belgium and the United Kingdom have both the highest secondary total Gross Enrolment Ratios and the highest secondary Percentages of Technical/Vocational Enrolment. Eritrea, Gambia and Niger have very low Gross Enrolment Ratios and Percentages of Technical/Vocational Enrolment in secondary education.

* For explanation please see p. xi of this report.

Figure 13 shows that a similar pattern occurs in upper secondary education. Once again, when we focus on this level, Argentina and Guatemala stand out, while Belgium and the United Kingdom become closer to the mainstream.

Figure 13: Percentages of Technical/Vocational Enrolment in upper secondary, by upper secondary Gross Enrolment Ratio, 2002*



Source: UNESCO Institute for Statistics database, 2005.

From a decisionmaker's point of view, this hyphothesis is important because both variables (unlike GDP per capita) are part of education policy. Consequently, further consideration should be given to the probable causes behind this relationship.

First, alternative explanations should be discarded, or at least the most obvious one: it has been established that PTVEs are positively correlated with both GDP per capita and GERs; at the same time, the greater a country's Gross Domestic Product per capita, the greater its secondary Gross Enrolment Ratio. In other words, total GERs, PTVEs and GDP per capita are all positively correlated. Could the apparent association between GERs and PTVEs then be a result of both of them being associated with GDP per capita? Further analyses led us to conclude that the association between them cannot be fully explained by variations in GDP per capita; therefore, GERs and PTVEs are indeed associated, not merely as a result of GDP per capita having an effect on both of them.

* For explanation please see p. xi of this report.

However, in the case of the present dataset, there may also be a measurement issue: "data from WEI countries and those for which statistics are collected via the UOE questionnaires, particularly concerning secondary education, may include programmes for older students."[98] The WEI project includes 19 middle-income countries and the UOE questionnaires are mostly administered to OECD and EU countries. As a result, programmes for older students are more likely to appear in countries with above-average income levels and Gross Enrolment Ratios. The inclusion of these programmes leads to an overestimation of both GER and PTVE for a particular set of countries; as a result, the association between the two might be overestimated as well. This is also likely to affect the results of the hypothesis that links GDP per capita and PTVE. It remains unsolved and should lead us to interpret these data with caution. This situation will soon be ameliorated by a recent modification in UOE's data collection, which has introduced a specific table for programmes targeting adult populations (even though double counting, not just among adults, still may occur due to multiple course enrolment).

Benavot (the original proponent of this hypothesis, who worked with an older dataset that was not affected by the abovementioned problem) claims that "countries that have more of their eligible population enrolled in secondary schools are more likely to expand vocational education because of their ability to control and allocate scarce educational resources."[99] This may be regarded as a supply-side argument that deals mostly with countries' different ability to provide TVET programmes, rather than with the students' (or their families') decisionmaking process.

Others may argue that the reason for this might be found on the demand side in the profile of TVET students. The stereotype claims that they are from relatively disadvantaged households and have low ability or at least low achievement levels. If these notions were true, it would be reasonable to expect these students to drop out of general school because of a number of factors, mainly the economic pressure to join the labour market at an early age or the frustration caused by low achievement. Under these assumptions, some countries may provide TVET in order to prevent these students from dropping out by offering them a curriculum that is both more suitable for early labour market entry and less demanding in the purely academic subjects that these students might find the most challenging. In these circumstances TVET becomes, among other things, a device to keep students in school, which - when successful - results in an increase both in the total Gross Enrolment Ratio and the Percentage of Vocational/Technical Enrolment. This is indeed the case in Latin America with SENAI, SENA and INA.

Nevertheless, this is a dangerous argument, because it cuts both ways: on the one hand, it claims that TVET may provide a way to keep the underprivileged in school, resulting in lower dropout and maybe even -in the long run- lower unemployment rates and higher social integration. On the other hand, it reinforces the negative stereotypes that afflict TVET and prevent it from achieving the badly needed "parity of esteem". Additionally, this issue is not only politically sensitive but also very difficult to address from an empirical point of view: testing the hypothesis that postulates this effect of TVET on dropout rates would require long, complex, expensive and ultimately unfeasible studies.

In conclusion, this is a relevant but also sensitive issue where several interpretations compete against each other. This brief review of some possible explanations is unlikely to exhaust this controversial topic, which remains open for discussion.

98 UNESCO, 2004b, pp. 248-9

99 Benavot, 1983, p. 71

4.7 TVET and gender: The case of upper secondary (ISCED 3)

TVET enrolment by gender is available separately for ISCED 2 and ISCED 3:

- At the lower secondary (ISCED 2) level, all 173 countries that provided data on TVET enrolment also provided breakdowns by gender. However, 125 of these countries do not have vocational programmes at this level.
- At the upper secondary (ISCED 3) level, out of 164 countries that provided the number of TVET enrolment, 162 also provided figures on enrolment by gender.

Thus, analyses will be conducted at the upper secondary level.

The main hypothesis in this section postulates that the greater a country's Percentage of Technical/Vocational Enrolment, the less inequality in this indicator for males and females. The Gender Parity Index (GPI)[100] and a less-known variation called the Transformed Gender Parity Index (TGPI) will be used as indicators of the gender dimension.

The main reason for using TGPI as well is that "the GPI, when expressed as the ratio of females to males in enrolment ratios (...) can exceed unity when more girls/women are enrolled than boys/men",[101] which also constitutes a form of gender disparity. This is particularly important in the case of vocational education, for a number of reasons:

- In many countries, vocational education still struggles to achieve parity of esteem in relation to general education; in some of those countries, females may be led to the former while males occupy a wider share of the more prestigious streams. As a result, vocational education indicators appear misleadingly advantageous for females.
- On the other hand, gender issues not only affect females: as it is well known, in some countries educational systems tend to exclude boys rather than girls; vocational education may or may not be the exception.

The first version of our hypothesis postulates that "the greater a country's Percentage of Technical/Vocational Enrolment at the upper secondary level, the greater its own Gender Parity Index".

As seen in **Figure 14**, the Percentages of Technical/Vocational Enrolment tend to increase as the Gender Parity Index gets to a value of 1, as shown by the cases of Argentina and Guatemala. However, they go down again when GPIs reach even higher values, as shown by the cases of Burkina Faso and Mali. This is reasonable, since a Gender Parity Index above 1.3 is usually regarded as an indication of gender disparity. This difficulty can be overcome by using a more suitable indicator: "the 'transformed GPI' has been created in order to highlight gender disparities neutrally – whether to the disadvantage of females or males."[102]

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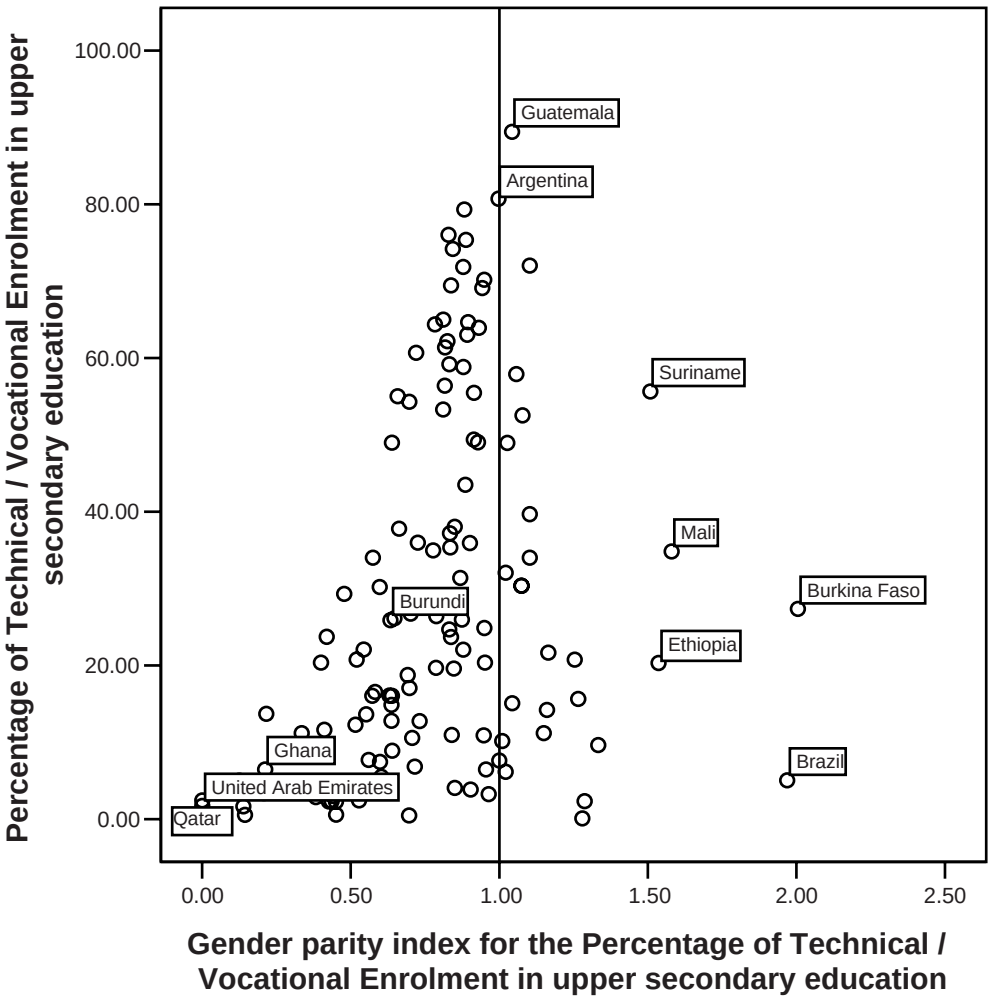
100 "Gender Parity Index (GPI). Ratio of the female-to-male values of a given indicator. A GPI of 1 indicates parity between sexes." (UNESCO Institute of Statistics, 2006, p. 183)

101 For the Transformed Gender Parity Index, where the Gender Parity Index is higher than 1, the usual female-to-male formula is inverted to male-to-female. (UNESCO, 2004b, p. 241) As a result, the upper boundary for TGPI becomes 1, which represents perfect parity. A TGPI below 0.97 indicates disparity either in favour of males or females.

102 UNESCO, 2003, p. 285

Figure 14: Percentage of Technical/Vocational Enrolment in upper secondary, by its Gender Parity Index, 2002*



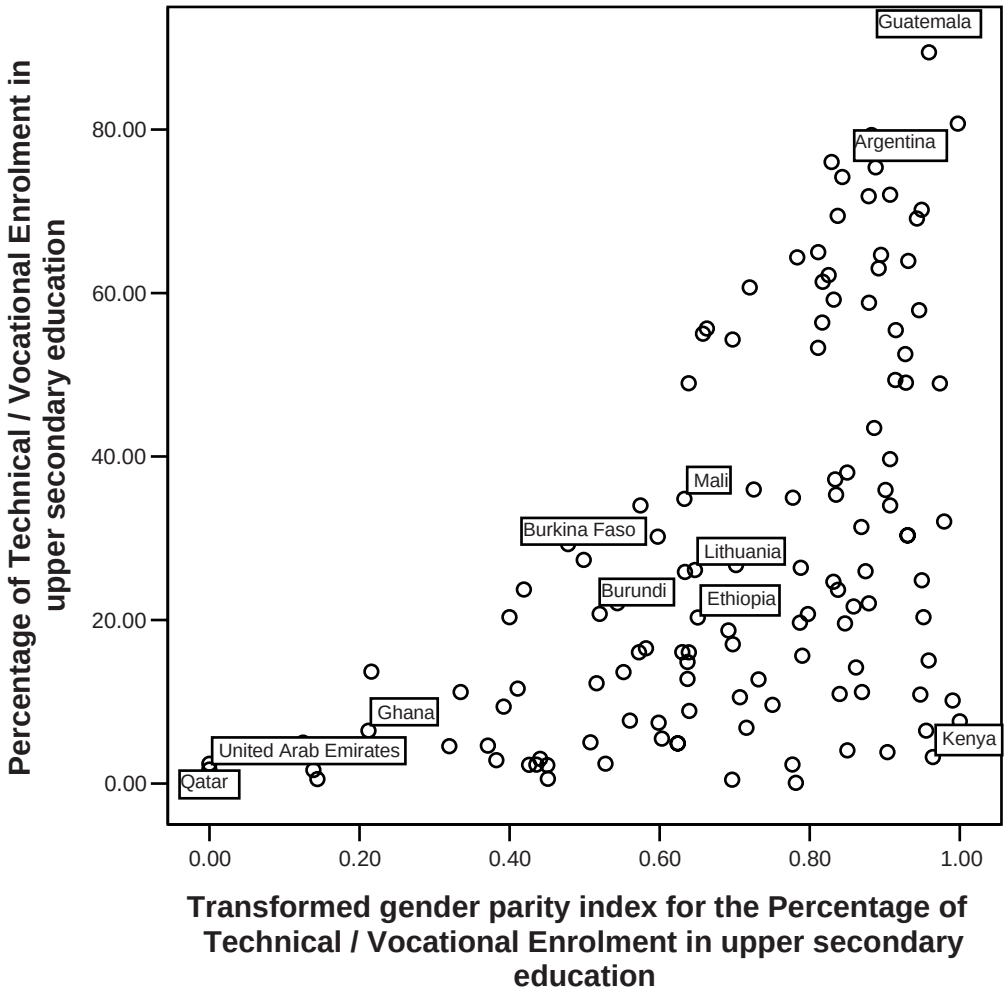
Source: UNESCO Institute for Statistics database, 2005.

Therefore, the second version of our hypothesis postulates that: "The greater a country's Percentage of Technical/Vocational Enrolment at the upper secondary level, the greater its own Transformed Gender Parity Index".

As shown in **Figure 15**, Guatemala and Argentina, the two countries with the highest Percentages of Vocational/Technical Enrolment, are among the closest to perfect gender parity. In the lower left corner, Qatar and United Arab Emirates are among the countries with no females enrolled and low Percentage of Technical/Vocational Enrolment. Those countries with Gender Parity Indices above 1 now appear among the countries with moderate gender disparity - even though in these cases the females outnumber the males. Burkina Faso and Mali are two examples of such countries, and they now appear closer to Burundi, where the situation is almost exactly the opposite in terms of gender but very similar in terms of percentage of enrolment. This shows that disparity hinders TVET expansion, regardless of which gender is less emphatically targeted or less successfully attracted than the other.

* For explanation please see p. xi of this report.

Figure 15: Percentage of Technical/Vocational Enrolment in upper secondary, by its Transformed Gender Parity Index, 2002*



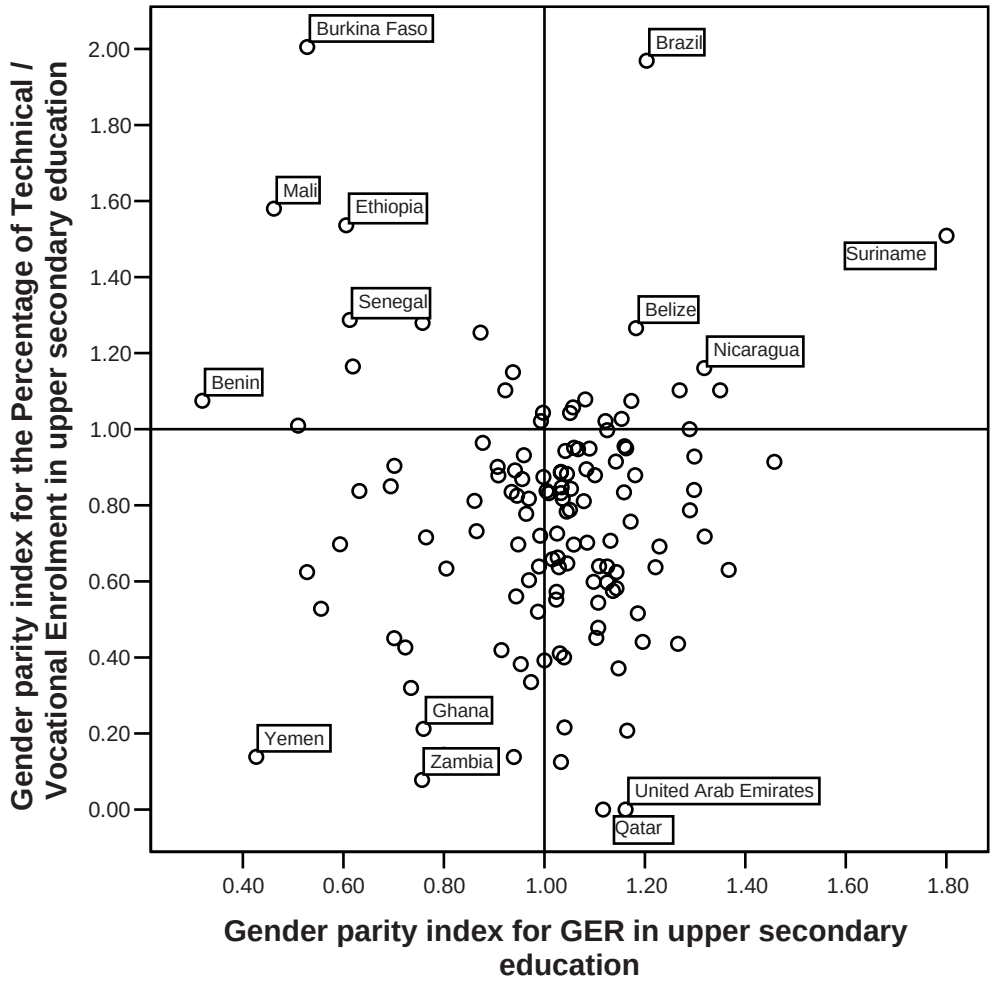
Source: UNESCO Institute for Statistics database, 2005.

Though Kenya, for example, has relatively high gender parity and low Percentage of Technical/Vocational Enrolment, no country has low gender parity and high Percentage of Technical/Vocational Enrolment. Therefore, gender parity seems to be a necessary but not sufficient condition for TVET expansion.

Finally, how do gender gaps in upper secondary education as a whole correlate to gender disparity in TVET at this level? In the countries that enrol fewer females than males in upper secondary education, are enrolled females more or less likely than enrolled males to attend vocational streams?

* For explanation please see p. xi of this report.

Figure 16: Gender Parity Index for the Percentage of Technical/Vocational, by the Gender Parity Index for the total Gross Enrolment Ratio, upper secondary, 2002*



Source: UNESCO Institute for Statistics database, 2005.

It seems that there is no such relationship. **Figure 16** plots Gender Parity Indices for overall upper secondary Gross Enrolment Ratios and Percentages of Technical/Vocational Enrolment. Even though there is no trend in the data (or perhaps because of that) the figure works as a visual typology of the relationships between gender and TVET enrolment in different countries:

- In Brazil (upper-right quadrant) females are slightly more likely than males to be enrolled in upper secondary education, and enrolled females are twice as likely as enrolled males to attend vocational streams. As a result, there are about five females for every two males enrolled in TVET.
- Burkina Faso's case (upper-left quadrant) is different: enrolled females are twice as likely as enrolled males to attend TVET (as in the case of Brazil), but females are one-half as likely as males to be enrolled in upper secondary education at all. Therefore, VGERs are similar for both genders, but within general education the ratio for males is much higher than that for females.
- Qatar and United Arab Emirates (lower-right quadrant) have more female than male enrolment in upper secondary education, but no female enrolment at all in TVET. This means that females are even more over-represented within general education.
- Females in Yemen (lower-left quadrant) are considerably under-represented in upper secondary, and even more so in its TVET stream.

As shown, countries present very different pictures of the relationship between gender disparities in participation in overall education and in technical and vocational education and training.

* For explanation please see p. xi of this report.

In short, the relationships between gender and TVET are complex and likely to vary greatly across regions and countries. Among the countries where females are considerably under-represented in general education, there are some where females are even more so in vocational education, and others where females are actually over-represented in the vocational streams as compared to the whole of the schooled population. Within the group of countries where females are over-represented in general education, there are countries where female over-representation is even higher in vocational streams while others exclude females completely from TVET. This question should be considered in the context of the issue of parity of esteem for TVET and female participation in overall education - as well as in the labour market.

Box 3: TVET growth and female participation in Bahrain

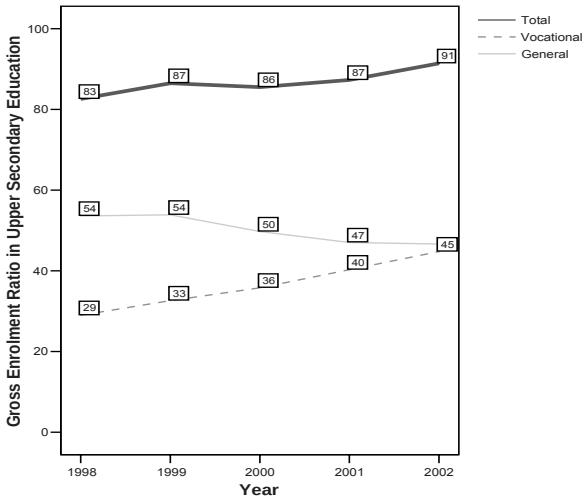
Technical/Vocational education in Bahrain has shown steady growth over the past five years. At the upper secondary level, this country has now Asia's highest Vocational Gross Enrolment Ratio. New programmes have appeared at this level: in 1999, new vocational 3C programmes were created; in 2000, all three existing 3A vocational programmes were reclassified as 3B; the latter can now lead to several ISCED 5B programmes that were initiated two years later. Enrolment at vocational programmes at the upper secondary level have risen gradually from 1998 to 2002, driving the total Gross Enrolment Ratio up (even though general enrolment has tended to decrease).

As shown in the figure below (left), the total Gross Enrolment Ratio increases as the diminishing general GER and the growing vocational GER converge around 45%.

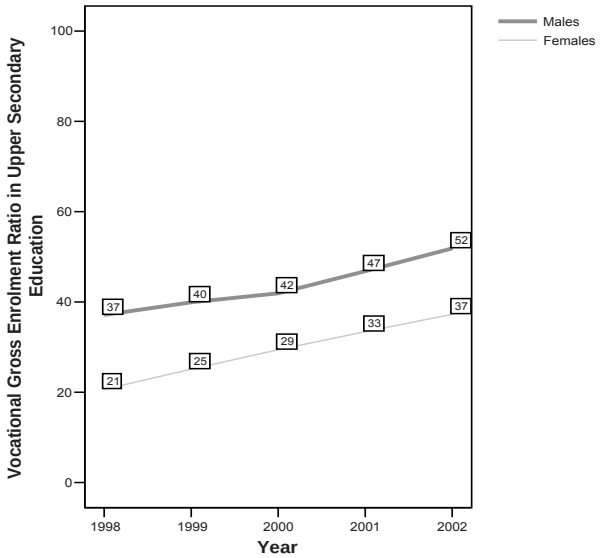
Just as technical/vocational enrolment has been pushing total enrolment up; TVET growth has been fueled in part by an increased participation of females: their vocational Gross Enrolment Ratio nearly doubled in five years, rising from 21% in 1998 to 37% in 2002 (see figure below, right).

It should be noticed that Bahrain offers several advantages for planned educational change: the smallest and most densely populated of the Arab states, it is also rich and highly urbanised. Still, this growth may be mostly a result of the new programmes' initial impetus.

Therefore, it remains to be seen whether Bahrain's change is sustainable and whether other countries with low TVET development and low female participation see in this an opportunity for change.



Source: UNESCO Institute for Statistics database, 2005.



Source: UNESCO Institute for Statistics database, 2005.

4.8 Conclusions

The degree of heterogeneity in TVET provision around the world is substantial. The combinations of programmes offered at different ISCED levels, as well as the levels of enrolment in them, vary considerably across regions, as well as across countries within regions.

Industrialised countries offer combinations of programmes that tend to be more diversified by ISCED level and have higher levels of TVET participation at the upper secondary level (ISCED 3) - where they also tend to have higher values both in Vocational Gross Enrolment Ratios and in Percentages of Technical/Vocational Enrolment.

The dominant pattern of formal TVET provision combines ISCED 3 and ISCED 4 programmes. The second-most frequent pattern concentrates TVET provision solely at ISCED 3. Patterns of provision are strongly related to cultural institutions, colonial history and geographic proximity, i.e. Anglophone countries tend to have high levels of TVET provision at ISCED 4 level, which is rather infrequent in Latin America; while there are high levels in ISCED 2 in Belgium, Netherlands and former Dutch colonies.

The data reported sustain the hypothesis that the higher the GDP per capita, the higher the Percentages of Technical/Vocational Enrolment. The data also support the hypothesis that claims that the higher the total GER, the higher the Percentages of Technical/Vocational Enrolment. These hold for both overall and upper secondary education; the latter is true even after controlling for GDP per capita. This may suggest that promoting TVET at the upper secondary level might be a way of expanding total coverage of upper secondary, but this idea should be handled with caution and alternative explanations should be considered - especially given that data collection procedures in this area hinder global comparability.

The present data also support the hypothesis that TVET participation, as measured by the Percentage of Technical/Vocational Enrolment, is associated with its own gender parity: the more equitable in terms of gender, the higher the percentage of TVET participation.

What steps should be taken next? When it comes to data collection, some changes should be introduced in order to enhance comparability between developed and developing countries. In fact, some of these modifications, such as those pertaining to pre-vocational and adult education programmes, are already underway.

In terms of strategies for data analysis, we would probably gain a deeper understanding of these relationships if we looked at the evolution over time of these variables and searched for patterns of growth. Currently, data have been collected using the same methodology for five years, which is wide enough a time span to show some change in educational systems.

5. STATISTICAL TABLES

TABLE 1: PRESENCE OF VOCATIONAL AND 5B ENROLMENTS

	Summary of vocational enrolment					Enrolment in ISCED 5B programmes
Region	Enrolment by level			Index of diversification	Typology of TVET by ISCED level	
Country or territory	ISCED 2	ISCED 3	ISCED 4			
Africa						
Algeria	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	...
Angola	...	...	No	...	...	No
Benin	Yes	Yes	...	...	...	...
Botswana	No	Yes	Yes	2	ISCED 3 + 4	Yes
Burkina Faso	Yes	Yes	No	2	ISCED 2 + 3	...
Burundi	...	Yes	No	...	...	...
Cameroon	...	...	...	...	...	...
Cape Verde	No	Yes	Yes	2	ISCED 3 + 4	No
Central African Republic	...	...	...	...	...	...
Chad	...	...	No	...	...	...
Comoros	No	Yes	Yes	2	ISCED 3 + 4	Yes
Congo	...	...	...	...	...	Yes
Côte d'Ivoire	...	...	...	...	...	...
Democratic Republic of the Congo	...	...	No	...	...	...
Djibouti	Yes	Yes	No	2	ISCED 2 + 3	Yes
Egypt	...	Yes	Yes	...	...	...
Equatorial Guinea	...	...	No	...	...	...
Eritrea	No	Yes	Yes	2	ISCED 3 + 4	No
Ethiopia	No	Yes	...	...	...	No
Gabon	...	...	...	...	...	...
Gambia	Yes	No	No	1	ISCED 2	No
Ghana	No	Yes	No	1	ISCED 3	...
Guinea-Bissau	No	...	No	...	...	...
Guinea	No	...	No	...	...	...
Kenya	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	...
Lesotho	Yes	Yes	No	2	ISCED 2 + 3	Yes
Liberia	...	...	No	...	...	...
Libyan Arab Jamahiriya	Yes	Yes	...	...	...	Yes
Madagascar	...	...	No	...	...	Yes
Malawi	No	No	...	...	...	No
Mali	No	Yes	No	1	ISCED 3	No
Mauritania	Yes	Yes	No	2	ISCED 2 + 3	Yes
Mauritius	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Morocco	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Mozambique	Yes	Yes	No	2	ISCED 2 + 3	...
Namibia	No	No	Yes	1	ISCED 4	Yes
Niger	No	Yes	Yes	2	ISCED 3 + 4	...
Nigeria	No	No	...	...	...	Yes
Rwanda	...	...	No	...	...	Yes
Sao Tome and Principe	No	...	...	...	...	No
Senegal	...	Yes	...	...	...	...
Seychelles	No	No	Yes	1	ISCED 4	No
Sierra Leone	No	...	...	...	...	...

Region	Summary of vocational enrolment					Enrolment in ISCED 5B programmes
	Enrolment by level			Index of diversification	Typology of TVET by ISCED level	
Country or territory	ISCED 2	ISCED 3	ISCED 4			
Somalia	...	...	...	...	...	No
South Africa	No	Yes	Yes	2	ISCED 3 + 4	Yes
Sudan	No	Yes	No	1	ISCED 3	...
Swaziland	Yes	No	Yes	2	ISCED 2 + 4	No
Togo	...	...	No	...	...	...
Tunisia	Yes	Yes	No	2	ISCED 2 + 3	Yes
Uganda	Yes	Yes	No	2	ISCED 2 + 3	Yes
United Republic of Tanzania	...	...	No	...	...	Yes
Zambia	No	Yes	No	1	ISCED 3	...
Zimbabwe	No	No	Yes	1	ISCED 4	Yes
America, North						
Anguilla	No	Yes	No	1	ISCED 3	No
Antigua and Barbuda	...	...	...	...	...	No
Aruba	Yes	Yes	No	2	ISCED 2 + 3	Yes
Bahamas	No	No	...	...	...	...
Barbados	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	...
Belize	No	Yes	No	1	ISCED 3	No
Bermuda	No	No	No	0	No programmes	...
British Virgin Islands	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	No
Canada	No	...	...	...	...	...
Cayman Islands	...	...	...	...	...	...
Costa Rica	Yes	Yes	No	2	ISCED 2 + 3	Yes
Cuba	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	No
Dominica	Yes	No	Yes	2	ISCED 2 + 4	No
Dominican Republic	No	Yes	No	1	ISCED 3	Yes
El Salvador	No	Yes	No	1	ISCED 3	Yes
Grenada	No	Yes	Yes	2	ISCED 3 + 4	No
Guatemala	No	Yes	No	1	ISCED 3	Yes
Haiti	...	...	...	0	No programmes	No
Honduras	...	...	No	...	...	...
Jamaica	No	Yes	...	...	...	Yes
Mexico	Yes	Yes	No	2	ISCED 2 + 3	Yes
Montserrat	No	No	Yes	1	ISCED 4	No
Netherlands Antilles	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	...
Nicaragua	Yes	Yes	No	2	ISCED 2 + 3	Yes
Panama	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Saint Kitts and Nevis	No	No	Yes	1	ISCED 4	No
Saint Lucia	Yes	No	Yes	2	ISCED 2 + 4	...
Saint Vincent and the Grenadines	Yes	No	Yes	2	ISCED 2 + 4	No
Trinidad and Tobago	No	Yes	No	1	ISCED 3	Yes
Turks and Caicos Islands	No	Yes	Yes	2	ISCED 3 + 4	Yes
United States	No	No	Yes	1	ISCED 4	Yes
America, South						
Argentina	No	Yes	No	1	ISCED 3	Yes
Bolivia	Yes	No	...	...	...	...
Brazil	No	Yes	No	1	ISCED 3	...
Chile	No	Yes	No	1	ISCED 3	Yes
Colombia	No	Yes	No	1	ISCED 3	Yes

	Summary of vocational enrolment					Enrolment in ISCED 5B programmes
Region	Enrolment by level			Index of diversification	Typology of TVET by ISCED level	
Country or territory	ISCED 2	ISCED 3	ISCED 4			
Ecuador	No	Yes	No	1	ISCED 3	...
Guyana	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Paraguay	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Peru	No	No	No	0	No programmes	Yes
Suriname	Yes	Yes	No	2	ISCED 2 + 3	...
Uruguay	No	Yes	Yes	2	ISCED 3 + 4	Yes
Venezuela	No	Yes	No	1	ISCED 3	Yes
Asia						
Afghanistan, Islamic Republic of	...	...	...	...	...	...
Armenia	No	Yes	Yes	2	ISCED 3 + 4	No
Azerbaijan	No	Yes	Yes	2	ISCED 3 + 4	No
Bahrain	No	Yes	Yes	2	ISCED 3 + 4	Yes
Bangladesh	No	Yes	Yes	2	ISCED 3 + 4	Yes
Bhutan	No	Yes	Yes	2	ISCED 3 + 4	...
Brunei Darussalam	No	Yes	No	1	ISCED 3	Yes
Cambodia	No	Yes	Yes	2	ISCED 3 + 4	No
China	No	Yes	Yes	2	ISCED 3 + 4	Yes
Cyprus	No	Yes	No	1	ISCED 3	Yes
Democratic People's Republic of Korea	...	...	...	...	...	...
Georgia	No	Yes	No	1	ISCED 3	No
Hong Kong (China), SAR	No	Yes	...	...	...	Yes
India	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Indonesia	No	Yes	No	1	ISCED 3	Yes
Iran, Islamic Republic of	No	Yes	Yes	2	ISCED 3 + 4	Yes
Iraq	No	Yes	No	1	ISCED 3	...
Israel	No	Yes	No	1	ISCED 3	Yes
Japan	No	Yes	...	...	...	Yes
Jordan	No	Yes	No	1	ISCED 3	Yes
Kazakhstan	No	Yes	Yes	2	ISCED 3 + 4	No
Kuwait	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	...
Kyrgyzstan	No	Yes	No	1	ISCED 3	No
Lao People's Democratic Republic	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Lebanon	Yes	Yes	No	2	ISCED 2 + 3	Yes
Macao, China	Yes	Yes	No	2	ISCED 2 + 3	Yes
Malaysia	No	Yes	Yes	2	ISCED 3 + 4	Yes
Maldives	No	Yes	Yes	2	ISCED 3 + 4	No
Mongolia	No	Yes	Yes	2	ISCED 3 + 4	Yes
Myanmar	No	No	No	0	No programmes	...
Nepal	No	Yes	No	1	ISCED 3	No
Oman	No	No	...	...	...	...
Pakistan	No	Yes	...	...	...	Yes
Palestinian Autonomous Territories	No	Yes	...	...	...	Yes
Philippines	No	No	Yes	1	ISCED 4	Yes
Qatar	No	Yes	No	1	ISCED 3	Yes
Republic of Korea	No	Yes	No	1	ISCED 3	Yes
Saudi Arabia	Yes	Yes	...	...	...	Yes
Singapore	No	...	...	...	...	...

Region	Summary of vocational enrolment					Enrolment in ISCED 5B programmes
	Enrolment by level			Index of diversification	Typology of TVET by ISCED level	
Country or territory	ISCED 2	ISCED 3	ISCED 4			
Sri Lanka	No	...	No	...	...	...
Syrian Arab Republic	No	Yes	Yes	2	ISCED 3 + 4	...
Tajikistan	No	Yes	Yes	2	ISCED 3 + 4	No
Thailand	No	Yes	No	1	ISCED 3	Yes
Timor-Leste	No	No	No	0	No programmes	...
Turkey	No	Yes	No	1	ISCED 3	Yes
Turkmenistan	...	...	...	...	...	...
United Arab Emirates	No	Yes	No	1	ISCED 3	...
Uzbekistan	No	Yes	No	1	ISCED 3	Yes
Viet Nam	No	Yes	No	1	ISCED 3	Yes
Yemen	No	Yes	...	...	...	...
Europe						
Albania	No	Yes	No	1	ISCED 3	Yes
Andorra	No	Yes	No	1	ISCED 3	Yes
Austria	No	Yes	Yes	2	ISCED 3 + 4	Yes
Belarus	No	Yes	Yes	2	ISCED 3 + 4	Yes
Belgium	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Bosnia and Herzegovina	...	...	...	...	...	No
Bulgaria	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Croatia	No	Yes	No	1	ISCED 3	Yes
Czech Republic	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Denmark	No	Yes	No	1	ISCED 3	Yes
Estonia	No	Yes	Yes	2	ISCED 3 + 4	Yes
Finland	No	Yes	Yes	2	ISCED 3 + 4	Yes
France	No	Yes	Yes	2	ISCED 3 + 4	Yes
Germany	No	Yes	Yes	2	ISCED 3 + 4	Yes
Gibraltar	...	...	...	...	...	No
Greece	No	Yes	Yes	2	ISCED 3 + 4	Yes
Holy See	No	No	No	0	No programmes	...
Hungary	No	Yes	Yes	2	ISCED 3 + 4	Yes
Iceland	No	Yes	Yes	2	ISCED 3 + 4	Yes
Ireland	No	No	Yes	1	ISCED 4	Yes
Italy	No	Yes	Yes	2	ISCED 3 + 4	Yes
Latvia	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Liechtenstein	No	Yes	Yes	2	...	No
Lithuania	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Luxembourg	No	Yes	Yes	2	ISCED 3 + 4	Yes
Malta	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Monaco	No	...	No	...	...	No
Netherlands	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes
Norway	No	Yes	Yes	2	ISCED 3 + 4	Yes
Poland	No	Yes	Yes	2	ISCED 3 + 4	Yes
Portugal	Yes	Yes	No	2	ISCED 2 + 3	Yes
Republic of Moldova	No	Yes	No	1	ISCED 3	Yes
Romania	No	Yes	Yes	2	ISCED 3 + 4	Yes
Russian Federation	No	Yes	Yes	2	ISCED 3 + 4	Yes
San Marino	No	No	...	...	...	...
Serbia and Montenegro	No	...	...	...	...	...
Slovakia	Yes	Yes	Yes	3	ISCED 2 + 3 + 4	Yes

Region	Summary of vocational enrolment					Enrolment in ISCED 5B programmes
	Enrolment by level			Index of diversification	Typology of TVET by ISCED level	
Country or territory	ISCED 2	ISCED 3	ISCED 4			
Slovenia	No	Yes	Yes	2	ISCED 3 + 4	Yes
Spain	Yes	Yes	No	2	ISCED 2 + 3	Yes
Sweden	No	Yes	Yes	2	ISCED 3 + 4	Yes
Switzerland	No	Yes	Yes	2	ISCED 3 + 4	Yes
The former Yugoslav Rep. of Macedonia	No	Yes	Yes	2	ISCED 3 + 4	Yes
Ukraine	No	Yes	Yes	2	ISCED 3 + 4	Yes
United Kingdom	No	Yes	...	...	...	Yes
Oceania						
Australia	Yes	Yes	...	...	ISCED 2 + 3	Yes
Cook Islands	No	No	...	...	...	No
Fiji	No	...	...	...	...	...
Kiribati	...	...	...	...	...	...
Marshall Islands	No	No	...	...	...	...
Micronesia (Federated States of)	...	...	...	...	...	...
Nauru	No	No	...	...	...	No
New Zealand	No	Yes	Yes	2	ISCED 3 + 4	Yes
Niue	...	...	No	0	No programmes	No
Palau	No	No	...	...	...	No
Papua New Guinea	Yes	Yes	No	2	ISCED 2 + 3	...
Samoa	No	No	No	0	No programmes	...
Solomon Islands	No	...	No	...	...	No
Tokelau	...	...	...	...	...	No
Tonga	...	...	No	...	...	...
Tuvalu	No	...	...	...	...	No
Vanuatu	...	...	...	...	...	...

Symbols and footnotes:

- ** UIS estimation
- * National estimation
- ... No data available
- - Magnitude nil or negligible
- na Not applicable

TABLE 2: SECONDARY EDUCATION, ISCED 2 AND 3. VOCATIONAL ENROLMENTS

Regions	Lower secondary (ISCED 2)											
	Vocational education		Enrolment		Enrolment in technical and vocational programmes (%)				Vocational gross enrolment ratio			
Country or territory	Entrance age	Duration	All programmes	Vocational programmes	MF	M	F	GPI	MF	M	F	GPI
Africa												
Algeria	...	...	2,349,883	163,545	7	9	5	.58	...	...	...	...
Angola	10	4	...	...	...	...	...	...	...	...	...	...
Benin	12	3	* 247,843	* 9,264	* 4	* 4	* 3	* .59	* 2	* 3	* 1	* .30
Botswana	na	na	** 114,016	na	na	na	na	na	na	na	na	na
Burkina Faso	15	3	194,395	6,789	3	3	4	1.33	1	1	1	.93
Burundi	13	4	...	...	...	...	...	...	...	...	...	...
Cameroon	12	4	...	...	...	...	...	...	...	...	...	...
Cape Verde	na	na	24,592	na	na	na	na	na	na	na	na	na
Central African Republic	15	3	** 53,860	...	...	...	...	...	...	...	...	...
Chad	14	3	** 159,039	...	...	...	...	...	...	...	...	...
Comoros	na	na	25,689	na	na	na	na	na	na	na	na	na
Congo	12	2	...	...	...	...	...	...	...	...	...	...
Côte d'Ivoire	15	2	...	...	...	...	...	...	...	...	...	...
Democratic Republic of the Congo	13	5	...	...	...	...	...	...	...	...	...	...
Djibouti	12	4	** 14,925	** 174	** 1	** 2	** 0	** .22	** 0	** 0	** 0	** .14
Egypt	13	3	** 4,699,109	...	...	...	...	...	...	...	...	...
Equatorial Guinea	13	3	...	...	...	...	...	...	...	...	...	...
Eritrea	na	na	86,644	na	na	na	na	na	na	na	na	na
Ethiopia	na	na	1,502,701	na	na	na	na	na	na	na	na	na
Gabon	13	4	...	...	...	...	...	...	...	...	...	...
Gambia	13	3	** 43,842	** 428	** 1	** 1	** 2	** 2.88	** 0	** 0	** 1	** 2.04
Ghana	na	na	865,298	na	na	na	na	na	na	na	na	na
Guinea-Bissau	13	3	...	-	-	-	-	na	-	-	-	na
Guinea	na	na	225,456	na	na	na	na	na	na	na	na	na
Kenya	14	2	993,180	14,778	1	** 1	** 1	** .98	1	1	1	.93
Lesotho	13	2	61,434	423	1	0	1	5.08	0	0	1	6.73
Liberia	16	2	...	...	...	...	...	...	...	...	...	...
Libyan Arab Jamahiriya	12	1	** 438,658	** 2,158	** 0	** 1	** 0	** .59	** 2	** 2	** 1	** .59
Madagascar	14	2	** 365,785	...	...	...	...	...	...	...	...	...
Malawi	na	na	391,391	na	na	na	na	na	na	na	na	na
Mali	na	na	237,298	na	na	na	na	na	na	na	na	na
Mauritania	12	3	49,910	771	2	2	1	.60	0	1	0	.49
Mauritius	13	3	57,159	5,966	10	14	7	.52	10	13	7	.53
Morocco	15	2	1,147,922	28,342	2	2	3	1.55	2	2	2	1.26
Mozambique	13	3	337,103	18,795	6	7	4	.63	1	2	1	.41
Namibia	na	na	110,998	na	na	na	na	na	na	na	na	na
Niger	na	na	107,330	na	na	na	na	na	na	na	na	na

Upper secondary (ISCED 3)												Regions
Vocational education		Enrolment		Enrolment in technical and vocational programmes (%)				Vocational gross enrolment ratio				
Entrance age	Duration	All programmes	Vocational programmes	MF	M	F	GPI	MF	M	F	GPI	Country or territory
												Africa
16	3	1,198,601	192,692	16	20	13	.63	9	10	8	.86	Algeria
14	4	...	...	...	...	...	...	...	...	...	...	Angola
16	3	* 64,584	* 19,603	* 30	* 30	* 32	* 1.08	* 4	* 6	* 2	.34	Benin
16	4	** 44,488	** 5,168	** 12	** 17	** 7	** .41	** 3	** 4	** 2	** .42	Botswana
18	3	42,519	11,632	27	20	41	2.00	1	1	2	1.06	Burkina Faso
17	3	** 36,900	** 9,552	** 26	** 31	** 20	** .63	** 2	** 3	** 1	** .51	Burundi
16	3	...	...	...	...	...	...	...	...	...	...	Cameroon
14	4	24,930	1,856	7	9	6	.60	4	5	3	.66	Cape Verde
16	3	...	...	...	...	...	...	...	...	...	...	Central African Republic
16	3	...	...	...	...	...	...	...	...	...	...	Chad
16	3	12,583	69	1	1	0	.14	0	0	0	.12	Comoros
16	3	...	...	...	...	...	...	...	...	...	...	Congo
16	3	...	...	...	...	...	...	...	...	...	...	Côte d'Ivoire
13	5	...	...	...	...	...	...	...	...	...	...	Democratic Republic of the Congo
16	4	** 6,027	** 1,305	** 22	** 20	** 24	** 1.16	** 2	** 3	** 2	** .72	Djibouti
14	3	** 3,684,955	** 2,355,481	** 64	** 66	** 62	** .93	** 48	** 51	** 45	** .89	Egypt (p)
16	3	...	...	...	...	...	...	...	...	...	...	Equatorial Guinea
16	3	74,629	1,817	2	3	2	.53	1	1	0	.29	Eritrea
17	1	355,116	72,162	20	17	26	1.54	5	5	5	.93	Ethiopia
16	3	...	...	...	...	...	...	...	...	...	...	Gabon
...	...	** 16,379	-	-	-	-	na	-	-	-	na	Gambia
15	3	** 305,466	19,770	** 6	** 10	** 2	** .21	1	2	0	.16	Ghana
16	3	...	...	...	...	...	...	...	...	...	...	Guinea
17	3	** 85,026	...	...	...	...	...	...	...	...	...	Guinea-Bissau
16	1	396,638	12,909	3	3	3	.96	2	2	1	.85	Kenya
16	2	20,824	705	3	6	1	.21	1	1	0	.24	Lesotho
19	2	...	...	...	...	...	...	...	...	...	...	Liberia
15	3	** 359,334	** 175,894	** 49	** 48	** 50	** 1.03	** 43	** 40	** 47	** 1.19	Libyan Arab Jamahiriya
15	3	...	...	...	...	...	...	...	...	...	...	Madagascar
na	na	** 126,299	na	na	na	na	na	na	na	na	na	Malawi
18	2	114,173	39,754	35	30	47	1.58	7	9	6	.73	Mali
15	3	34,497	2,358	7	8	6	.72	1	2	1	.55	Mauritania
15	4	54,607	6,113	11	17	6	.33	8	12	4	.33	Mauritius
15	3	610,135	77,755	13	15	11	.73	4	5	3	.63	Morocco
16	3	161,736	3,660	2	3	1	.45	0	0	0	.32	Mozambique
na	na	27,101	na	na	na	na	na	na	na	na	na	Namibia
17	3	17,459	859	5	6	4	.62	0	0	0	.33	Niger

TABLE 2: SECONDARY EDUCATION, ISCED 2 AND 3. VOCATIONAL ENROLMENTS

Regions	Lower secondary (ISCED 2)											
	Vocational education		Enrolment		Enrolment in technical and vocational programmes (%)				Vocational gross enrolment ratio			
Country or territory	Entrance age	Duration	All programmes	Vocational programmes	MF	M	F	GPI	MF	M	F	GPI
Nigeria	13	2	3,593,650	-	-	-	-	na	-	-	-	na
Rwanda	13	4	...	...	...	...	...	...	...	...	...	...
Sao Tome and Principe	13	2	...	-	-	-	-	na	-	-	-	na
Senegal	15	3	241,756	...	...	...	...	...	...	...	...	...
Seychelles	na	na	4,652	na	na	na	na	na	na	na	na	na
Sierra Leone	na	na	...	na	na	na	na	na	na	na	na	na
Somalia	...	...	...	...	...	...	...	...	...	...	...	...
South Africa	na	na	2,025,796	na	na	na	na	na	na	na	na	na
Sudan	na	na	770,976	na	na	na	na	na	na	na	na	na
Swaziland	13	3	46,152	1,072	2	1	3	2.52	1	1	2	2.61
Togo	12	4	...	...	...	...	...	...	...	...	...	...
Tunisia	15	2	624,486	1,652	0	0	0	2.54	0	0	1	2.52
Uganda	13	3	** 584,564	** 7,235	** 1	** 2	** 0	** .23	** 0	** 1	** 0	** .19
United Republic of Tanzania	14	2	...	...	...	...	...	...	...	...	...	...
Zambia	na	na	215,464	na	na	na	na	na	na	na	na	na
Zimbabwe	na	na	424,947	na	na	na	na	na	na	na	na	na
America, North												
Anguilla	na	na	705	na	na	na	na	na	na	na	na	na
Antigua and Barbuda	15	2	...	...	...	...	...	...	...	...	...	...
Aruba	12	3	3,214	217	7	10	4	.41	5	7	3	.42
Bahamas	na	na	** 15,690	na	na	na	na	na	na	na	na	na
Barbados	11	3	12,568	60	0	1	0	.19	1	1	0	.18
Belize	na	na	21,037	na	na	na	na	na	na	na	na	na
Bermuda	na	na	...	na	na	na	na	na	na	na	na	na
British Virgin Islands	14	3	1,149	25	2	4	1	.24	2	4	1	.25
Canada	na	na	...	na	na	na	na	na	na	na	na	na
Cayman Islands	...	...	...	...	...	...	...	...	...	...	...	...
Costa Rica	12	3	203,452	32,543	16	16	16	.97	12	12	12	1.02
Cuba	12	3	524,229	20,803	4	6	2	.32	4	6	2	.31
Dominica	14	3	5,459	406	7	6	9	1.63	10	8	12	1.59
Dominican Republic	na	na	267,174	na	na	na	na	na	na	na	na	na
El Salvador	na	na	304,542	na	na	na	na	na	na	na	na	na
Grenada	na	na	9,693	na	na	na	na	na	na	na	na	na
Guatemala	na	na	414,324	na	na	na	na	na	na	na	na	na
Haiti	na	na	...	na	na	na	na	na	na	na	na	na
Honduras	14	3	...	...	...	...	...	...	...	...	...	...
Jamaica	na	na	150,254	na	na	na	na	na	na	na	na	na
Mexico	12	4	6,892,913	1,232,843	18	14	21	1.53	14	11	18	1.69
Montserrat	na	na	** 180	na	na	na	na	na	na	na	na	na
Netherlands Antilles	12	2	** 7,132	** 3,320	** 47	** 45	** 48	** 1.06	** 46	** 45	** 46	** 1.01

Upper secondary (ISCED 3)												Regions
Vocational education		Enrolment		Enrolment in technical and vocational programmes (%)				Vocational gross enrolment ratio				
Entrance age	Duration	All programmes	Vocational programmes	MF	M	F	GPI	MF	M	F	GPI	Country or territory
13	2	2,719,460	-	-	-	-	na	-	-	-	na	Nigeria
16	3	...	...	...	...	...	...	...	...	...	...	Rwanda
16	3	...	...	...	...	...	...	...	...	...	...	Sao Tome and Principe
17	3	68,203	** 1,590	** 2	** 2	** 3	** 1.29	** 0	** 0	** 0	** .79	Senegal
na	na	2,873	na	na	na	na	na	na	na	na	na	Seychelles
15	3	...	...	...	...	...	...	...	...	...	...	Sierra Leone
...	...	...	...	...	...	...	...	...	...	...	...	Somalia
16	3	2,328,021	245,108	11	13	8	.61	8	10	7	.66	South Africa
14	3	520,047	28,598	5	7	4	.60	1	2	1	.58	Sudan
na	na	16,524	na	na	na	na	na	na	na	na	na	Swaziland
16	3	...	...	...	...	...	...	...	...	...	...	Togo
17	2	524,037	15,855	3	4	2	.44	4	5	3	.53	Tunisia (p)
17	1	** 103,049	** 24,427	** 24	** 25	** 21	** .84	** 4	** 6	** 3	** .53	Uganda
18	2	...	...	...	...	...	...	...	...	...	...	United Republic of Tanzania
16	3	135,978	6,000	4	7	1	.08	1	2	0	.06	Zambia
na	na	403,509	na	na	na	na	na	na	na	na	na	Zimbabwe (p)
												America, North
15	2	** 458	** 60	** 13	** 11	** 15	** 1.29	** 15	** 13	** 17	** 1.35	Anguilla
15	3	...	...	...	...	...	...	...	...	...	...	Antigua and Barbuda
14	2	3,655	1,104	30	38	23	.60	42	50	34	.67	Aruba
na	na	** 16,285	na	na	na	na	na	na	na	na	na	Bahamas
14	2	8,379	49	1	1	0	.45	1	1	0	.50	Barbados
15	2	** 6,843	** 1,070	** 16	** 14	** 17	** 1.27	** 9	** 7	** 11	** 1.50	Belize
na	na	...	na	na	na	na	na	na	na	na	na	Bermuda
15	2	484	239	49	52	48	.91	36	31	42	1.33	British Virgin Islands
...	...	...	...	...	...	...	...	...	...	...	...	Canada (p)
...	...	...	...	...	...	...	...	...	...	...	...	Cayman Islands
15	3	85,513	21,266	25	26	24	.95	8	8	9	1.10	Costa Rica
15	4	413,818	251,088	61	70	51	.72	38	45	32	.71	Cuba
na	na	2,402	na	na	na	na	na	na	na	na	na	Dominica
14	4	390,990	** 29,789	** 8	** 8	** 8	** 1.00	** 4	** 3	** 4	** 1.29	Dominican Republic
16	3	157,959	** 91,450	** 58	** 56	** 59	** 1.06	** 24	** 23	** 25	** 1.12	El Salvador
16	2	5,167	1,052	20	29	12	.40	26	37	15	.42	Grenada
16	3	194,096	173,590	89	88	91	1.04	21	20	22	1.10	Guatemala
na	na	...	na	na	na	na	na	na	na	na	na	Haiti
16	4	...	...	...	...	...	...	...	...	...	...	Honduras
15	2	79,447	376	0	1	0	.70	0	0	0	.74	Jamaica (p)
15	4	3,295,272	359,171	11	11	11	.95	4	4	4	1.01	Mexico (p)
na	na	** 125	na	na	na	na	na	na	na	na	na	Montserrat
14	2	** 8,136	** 2,768	** 34	** 32	** 35	** 1.10	** 39	** 32	** 45	** 1.40	Netherlands Antilles

TABLE 2: SECONDARY EDUCATION, ISCED 2 AND 3. VOCATIONAL ENROLMENTS

Regions	Lower secondary (ISCED 2)											
	Vocational education		Enrolment		Enrolment in technical and vocational programmes (%)				Vocational gross enrolment ratio			
Country or territory	Entrance age	Duration	All programmes	Vocational programmes	MF	M	F	GPI	MF	M	F	GPI
Nicaragua	13	3	266,296	2,364	1	1	1	.39	1	1	0	.43
Panama	12	3	155,188	50,080	32	33	31	.95	28	28	27	.98
Saint Kitts and Nevis	na	na	3,342	na	na	na	na	na	na	na	na	na
Saint Lucia	14	3	8,033	325	4	5	3	.55	4	4	3	.66
Saint Vincent and the Grenadines	13	2	6,876	1,715	25	33	17	.52	31	40	21	.52
Trinidad and Tobago	na	na	66,462	na	na	na	na	na	na	na	na	na
Turks and Caicos Islands	na	na	828	na	na	na	na	na	na	na	na	na
United States	na	na	12,942,848	na	na	na	na	na	na	na	na	na
America, South												
Argentina	na	na	2,401,473	na	na	na	na	na	na	na	na	na
Bolivia	12	2	** 420,811	** 40,030	** 10	** 6	** 13	** 1.98	** 10	** 7	** 13	** 2.00
Brazil	na	na	17,204,625	na	na	na	na	na	na	na	na	na
Chile	na	na	587,567	na	na	na	na	na	na	na	na	na
Colombia	na	na	2,782,163	na	na	na	na	na	na	na	na	na
Ecuador	na	na	561,775	na	na	na	na	na	na	na	na	na
Guyana	15	1	50,112	4,899	10	11	9	.86	33	27	39	1.44
Paraguay	12	2	307,644	1,459	0	1	0	.02	1	1	0	.02
Peru	na	na	1,687,554	na	na	na	na	na	na	na	na	na
Suriname	12	4	** 29,924	** 11,802	** 39	** 50	** 30	** .61	** 33	** 38	** 28	** .73
Uruguay	na	na	181,321	na	na	na	na	na	na	na	na	na
Venezuela	na	na	1,348,191	na	na	na	na	na	na	na	na	na
Asia												
Afghanistan, Islamic Republic of	...	...	...	-	-	-	-	na	-	-	-	na
Armenia	na	na	270,849	na	na	na	na	na	na	na	na	na
Azerbaijan	na	na	824,767	na	na	na	na	na	na	na	na	na
Bahrain	na	na	36,764	na	na	na	na	na	na	na	na	na
Bangladesh	na	na	6,604,177	na	na	na	na	na	na	na	na	na
Bhutan	na	na	** 16,345	na	na	na	na	na	na	na	na	na
Brunei Darussalam	na	na	21,900	na	na	na	na	na	na	na	na	na
Cambodia	16	1	417,193	-	-	-	-	na	-	-	-	na
China	na	na	67,153,407	na	na	na	na	na	na	na	na	na
Cyprus	na	na	32,868	na	na	na	na	na	na	na	na	na
Democratic People's Republic of Korea	na	na	...	na	na	na	na	na	na	na	na	na
Georgia	na	na	351,533	na	na	na	na	na	na	na	na	na
Hong Kong (China), SAR	na	na	256,753	na	na	na	na	na	na	na	na	na
India	14	2	47,523,454	678,247	1	2	0	.21	2	3	0	.17

Upper secondary (ISCED 3)												Regions
Vocational education		Enrolment		Enrolment in technical and vocational programmes (%)				Vocational gross enrolment ratio				
Entrance age	Duration	All programmes	Vocational programmes	MF	M	F	GPI	MF	M	F	GPI	Country or territory
16	2	116,655	16,575	14	13	15	1.16	7	5	8	1.53	Nicaragua
15	3	96,040	53,270	55	58	53	.91	30	30	31	1.04	Panama
na	na	879	na	na	na	na	na	na	na	na	na	Saint Kitts and Nevis
na	na	4,954	na	na	na	na	na	na	na	na	na	Saint Lucia
na	na	2,748	na	na	na	na	na	na	na	na	na	Saint Vincent and the Grenadines
16	2	** 41,418	** 2,550	** 6	** 6	** 6	** 1.02	** 4	** 4	** 5	** 1.14	Trinidad and Tobago
15	2	** 567	** 125	** 22	** 24	** 21	** .88	** 23	** 23	** 23	** .97	Turks and Caicos Islands
na	na	10,911,610	na	na	na	na	na	na	na	na	na	United States (p)
												America, South
15	3	1,574,740	1,271,093	81	81	81	1.00	64	61	68	1.12	Argentina (p)
na	na	575,766	na	na	na	na	na	na	na	na	na	Bolivia
15	3	9,584,585	471,227	5	5	5	1.01	4	4	5	1.22	Brazil (p)
14	4	909,370	395,557	43	46	41	.89	36	37	34	.91	Chile (p)
15	2	941,185	285,922	30	29	31	1.07	17	15	19	1.26	Colombia
15	3	411,002	215,933	53	51	54	1.08	27	25	29	1.17	Ecuador
15	2	14,842	690	5	9	1	.06	2	4	0	.07	Guyana
15	2	212,286	43,933	21	** 22	** 20	** .92	17	** 17	** 16	** .97	Paraguay (p)
na	na	852,128	na	na	na	na	na	na	na	na	na	Peru (p)
16	4	** 11,076	** 6,164	** 56	** 42	** 63	** 1.51	** 16	** 9	** 23	** 2.71	Suriname
15	3	150,854	28,271	19	22	16	.69	18	20	17	.85	Uruguay (p)
15	3	517,923	56,746	11	12	10	.84	4	3	4	1.09	Venezuela
												Asia
...	...	...	-	-	-	-	na	-	-	-	na	Afghanistan, Islamic Republic of
15	2	96,676	4,757	5	6	4	.62	4	4	3	.71	Armenia
15	2	269,620	20,753	8	10	5	.56	6	7	4	.53	Azerbaijan
15	3	30,396	14,886	49	60	38	.64	45	52	37	.72	Bahrain
16	3	4,420,149	126,355	3	4	2	.38	1	2	1	.36	Bangladesh
15	4	** 12,849	** 521	** 4	** 4	** 4	** .85	** 0	** 0	** 0	** .65	Bhutan
15	2	16,792	2,061	12	16	8	.52	17	21	13	.62	Brunei Darussalam
15	3	143,004	14,537	10	10	10	1.01	1	2	1	.51	Cambodia
15	3	28,471,353	11,298,031	40	38	42	1.10	17	17	17	1.02	China (p)
15	3	31,843	4,363	14	22	5	.22	13	21	5	.22	Cyprus
na	na	...	na	na	na	na	na	na	na	na	na	Democratic People's Republic of Korea
15	3	98,812	9,296	9	13	5	.39	4	5	2	.39	Georgia
15	2	230,465	11,545	5	9	1	.12	7	11	1	.13	Hong Kong (China), SAR
16	2	33,526,675	32,129	0	0	0	1.28	0	0	0	.97	India (p)

TABLE 2: SECONDARY EDUCATION, ISCED 2 AND 3. VOCATIONAL ENROLMENTS

Regions	Lower secondary (ISCED 2)											
	Vocational education		Enrolment		Enrolment in technical and vocational programmes (%)				Vocational gross enrolment ratio			
Country or territory	Entrance age	Duration	All programmes	Vocational programmes	MF	M	F	GPI	MF	M	F	GPI
Indonesia	na	na	9,930,748	na	na	na	na	na	na	na	na	na
Iran, Islamic Republic of	na	na	4,921,526	na	na	na	na	na	na	na	na	na
Iraq	na	na	...	na	na	na	na	na	na	na	na	na
Israel	na	na	246,917	na	na	na	na	na	na	na	na	na
Japan	na	na	3,886,331	na	na	na	na	na	na	na	na	na
Jordan	na	na	435,233	na	na	na	na	na	na	na	na	na
Kazakhstan	na	na	1,501,589	na	na	na	na	na	na	na	na	na
Kuwait	13	4	136,470	464	0	1	-	.00	0	1	-	.00
Kyrgyzstan	na	na	548,757	na	na	na	na	na	na	na	na	na
Lao People's Democratic Republic	11	4	229,301	278	0	0	0	2.60	0	0	0	1.99
Lebanon	13	2	201,390	6,498	3	5	2	.32	4	6	2	.35
Macao, China	12	3	27,245	1,483	5	6	5	.85	6	6	6	.86
Malaysia	na	na	1,350,506	na	na	na	na	na	na	na	na	na
Maldives	na	na	23,938	na	na	na	na	na	na	na	na	na
Mongolia	na	na	226,905	na	na	na	na	na	na	na	na	na
Myanmar	na	na	1,755,491	na	na	na	na	na	na	na	na	na
Nepal	na	na	1,137,101	na	na	na	na	na	na	na	na	na
Oman	na	na	153,357	na	na	na	na	na	na	na	na	na
Pakistan	...	...	3,918,146	-	-	-	-	na	-	-	-	na
Palestinian Autonomous Territories	na	na	490,427	na	na	na	na	na	na	na	na	na
Philippines	na	na	4,915,451	na	na	na	na	na	na	na	na	na
Qatar	na	na	28,913	na	na	na	na	na	na	na	na	na
Republic of Korea	na	na	1,851,685	na	na	na	na	na	na	na	na	na
Saudi Arabia	15	2	1,116,025	33,561	3	5	1	.10	4	6	1	.09
Singapore	na	na	...	na	na	na	na	na	na	na	na	na
Sri Lanka	na	na	** 1,345,138	na	na	na	na	na	na	na	na	na
Syrian Arab Republic	na	na	896,417	na	na	na	na	na	na	na	na	na
Tajikistan	na	na	798,568	na	na	na	na	na	na	na	na	na
Thailand	na	na	** 3,051,852	na	na	na	na	na	na	na	na	na
Timor-Leste	na	na	...	na	na	na	na	na	na	na	na	na
Turkey	na	na	** 2,427,258	na	na	na	na	na	na	na	na	na
Turkmenistan	...	...	...	...	...	...	...	...	...	...	...	...
United Arab Emirates	na	na	173,297	na	na	na	na	na	na	na	na	na
Uzbekistan	na	na	3,139,408	na	na	na	na	na	na	na	na	na
Viet Nam	11	3	6,497,548	-	-	-	-	na	-	-	-	na
Yemen	na	na	814,766	na	na	na	na	na	na	na	na	na
Europe												
Albania	na	na	263,163	na	na	na	na	na	na	na	na	na

Upper secondary (ISCED 3)												Regions
Vocational education		Enrolment		Enrolment in technical and vocational programmes (%)				Vocational gross enrolment ratio				
Entrance age	Duration	All programmes	Vocational programmes	MF	M	F	GPI	MF	M	F	GPI	Country or territory
16	3	5,941,787	2,099,753	35	38	32	.84	16	18	14	.78	Indonesia (p)
15	2	5,102,579	819,264	16	19	12	.64	22	27	17	.63	Iran, Islamic Republic of
15	3	...	62,841	...	...	...	...	4	6	1	.25	Iraq
15	3	356,404	124,629	35	39	30	.78	39	44	33	.75	Israel (p)
15	3	4,244,886	1,047,720	25	27	22	.83	25	27	23	.84	Japan (p)
16	2	177,887	34,855	20	21	18	.85	15	16	14	.88	Jordan (p)
16	3	565,579	90,778	16	20	12	.57	10	12	7	.59	Kazakhstan
17	3	124,225	13,128	11	12	9	.71	12	13	11	.82	Kuwait
16	1	190,502	25,972	14	18	10	.55	23	30	17	.57	Kyrgyzstan
14	3	124,061	4,775	4	4	4	.90	1	2	1	.63	Lao People's Democratic Republic
15	3	148,821	39,773	27	32	22	.70	18	21	16	.76	Lebanon
15	3	17,180	1,112	6	7	6	.96	5	4	5	1.11	Macao, China
15	2	949,556	141,242	15	18	12	.64	15	17	13	.78	Malaysia (p)
16	2	1,427	296	21	19	23	1.25	2	2	2	1.09	Maldives
16	2	85,869	16,900	20	22	18	.79	14	14	14	1.01	Mongolia
15	1	627,117	-	-	-	-	na	-	-	-	na	Myanmar
16	3	684,962	15,708	2	3	1	.43	1	2	0	.31	Nepal
na	na	125,945	na	na	na	na	na	na	na	na	na	Oman
15	1	1,816,147	83,000	5	6	2	.32	2	4	1	.23	Pakistan
16	2	92,309	4,283	5	7	3	.37	3	4	2	.43	Palestinian Autonomous Territories
na	na	1,153,612	na	na	na	na	na	na	na	na	na	Philippines (p)
15	3	22,975	557	2	5	na	.00	2	4	na	.00	Qatar
15	3	1,810,074	580,274	32	32	32	1.02	28	27	28	1.01	Republic of Korea (p)
15	3	879,418	34,873	4	7	1	.14	2	4	1	.13	Saudi Arabia
16	2	...	...	...	...	...	...	...	...	...	...	Singapore
14	2	** 999,822	...	...	...	...	...	...	...	...	...	Sri Lanka (p)
15	3	387,940	121,744	31	33	29	.87	9	10	8	.83	Syrian Arab Republic
14	2	149,773	25,546	17	19	13	.70	8	11	5	.41	Tajikistan
15	3	** 2,313,702	** 610,943	** 26	** 30	** 23	** .79	** 18	** 20	** 17	** .83	Thailand (p)
...	...	...	-	-	-	-	na	-	-	-	na	Timor-Leste
14	3	3,314,812	1,261,077	38	** 40	** 34	** .85	29	** 37	** 22	** .59	Turkey (p)
15	2	...	...	...	...	...	...	...	...	...	...	Turkmenistan
15	3	100,194	1,724	2	4	na	.00	1	2	na	.00	United Arab Emirates
16	3	1,021,495	366,927	36	38	34	.90	21	23	19	.82	Uzbekistan
15	3	2,768,253	309,807	11	10	12	1.15	6	6	6	1.08	Viet Nam
15	2	558,596	9,233	2	2	0	.14	1	2	0	.06	Yemen
												Europe
14	5	132,976	20,032	15	15	15	1.04	7	7	7	1.04	Albania

TABLE 2: SECONDARY EDUCATION, ISCED 2 AND 3. VOCATIONAL ENROLMENTS

Regions	Lower secondary (ISCED 2)											
	Vocational education		Enrolment		Enrolment in technical and vocational programmes (%)				Vocational gross enrolment ratio			
Country or territory	Entrance age	Duration	All programmes	Vocational programmes	MF	M	F	GPI	MF	M	F	GPI
Andorra	na	na	2,442	na	na	na	na	na	na	na	na	na
Austria	na	na	392,892	na	na	na	na	na	na	na	na	na
Belarus	na	na	793,292	na	na	na	na	na	na	na	na	na
Belgium	12	2	420,442	** 158,652	** 38	** 33	** 42	** 1.25	** 65	** 54	** 76	** 1.41
Bosnia and Herzegovina	8	4	...	...	...	...	...	...	...	...	...	...
Bulgaria	13	2	348,317	1,826	1	1	0	.55	1	1	1	.51
Croatia	na	na	203,698	na	na	na	na	na	na	na	na	na
Czech Republic	15	1	510,304	1,796	0	0	0	.89	1	1	1	.90
Denmark	na	na	224,860	na	na	na	na	na	na	na	na	na
Estonia	na	na	66,614	na	na	na	na	na	na	na	na	na
Finland	na	na	194,146	na	na	na	na	na	na	na	na	na
France	na	na	3,275,540	na	na	na	na	na	na	na	na	na
Germany	na	na	5,664,699	na	na	na	na	na	na	na	na	na
Gibraltar	...	...	...	...	...	...	...	...	...	...	...	...
Greece	na	na	341,048	na	na	na	na	na	na	na	na	na
Holy See	na	na	0	na	na	na	na	na	na	na	na	na
Hungary	na	na	504,202	na	na	na	na	na	na	na	na	na
Iceland	na	na	13,225	na	na	na	na	na	na	na	na	na
Ireland	na	na	175,370	na	na	na	na	na	na	na	na	na
Italy	na	na	1,837,831	na	na	na	na	na	na	na	na	na
Latvia	15	2	175,860	1,254	1	1	0	.31	2	3	1	.30
Liechtenstein	na	na	1,641	na	na	na	na	na	na	na	na	na
Lithuania	11	6	335,632	7,633	2	4	1	.27	2	4	1	.26
Luxembourg	na	na	16,842	na	na	na	na	na	na	na	na	na
Malta	13	3	28,812	252	1	2	-	.00	1	3	-	.00
Monaco	na	na	...	na	na	na	na	na	na	na	na	na
Netherlands	16	1	790,524	57,761	7	9	6	.62	30	38	22	.58
Norway	na	na	175,121	na	na	na	na	na	na	na	na	na
Poland	na	na	1,720,469	na	na	na	na	na	na	na	na	na
Portugal	12	3	393,673	948	0	0	0	.75	0	0	0	.76
Republic of Moldova	na	na	307,967	na	na	na	na	na	na	na	na	na
Romania	na	na	1,207,505	na	na	na	na	na	na	na	na	na
Russian Federation	na	na	9,614,812	na	na	na	na	na	na	na	na	na
San Marino	na	na	...	na	na	na	na	na	na	na	na	na
Serbia and Montenegro	na	na	...	na	na	na	na	na	na	na	na	na
Slovakia	15	2	380,637	85	0	0	0	1.84	0	0	0	1.82
Slovenia	na	na	92,671	na	na	na	na	na	na	na	na	na
Spain	16	2	1,971,841	8,237	0	0	0	.69	1	1	1	.69
Sweden	na	na	391,034	na	na	na	na	na	na	na	na	na
Switzerland	na	na	285,842	na	na	na	na	na	na	na	na	na

Upper secondary (ISCED 3)												Regions
Vocational education		Enrolment		Enrolment in technical and vocational programmes (%)				Vocational gross enrolment ratio				
Entrance age	Duration	All programmes	Vocational programmes	MF	M	F	GPI	MF	M	F	GPI	Country or territory
17	2	752	219	29	34	25	.72	18	18	17	.95	Andorra
14	3	371,534	266,909	72	76	67	.88	92	102	82	.80	Austria (p)
16	1	204,468	4,744	2	3	1	.44	3	4	2	.55	Belarus
14	4	760,885	533,969	70	72	68	.95	109	107	111	1.03	Belgium (p)
14	4	...	...	...	...	...	...	...	...	...	...	Bosnia and Herzegovina
15	3	358,934	197,521	55	66	44	.66	62	74	49	.67	Bulgaria
15	4	196,147	145,510	74	81	68	.84	62	66	59	.89	Croatia
15	4	490,189	388,862	79	84	74	.88	75	78	72	.92	Czech Republic (p)
16	4	222,003	118,329	53	59	48	.81	54	57	50	.87	Denmark (p)
16	4	56,460	16,544	29	40	19	.48	19	25	13	.53	Estonia
16	3	302,688	178,044	59	63	55	.88	92	90	93	1.04	Finland (p)
18	2	2,583,587	1,457,240	56	62	51	.82	93	101	85	.85	France (p)
16	3	2,781,860	1,729,839	62	68	56	.83	59	67	52	.78	Germany (p)
15	2	...	...	...	...	...	...	...	...	...	...	Gibraltar
15	2	372,802	134,099	36	42	30	.73	53	61	45	.74	Greece (p)
na	na	0	na	na	na	na	na	na	na	na	na	Holy See
16	1	525,777	67,269	13	16	10	.64	57	68	45	.66	Hungary (p)
16	4	21,362	7,266	34	44	25	.57	43	51	33	.65	Iceland (p)
na	na	145,250	na	na	na	na	na	na	na	na	na	Ireland (p)
14	3	2,690,469	698,717	26	28	24	.87	41	44	38	.87	Italy (p)
16	3	100,212	37,869	38	45	30	.66	34	40	27	.68	Latvia
...	...	1,614	1,227	76	82	68	.83	...	...	...	...	Liechtenstein
17	3	112,320	29,341	26	32	21	.65	18	21	15	.68	Lithuania
15	4	17,874	11,558	65	68	61	.90	58	59	57	.97	Luxembourg (p)
16	2	8,744	2,075	24	33	14	.42	18	26	10	.38	Malta
16	5	...	...	...	...	...	...	...	...	...	...	Monaco
16	3	624,646	431,683	69	71	67	.94	77	77	76	.98	Netherlands (p)
16	3	209,888	124,230	59	65	54	.83	76	82	70	.86	Norway (p)
15	4	2,174,698	1,180,964	54	63	44	.70	46	55	36	.66	Poland (p)
15	3	372,499	104,805	28	32	24	.76	30	32	28	.89	Portugal (p)
16	2	102,623	22,647	22	29	16	.54	14	17	10	.60	Republic of Moldova
15	4	1,010,619	650,482	64	72	57	.78	49	53	44	.82	Romania
15	2	4,907,006	1,413,885	29	37	20	.54	29	38	20	.53	Russian Federation (p)
14	5	...	-	-	-	-	na	-	-	-	na	San Marino
15	4	...	...	...	...	...	...	...	...	...	...	Serbia and Montenegro
15	4	288,941	217,764	75	80	71	.89	64	67	61	.92	Slovakia (p)
15	4	124,916	86,738	69	75	63	.84	82	89	75	.84	Slovenia
16	2	1,080,821	402,064	37	41	34	.83	43	44	43	.97	Spain (p)
16	4	526,944	258,379	49	51	47	.93	62	57	68	1.21	Sweden (p)
16	3	269,663	175,281	65	71	58	.81	73	85	60	.70	Switzerland (p)

TABLE 2: SECONDARY EDUCATION, ISCED 2 AND 3. VOCATIONAL ENROLMENTS

Regions	Lower secondary (ISCED 2)											
	Vocational education		Enrolment		Enrolment in technical and vocational programmes (%)				Vocational gross enrolment ratio			
Country or territory	Entrance age	Duration	All programmes	Vocational programmes	MF	M	F	GPI	MF	M	F	GPI
The former Yugoslav Rep. of Macedonia	na	na	122,699	na	na	na	na	na	na	na	na	na
Ukraine	na	na	3,253,164	na	na	na	na	na	na	na	na	na
United Kingdom	na	na	2,345,939	na	na	na	na	na	na	na	na	na
Oceania												
Australia	15	2	1,292,377	332,371	26	26	25	.98	61	61	60	.98
Cook Islands	na	na	...	na	na	na	na	na	na	na	na	na
Fiji	na	na	...	na	na	na	na	na	na	na	na	na
Kiribati	14	3	...	...	...	...	...	...	...	...	...	...
Marshall Islands	na	na	...	na	na	na	na	na	na	na	na	na
Micronesia (Federated States of)	na	na	...	na	na	na	na	na	na	na	na	na
Nauru	na	na	...	na	na	na	na	na	na	na	na	na
New Zealand	na	na	254,470	na	na	na	na	na	na	na	na	na
Niue	na	na	...	na	na	na	na	na	na	na	na	na
Palau	na	na	...	na	na	na	na	na	na	na	na	na
Papua New Guinea	15	3	170,738	15,258	9	11	6	.49	4	6	2	.40
Samoa	na	na	** 8,782	na	na	na	na	na	na	na	na	na
Solomon Islands	na	na	24,382	na	na	na	na	na	na	na	na	na
Tokelau	na	na	...	na	na	na	na	na	na	na	na	na
Tonga	13	4	...	...	...	...	...	...	...	...	...	...
Tuvalu	na	na	...	na	na	na	na	na	na	na	na	na
Vanuatu	12	4	...	...	...	...	...	...	...	...	...	...

Upper secondary (ISCED 3)												Regions
Vocational education		Enrolment		Enrolment in technical and vocational programmes (%)				Vocational gross enrolment ratio				
Entrance age	Duration	All programmes	Vocational programmes	MF	M	F	GPI	MF	M	F	GPI	Country or territory
15	4	95,950	58,891	61	67	55	.82	45	50	39	.79	The Former Yugoslav Rep. of Macedonia
15	2	1,570,913	326,213	21	27	14	.52	22	28	15	.51	Ukraine
16	2	6,873,115	4,744,242	69	65	73	1.12	313	248	382	1.54	United Kingdom (p)
												Oceania
17	4	1,221,293	769,687	63	66	59	.89	70	76	64	.84	Australia (p)
na	na	...	na	na	na	na	na	na	na	na	na	Cook Islands
16	2	...	...	...	...	...	...	...	...	...	...	Fiji
...	...	...	...	...	...	...	...	...	...	...	...	Kiribati
na	na	...	na	na	na	na	na	na	na	na	na	Marshall Islands
14	1	...	...	...	...	...	...	...	...	...	...	Micronesia (Federated States of)
na	na	...	na	na	na	na	na	na	na	na	na	Nauru
17	1	228,489	55,591	24	22	27	1.22	99	78	122	1.56	New Zealand (p)
na	na	...	na	na	na	na	na	na	na	na	na	Niue
na	na	...	na	na	na	na	na	na	na	na	na	Palau
17	1	13,913	1,341	10	9	11	1.33	1	1	1	.94	Papua New Guinea
na	na	14,159	na	na	na	na	na	na	na	na	na	Samoa
15	2	21,700	...	...	...	...	...	...	...	...	...	Solomon Islands
na	na	0	na	na	na	na	na	na	na	na	na	Tokelau
17	2	...	...	...	...	...	...	...	...	...	...	Tonga
16	2	...	...	...	...	...	...	...	...	...	...	Tuvalu
16	2	...	...	...	...	...	...	...	...	...	...	Vanuatu

Symbols and footnotes:

** UIS estimation
* National estimation
... No data available
- Magnitude nil or negligible
na Not applicable

TABLE 3: POST-SECONDARY EDUCATION: NON-TERTIARY VOCATIONAL ENROLMENTS, TERTIARY 5B ENROLMENTS

Regions	Post-secondary non-tertiary (ISCED 4)					
	Enrolment		Vocational gross enrolment ratio			
Country or territory	All programmes	Vocational programmes	MF	M	F	GPI
Africa						
Algeria	39,729	39,729	3	3	3	1.04
Angola	na	na	na	na	na	na
Benin	...	...	...	...	...	...
Botswana	** 15,843	** 11,282	** 14	** 12	** 15	** 1.26
Burkina Faso	na	na	na	na	na	na
Burundi	na	na	na	na	na	na
Cameroon	...	...	...	...	...	...
Cape Verde	827	827	4	3	5	1.90
Central African Republic	...	...	...	...	...	...
Chad	na	na	na	na	na	na
Comoros	719	719	2	2	2	.85
Congo	...	...	...	...	...	...
Côte d'Ivoire	...	...	...	...	...	...
Democratic Republic of the Congo	na	na	na	na	na	na
Djibouti	-	-	-	-	-	na
Egypt	151,992	151,992	5	5	5	1.08
Equatorial Guinea	na	na	na	na	na	na
Eritrea	1,152	1,152	1	1	0	.13
Ethiopia	...	...	...	...	...	...
Gabon	...	...	...	...	...	...
Gambia	1,734	na	na	na	na	na
Ghana	** 18,986	na	na	na	na	na
Guinea-Bissau	na	na	na	na	na	na
Guinea	na	na	na	na	na	na
Kenya	60,149	22,167	1	1	1	.92
Lesotho	-	-	-	-	-	na
Liberia	...	na	na	na	na	na
Libyan Arab Jamahiriya	...	...	...	...	...	...
Madagascar	...	na	na	na	na	na
Malawi	...	...	...	...	...	...
Mali	na	na	na	na	na	na
Mauritania	1,309	-	-	-	-	na
Mauritius	** 4,184	** 4,184	** 10	** 16	** 5	** .31
Morocco	71,525	66,429	5	6	4	.75
Mozambique	na	na	na	na	na	na
Namibia	** 1,283	** 1,283	** 2	** 3	** 1	** .31
Niger	2,547	2,547	1	1	0	.59
Nigeria	...	...	...	...	...	...
Rwanda	na	na	na	na	na	na

Tertiary education (ISCED 5 AND 6)						Regions
Enrolment		5B programmes' gross enrolment ratio				
All programmes	5B programmes	MF	M	F	GPI	Country or territory
						Africa
** 682,775	...	...	...	...	...	Algeria
12,566	na	na	na	na	na	Angola
...	...	...	...	...	...	Benin
** 9,161	** 1,047	** 1	** 2	** 1	** .40	Botswana
** 16,054	...	...	...	...	...	Burkina Faso
** 11,915	...	...	...	...	...	Burundi
81,318	...	...	...	...	...	Cameroon
2,215	na	na	na	na	na	Cape Verde
...	...	...	...	...	...	Central African Republic
...	...	...	...	...	...	Chad
1,707	547	2	2	2	1.11	Comoros
** 12,456	** 1,868	** 1	** 2	** 0	** .14	Congo
...	...	...	...	...	...	Côte d'Ivoire
...	...	...	...	...	...	Democratic Republic of the Congo
** 742	** 350	** 1	** 1	** 1	** .95	Djibouti
2,153,865	...	...	...	...	...	Egypt (p)
...	...	...	...	...	...	Equatorial Guinea
** 5,755	na	na	na	na	na	Eritrea
147,954	na	na	na	na	na	Ethiopia
...	...	...	...	...	...	Gabon
...	na	na	na	na	na	Gambia
70,293	...	...	...	...	...	Ghana
...	...	...	...	...	...	Guinea
...	...	...	...	...	...	Guinea-Bissau
...	...	...	...	...	...	Kenya
6,108	2,996	3	2	5	2.26	Lesotho
...	...	...	...	...	...	Liberia
** 375,028	** 96,284	** 35	** 35	** 35	** 1.02	Libyan Arab Jamahiriya
32,593	6,611	1	1	1	.82	Madagascar
4,565	na	na	na	na	na	Malawi
** 28,332	na	na	na	na	na	Mali
** 9,198	** 454	** 0	** 1	** 0	** .23	Mauritania
16,764	9,964	25	16	34	2.09	Mauritius
335,755	36,231	3	3	3	.86	Morocco
17,225	na	na	na	na	na	Mozambique
** 13,536	** 6,052	** 8	** 10	5	** .54	Namibia
...	...	...	...	...	...	Niger
947,538	357,212	7	8	6	.84	Nigeria
20,393	736	0	0	0	.25	Rwanda

TABLE 3: POST-SECONDARY EDUCATION: NON-TERTIARY VOCATIONAL ENROLMENTS, TERTIARY 5B ENROLMENTS

Regions	Post-secondary non-tertiary (ISCED 4)					
	Enrolment		Vocational gross enrolment ratio			
Country or territory	All programmes	Vocational programmes	MF	M	F	GPI
Sao Tome and Principe	...	...	...	...	...	...
Senegal	...	...	...	...	...	...
Seychelles	1,636	1,335	50	46	53	1.16
Sierra Leone	...	...	...	...	...	...
Somalia	na	na	na	na	na	na
South Africa	161,036	161,036	9	10	7	.66
Sudan	na	na	na	na	na	na
Swaziland	404	404	1	1	0	.38
Togo	...	-	-	-	-	na
Tunisia	3,131	na	na	na	na	na
Uganda	na	na	na	na	na	na
United Republic of Tanzania	-	-	-	-	-	na
Zambia	na	na	na	na	na	na
Zimbabwe	1,045	1,045	0	0	0	.12
America, North						
Anguilla	55	na	na	na	na	na
Antigua and Barbuda	...	...	...	...	...	...
Aruba	na	na	na	na	na	na
Bahamas	...	...	...	...	...	...
Barbados	4,061	3,385	40	41	39	.94
Belize	1,890	na	na	na	na	na
Bermuda	na	na	na	na	na	na
British Virgin Islands	** 750	** 750	** 122	** 73	** 172	** 2.34
Canada	...	...	...	...	...	...
Cayman Islands	...	...	...	...	...	...
Costa Rica	na	na	na	na	na	na
Cuba	24,471	18,429	6	2	10	4.10
Dominica	1,872	104	3	2	5	2.49
Dominican Republic	na	na	na	na	na	na
El Salvador	na	na	na	na	na	na
Grenada	1,106	182	5	0	9	60.08
Guatemala	na	na	na	na	na	na
Haiti	na	na	na	na	na	na
Honduras	na	na	na	na	na	na
Jamaica	...	...	...	...	...	...
Mexico	na	na	na	na	na	na
Montserrat	** 20	** 20	** 19	...	...	...
Netherlands Antilles	** 445	** 445	** 7	** 2	** 11	** 5.43
Nicaragua	na	na	na	na	na	na
Panama	3,833	1,990	2	2	2	.93

Tertiary education (ISCED 5 AND 6)						Regions
Enrolment		5B programmes' gross enrolment ratio				
All programmes	5B programmes	MF	M	F	GPI	Country or territory
...	na	na	na	na	na	Sao Tome and Principe
...	...	...	...	...	...	Senegal
na	na	na	na	na	na	Seychelles
...	...	...	...	...	...	Sierra Leone
...	...	...	...	...	...	Somalia
675,160	82,628	4	3	6	1.91	South Africa
...	...	...	...	...	...	Sudan
** 5,369	...	...	...	...	...	Swaziland
...	...	...	...	...	...	Togo
263,414	50,718	12	...	...	...	Tunisia (p)
** 74,090	** 31,637	** 3	** 4	** 2	** .44	Uganda
31,049	7,895	1	1	0	.34	United Republic of Tanzania
...	...	...	...	...	...	Zambia
** 60,221	36,526	6	6	5	.86	Zimbabwe (p)
						America, North
...	...	...	...	...	...	Anguilla
...	...	...	...	...	...	Antigua and Barbuda
1,672	1,291	53	49	56	1.15	Aruba
...	...	...	...	...	...	Bahamas
...	...	...	...	...	...	Barbados
527	na	na	na	na	na	Belize
...	...	...	...	...	...	Bermuda
na	na	na	na	na	na	British Virgin Islands
...	...	...	...	...	...	Canada (p)
...	...	...	...	...	...	Cayman Islands
77,283	11,317	7	8	6	.78	Costa Rica
235,997	na	na	na	na	na	Cuba
na	na	na	na	na	na	Dominica
286,954	24,082	7	10	3	.35	Dominican Republic
113,366	13,592	5	5	6	1.24	El Salvador
na	na	na	na	na	na	Grenada
111,739	5,183	1	1	1	2.03	Guatemala
...	na	na	na	na	na	Haiti
...	...	...	...	...	...	Honduras
** 45,770	** 25,728	** 24	** 15	** 32	** 2.16	Jamaica (p)
2,236,791	65,815	2	2	1	.69	Mexico (p)
na	na	na	na	na	na	Montserrat
...	...	...	...	...	...	Netherlands Antilles
100,363	4,527	2	2	2	1.48	Nicaragua
117,601	16,181	14	14	14	1.00	Panama

TABLE 3: POST-SECONDARY EDUCATION: NON-TERTIARY VOCATIONAL ENROLMENTS, TERTIARY 5B ENROLMENTS

Regions	Post-secondary non-tertiary (ISCED 4)					
	Enrolment		Vocational gross enrolment ratio			
Country or territory	All programmes	Vocational programmes	MF	M	F	GPI
Saint Kitts and Nevis	820	249	16	** 13	** 20	** 1.56
Saint Lucia	1,568	846	14	13	15	1.08
Saint Vincent and the Grenadines	1,245	236	4	3	5	1.73
Trinidad and Tobago	8,159	na	na	na	na	na
Turks and Caicos Islands	578	231	46	25	67	2.71
United States	423,316	423,316	5	3	7	2.06
America, South						
Argentina	na	na	na	na	na	na
Bolivia	...	...	...	...	...	...
Brazil	na	na	na	na	na	na
Chile	na	na	na	na	na	na
Colombia	na	na	na	na	na	na
Ecuador	na	na	na	na	na	na
Guyana	2,318	1,938	6	10	3	.28
Paraguay	* 1,447	* 1,447	* 1	...	...	...
Peru	...	na	na	na	na	na
Suriname	na	na	na	na	na	na
Uruguay	2,564	2,564	3	3	2	.57
Venezuela	na	na	na	na	na	na
Asia						
Afghanistan, Islamic Republic of	na	na	na	na	na	na
Armenia	29,417	29,417	24	15	32	2.13
Azerbaijan	51,410	51,410	15	9	22	2.30
Bahrain	3,732	3,293	15	20	9	.46
Bangladesh	23,259	11,869	0	0	0	.82
Bhutan	** 3,602	** 779	** 1	** 1	** 1	** .46
Brunei Darussalam	55	na	na	na	na	na
Cambodia	8,534	8,534	1	2	1	.47
China	** 611,786	** 611,786	** 1	** 2	** 1	** .65
Cyprus	na	na	na	na	na	na
Democratic People's Republic of Korea	...	...	...	...	...	...
Georgia	28,173	na	na	na	na	na
Hong Kong (China), SAR	32,934	...	...	...	...	...
India	521,538	93,395	0	0	0	1.13
Indonesia	na	na	na	na	na	na
Iran, Islamic Republic of	** 881,044	** 881,044	** 25	** 40	** 8	** .21
Iraq	...	na	na	na	na	na
Israel	14,325	na	na	na	na	na

Tertiary education (ISCED 5 AND 6)						Regions
Enrolment		5B programmes' gross enrolment ratio				
All programmes	5B programmes	MF	M	F	GPI	Country or territory
na	na	na	na	na	na	Saint Kitts and Nevis
...	...	...	...	...	...	Saint Lucia
na	na	na	na	na	na	Saint Vincent and the Grenadines
12,316	3,438	6	4	8	1.98	Trinidad and Tobago
9	9	2	** 2	** 1	** .49	Turks and Caicos Islands
16,611,711	3,871,711	47	40	54	1.35	United States (p)
						America, South
2,026,735	520,816	39	23	56	2.39	Argentina (p)
311,015	...	...	...	...	...	Bolivia
3,582,105	...	...	...	...	...	Brazil (p)
521,609	89,678	17	18	16	.89	Chile (p)
989,745	190,141	11	12	11	.88	Colombia
...	...	...	...	...	...	Ecuador
4,848	472	2	** 1	** 2	** 1.15	Guyana
** 146,892	30,318	13	8	17	2.25	Paraguay (p)
** 831,345	380,984	36	31	40	1.30	Peru (p)
...	...	...	...	...	...	Suriname
** 98,520	23,248	23	8	38	5.04	Uruguay (p)
** 983,217	* 337,428	* 33	** 28	** 39	** 1.41	Venezuela
						Asia
...	...	...	...	...	...	Afghanistan
73,603	na	na	na	na	na	Armenia
121,156	na	na	na	na	na	Azerbaijan
19,079	3,412	16	14	18	1.28	Bahrain
877,335	79,905	1	2	0	.18	Bangladesh
...	...	...	...	...	...	Bhutan
4,418	1,560	12	9	16	1.81	Brunei Darussalam
43,210	na	na	na	na	na	Cambodia
15,186,217	7,363,004	18	19	16	.85	China (p)
18,272	14,614	63	71	56	.79	Cyprus
...	...	...	...	...	...	Democratic People's Republic of Korea
155,453	na	na	na	na	na	Georgia
159,254	67,805	35	35	34	.98	Hong Kong (China), SAR
11,295,041	88,011	0	0	0	.58	India (p)
3,441,429	890,525	10	10	10	.98	Indonesia (p)
1,714,433	404,439	11	13	10	.75	Iran, Islamic Republic of
...	...	...	...	...	...	Iraq
301,326	59,168	28	27	29	1.09	Israel (p)

TABLE 3: POST-SECONDARY EDUCATION: NON-TERTIARY VOCATIONAL ENROLMENTS, TERTIARY 5B ENROLMENTS

Regions	Post-secondary non-tertiary (ISCED 4)					
	Enrolment		Vocational gross enrolment ratio			
Country or territory	All programmes	Vocational programmes	MF	M	F	GPI
Japan	14,398	...	...	...	...	...
Jordan	na	na	na	na	na	na
Kazakhstan	211,346	211,346	36	31	41	1.30
Kuwait	16,259	9,617	14	9	19	2.22
Kyrgyzstan	25,989	na	na	na	na	na
Lao People's Democratic Republic	20,104	15,997	7	8	6	.74
Lebanon	na	na	na	na	na	na
Macao, China	na	na	na	na	na	na
Malaysia	172,783	39,263	4	6	3	.55
Maldives	...	343	2	2	3	1.15
Mongolia	2,593	2,593	2	2	2	.85
Myanmar	na	na	na	na	na	na
Nepal	na	na	na	na	na	na
Oman	...	...	...	...	...	...
Pakistan	...	...	...	...	...	...
Palestinian Autonomous Territories	...	...	...	...	...	...
Philippines	452,223	28,897	1	1	1	.88
Qatar	na	na	na	na	na	na
Republic of Korea	na	na	na	na	na	na
Saudi Arabia	...	...	...	...	na	.00
Singapore	...	...	...	...	...	...
Sri Lanka	na	na	na	na	na	na
Syrian Arab Republic	39,870	20,197	2	3	2	.89
Tajikistan	25,125	25,125	9	9	9	1.05
Thailand	** 18,576	na	na	na	na	na
Timor-Leste	na	na	na	na	na	na
Turkey	na	na	na	na	na	na
Turkmenistan	...	...	...	...	...	...
United Arab Emirates	na	na	na	na	na	na
Uzbekistan	...	...	...	...	...	...
Viet Nam	na	na	na	na	na	na
Yemen	...	...	...	...	...	...
Europe						
Albania	na	na	na	na	na	na
Andorra	na	na	na	na	na	na
Austria	54,840	54,840	29	22	36	1.67
Belarus	127,813	127,813	37	45	29	.64
Belgium	53,618	52,878	22	21	22	1.02
Bosnia and Herzegovina	na	na	na	na	na	na
Bulgaria	3,165	3,165	1	1	1	.92

Tertiary education (ISCED 5 AND 6)						Regions
Enrolment		5B programmes' gross enrolment ratio				
All programmes	5B programmes	MF	M	F	GPI	Country or territory
3,984,400	974,733	33	23	44	1.90	Japan (p)
186,189	26,967	12	9	16	1.82	Jordan (p)
603,072	na	na	na	na	na	Kazakhstan
...	...	...	...	...	...	Kuwait
201,128	na	na	na	na	na	Kyrgyzstan
28,117	18,950	8	10	6	.54	Lao People's Democratic Republic
144,050	20,679	15	17	13	.79	Lebanon
26,272	2,934	20	14	25	1.78	Macao, China
632,309	319,445	36	33	39	1.16	Malaysia (p)
na	na	na	na	na	na	Maldives
98,031	4,052	4	2	5	2.27	Mongolia
...	...	...	...	...	...	Myanmar
124,817	na	na	na	na	na	Nepal
...	...	...	...	...	...	Oman
401,056	281	0	0	0	.52	Pakistan
104,567	7,913	6	5	7	1.25	Palestinian Autonomous Territories
2,427,211	228,716	7	6	7	1.18	Philippines (p)
7,826	105	1	0	1	4.69	Qatar
3,210,142	1,317,325	90	111	68	.61	Republic of Korea (p)
525,344	68,982	8	13	3	.19	Saudi Arabia
...	...	...	...	...	...	Singapore
...	...	...	...	...	...	Sri Lanka (p)
...	...	...	...	...	...	Syrian Arab Republic
97,466	na	na	na	na	na	Tajikistan
** 2,205,581	** 415,979	** 18	** 19	** 17	** .92	Thailand (p)
...	...	...	...	...	...	Timor-Leste
1,918,483	575,712	20	23	18	.77	Turkey (p)
...	...	...	...	...	...	Turkmenistan
** 68,182	...	...	...	...	...	United Arab Emirates
393,910	158,478	14	14	15	1.08	Uzbekistan
** 797,087	** 220,912	** 7	** 10	** 3	** .27	Viet Nam
...	...	...	...	...	...	Yemen
						Europe
43,600	570	1	0	1	4.77	Albania
306	220	17	19	15	.82	Andorra
229,802	26,167	14	9	18	2.02	Austria (p)
488,650	160,913	47	40	55	1.37	Belarus
374,532	193,063	79	67	92	1.36	Belgium (p)
...	...	...	...	...	...	Bosnia and Herzegovina
230,513	14,801	7	6	8	1.39	Bulgaria

TABLE 3: POST-SECONDARY EDUCATION: NON-TERTIARY VOCATIONAL ENROLMENTS, TERTIARY 5B ENROLMENTS

Regions	Post-secondary non-tertiary (ISCED 4)					
	Enrolment		Vocational gross enrolment ratio			
Country or territory	All programmes	Vocational programmes	MF	M	F	GPI
Croatia	na	na	na	na	na	na
Czech Republic	73,629	53,428	18	20	16	.80
Denmark	1,015	-	-	-	-	na
Estonia	11,551	11,551	28	21	36	1.75
Finland	11,229	11,229	8	9	8	.91
France	33,288	15,894	1	1	1	2.05
Germany	463,341	395,013	21	21	21	1.00
Gibraltar	...	...	...	...	...	...
Greece	32,813	32,813	12	10	13	1.28
Holy See	na	na	na	na	na	na
Hungary	83,727	67,555	25	23	27	1.19
Iceland	553	553	6	8	5	.70
Ireland	50,957	50,957	38	33	43	1.30
Italy	45,714	45,714	4	3	5	1.83
Latvia	7,410	6,923	10	6	14	2.15
Liechtenstein	102	102	...	...	...	...
Lithuania	7,697	7,697	8	6	10	1.71
Luxembourg	1,052	1,052	11	17	5	.27
Malta	344	284	2	4	1	.20
Monaco	na	na	na	na	na	na
Netherlands	6,295	6,295	2	3	1	.24
Norway	6,150	4,829	5	7	2	.24
Poland	215,739	215,739	16	13	19	1.47
Portugal	na	na	na	na	na	na
Republic of Moldova	na	na	na	na	na	na
Romania	61,855	61,855	9	6	11	1.71
Russian Federation	234,174	234,174	5	4	6	1.46
San Marino	...	...	...	...	...	...
Serbia and Montenegro	...	...	...	...	...	...
Slovakia	6,377	6,377	4	3	4	1.53
Slovenia	1,550	324	1	0	1	1.74
Spain	na	na	na	na	na	na
Sweden	11,316	8,471	4	4	5	1.24
Switzerland	29,097	22,937	15	7	23	3.03
The former Yugoslav Rep. of Macedonia	266	266	0	1	0	.07
Ukraine	175,667	175,667	11	11	12	1.18
United Kingdom	...	...	...	...	...	...
Oceania						
Australia	175,899	...	...	...	...	...
Cook Islands	...	...	...	...	...	...

Tertiary education (ISCED 5 AND 6)						Regions
Enrolment		5B programmes' gross enrolment ratio				
All programmes	5B programmes	MF	M	F	GPI	Country or territory
121,722	41,691	34	34	35	1.03	Croatia
287,001	29,453	10	7	14	2.11	Czech Republic (p)
201,746	17,550	16	18	13	.75	Denmark (p)
63,625	24,185	59	41	78	1.90	Estonia
291,664	475	0	0	0	.70	Finland (p)
2,119,149	508,932	33	29	37	1.29	France (p)
** 2,334,569	339,989	18	14	23	1.67	Germany (p)
na	na	na	na	na	na	Gibraltar
561,468	182,692	65	65	65	1.00	Greece (p)
...	...	...	...	...	...	Holy See
390,453	15,021	5	4	7	1.62	Hungary (p)
13,347	742	9	8	9	1.08	Iceland (p)
181,557	64,873	48	44	53	1.23	Ireland (p)
1,913,352	20,868	2	1	2	1.98	Italy (p)
118,944	22,402	32	28	36	1.26	Latvia
440	na	na	na	na	na	Liechtenstein
167,606	48,058	47	35	60	1.71	Lithuania
3,077	1,216	12	12	13	1.14	Luxembourg (p)
8,946	1,929	16	12	21	1.68	Malta
na	na	na	na	na	na	Monaco
526,767	6,603	2	1	2	1.54	Netherlands (p)
212,395	7,178	7	7	7	1.10	Norway (p)
1,983,360	20,745	2	1	3	4.25	Poland (p)
400,831	5,466	2	2	2	1.18	Portugal (p)
114,238	15,291	9	8	11	1.39	Republic of Moldova
643,911	50,892	7	6	9	1.58	Romania
** 8,115,305	2,013,770	41	36	46	1.29	Russian Federation (p)
...	...	...	...	...	...	San Marino
...	...	...	...	...	...	Serbia and Montenegro
158,089	6,118	3	1	6	4.39	Slovakia (p)
101,458	50,885	89	82	96	1.18	Slovenia
1,840,607	248,035	24	23	25	1.07	Spain (p)
414,657	14,464	7	8	7	.92	Sweden (p)
185,965	38,231	25	28	21	.74	Switzerland (p)
45,624	2,914	4	5	4	.92	The Former Yugoslav Rep. of Macedonia
2,296,221	582,855	38	* 35	* 41	* 1.17	Ukraine
2,287,833	748,687	51	39	63	1.62	United Kingdom (p)
						Oceania
1,012,210	190,374	35	34	36	1.06	Australia (p)
na	na	na	na	na	na	Cook Islands

TABLE 3: POST-SECONDARY EDUCATION: NON-TERTIARY VOCATIONAL ENROLMENTS, TERTIARY 5B ENROLMENTS

Regions	Post-secondary non-tertiary (ISCED 4)					
	Enrolment		Vocational gross enrolment ratio			
Country or territory	All programmes	Vocational programmes	MF	M	F	GPI
Fiji	...	...	...	...	...	...
Kiribati	...	...	...	...	...	...
Marshall Islands	...	...	...	...	-	.00
Micronesia (Federated States of)	...	na	na	na	na	na
Nauru	...	...	...	...	...	...
New Zealand	45,487	1,245	1	2	0	.04
Niue	na	na	na	na	na	na
Palau	...	...	...	...	...	...
Papua New Guinea	na	na	na	na	na	na
Samoa	203	na	na	na	na	na
Solomon Islands	na	na	na	na	na	na
Tokelau	...	...	...	...	...	...
Tonga	...	na	na	na	na	na
Tuvalu	...	...	...	...	...	...
Vanuatu	...	na	na	na	na	na

Tertiary education (ISCED 5 AND 6)						Regions
Enrolment		5B programmes' gross enrolment ratio				
All programmes	5B programmes	MF	M	F	GPI	Country or territory
...	...	...	...	...	...	Fiji
...	...	...	...	...	...	Kiribati
...	...	...	...	...	...	Marshall Islands
...	...	...	...	...	...	Micronesia (Federated States of)
na	na	na	na	na	na	Nauru
185,099	47,428	44	34	55	1.59	New Zealand (p)
na	na	na	na	na	na	Niue
...	na	na	na	na	na	Palau
...	...	...	...	...	...	Papua New Guinea
...	...	...	...	...	...	Samoa
na	na	na	na	na	na	Solomon Islands
na	na	na	na	na	na	Tokelau
...	...	...	...	...	...	Tonga
na	na	na	na	na	na	Tuvalu
...	...	...	...	...	...	Vanuatu

Symbols and footnotes:

** UIS estimation
* National estimation
... No data available
- Magnitude nil or negligible
na Not applicable

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ANNEX A

Glossary

Compulsory education:
Number of years or the age-span during which children and young people are legally obliged to attend school.

Duration:
Number of grades (years) in a given level of education.

Enrolment:
Number of pupils or students officially enrolled in a given grade or level of education, regardless of age. Typically, these data are collected at the beginning of the school-year.

Entrance age (theoretical):
The age at which pupils or students would enter a given programme or level of education assuming they had started at the official entrance age for the lowest level of education, had studied full-time throughout and had progressed through the system without repeating or skipping a grade. Note that the theoretical entrance age to a given programme or level is often but not always the typical or most common entrance age.

Gross Domestic Product (GDP):
The sum of gross value added by all resident producers in the economy, including distributive trades and transport, plus any product taxes and minus any subsidies not included in the value of the products.

International Standard Classification of Education (ISCED):
A classification system that provides a framework for the comprehensive statistical description of national educational systems and a methodology that translates national educational programmes into internationally comparable levels of education. The basic unit of classification in ISCED is the educational programme. ISCED also classifies programmes by field of study, programme orientation and destination.

Orientation of educational programmes:

General education:
This type of programme is designed mainly to lead pupils to a deeper understanding of a subject or group of subjects, especially, but not necessarily, with a view to preparing pupils for further education at the same or a higher level. These programmes are typically school-based and may or may not contain vocational elements. Successful completion of these programmes may or may not lead to an academic qualification. However, they do not typically allow successful completers to enter a particular occupation or trade or class of occupations or trades without further training. General education has a technical or vocational content of less than 25%, but pre-technical/pre-vocational programmes (i.e. programmes with a technical/vocational content of more than 25% that do not lead to a labour-market relevant vocational or technical qualification) are typically reported with general programmes.

Pre-vocational or pre-technical education:
Education which is mainly designed to introduce participants to the world of work and to prepare them for entry into vocational or technical education programmes. Successful completion of such programmes does not yet lead to a labour-market relevant vocational or technical qualification. For a programme to be considered as pre-vocational or pre-technical education, at least 25% of its content has to be vocational or technical.

Technical and vocational education:
This type of programme is designed mainly to lead pupils to acquire the practical skills, know-how and understanding necessary for employment in a particular occupation or trade (or class of occupations or trades). Successful completion of such programmes normally leads to a labour-market relevant vocational qualification recognized by the competent authorities (e.g. Ministry of Education, employers' associations, etc.) in the country in which it is obtained.

School-age population:
Population of the age-group which corresponds to the relevant level of education as indicated by theoretical entrance age and duration.

Students:

Student/pupil:
A person enrolled in an educational programme.

Full-time students:
Students engaged in an educational programme for a number of hours of study statutorily regarded as full-time at the particular level of education in the given country.

Part-time students:
Students whose statutory study hours are less than those required of full-time students in the given level and country.

Full-time equivalent number of students:
These are generally calculated in person-years. The unit for the measurement of full-time equivalence is a full-time student. Thus, a full-time student equals one full-time equivalent. The full-time equivalence of part-time students is determined by calculating the ratio of their hours studied to the statutory hours studied by a full-time student during the school year. For example, a student who studied one-third of the statutory hours of a full-time student equals one-third of a full-time equivalent student.

ANNEX B

Definitions of indicators

Gender Parity Index (GPI):
Ratio of the female-to-male values of a given indicator. A GPI of 1 indicates parity between sexes.

Gross Enrolment Ratio (GER):
Number of students 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. For the tertiary level, the population used is the five-year age group following on from the secondary school leaving age.

Gross Enrolment Ratio at ISCED 5B:
Number of students enrolled in 5B programmes, regardless of age, expressed as a percentage of the population in the theoretical age group for that level of education. For the tertiary level, the population used is the five-year age group following on from the secondary school leaving age.

Percentage of Technical/Vocational Enrolment (PTVE):
Number of students enrolled in technical/vocational programmes at a given level of education as a percentage of the total number of students enrolled in all programmes (technical/vocational and general) at that level.

Transformed Gender Parity Index (TGPI):
Ratio of the female-to-male values of a given indicator for those cases where the value for females is lower than for males; or ratio of the male-to-female values of a given indicator for those cases where the value for males is lower than for females. A TGPI of 1 indicates parity between sexes.

Vocational Gross Enrolment Ratio (VGER):
Number of students enrolled in technical / vocational programmes at 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. For the post-secondary non-tertiary level, the population used is the two-year age group following on from the secondary school leaving age. For the tertiary level, the population used is the five-year age group following on from the secondary school leaving age.

ANNEX C

Description of ISCED97 levels, classification criteria, and sub-categories

0	PRE-PRIMARY LEVEL OF EDUCATION	Main criteria	Auxiliary criteria	Sub-Categories	
	Initial stage of organized instruction, designed primarily to introduce very young children to a school-type environment.	Should be centre- or school-based, be designed to meet the educational and developmental needs of children of at least 3 years of age, and have staff that are adequately trained (i.e. qualified) to provide an educational programme for children.	Pedagogical qualifications for the teaching staff; implementation of a curriculum with educational elements.		

1	PRIMARY LEVEL OF EDUCATION	Main criteria	Auxiliary criteria		
	Normally designed to give pupils a sound basic education in reading, writing and mathematics.	Beginning of systematic studies characteristic of primary education, e.g. reading, writing and mathematics. Entry into the nationally designated primary institutions or programmes. The commencement of reading activities alone is not a sufficient criteria for classification of an educational programmes at ISCED level 1.	In countries where the age of compulsory attendance (or at least the age at which virtually all students begin their education) comes after the beginning of systematic study in the subjects noted, the first year of compulsory attendance should be used to determine the boundary between ISCED 0 and ISCED 1.		

2	LOWER SECONDARY LEVEL OF EDUCATION	Main criteria	Auxiliary criteria		Destination for which the programmes have been designed to prepare students:		Programme orientation
	The lower secondary level of education generally continues the basic programmes of the primary level, although teaching is typically more subject-focused, often employing more specialized teachers who conduct classes in their field of specialisation.	Programmes at the start of level 2 correspond to the point where programmes are beginning to be organized in a more subject-oriented pattern, using more specialised teachers conducting classes in their field of specialisation. If this organizational transition point does not correspond to a natural split in the boundaries between national educational programmes, then programmes should be split at the point where national programmes begin to reflect this organizational change.	If there is no clear break-point for this organizational change, however, then countries should artificially split national programmes into ISCED 1 and 2 at the end of 6 years of primary education. In countries with no system break between lower secondary and upper secondary education, and where lower secondary education lasts for more than 3 years, only the first 3 years following primary education should be counted as lower secondary education.	A	Programmes designed to prepare students for direct access to level 3 in a sequence which would ultimately lead to tertiary education, that is, entrance to ISCED 3A or 3B.	*General*	Education which is not designed explicitly to prepare participants for a specific class of occupations or trades or for entry into further vocational/technical education programmes.
				B	Programmes designed to prepare students for direct access to programmes at level 3C.	*Vocational*	Education which prepares participants for direct entry, without further training, into specific occupations. Successful completion of such programmes leads to a labour-market relevant vocational qualification.
				C	Programmes primarily designed for direct access to the labour market at the end of this level (sometimes referred to as 'terminal' programmes).		

3	UPPER SECONDARY LEVEL OF EDUCATION	Main criteria	Modular programmes		Destination for which the programmes have been designed to prepare students:		Programme orientation
	The final stage of secondary education in most countries. Instruction is often more organized along subject-matter lines than at ISCED level 2 and teachers typically need to have a higher level, or more subject-specific, qualification than at ISCED 2.	National boundaries between lower secondary and upper secondary education should be the dominant factor for splitting levels 2 and 3. Admission into programmes at this level usually require the completion of ISCED 2 for admission, or a combination of basic education and life experience that demonstrates the ability to handle ISCED 3 subject matter.	An educational qualification is earned in a modular programme by combining blocks of courses, or modules, into a programme meeting specific curricular requirements. A single module, however, may not have a specific educational or labour market destination or a particular programme orientation.	A	Programmes designed to provide direct access to ISCED 5A.	*General*	Education which is not designed explicitly to prepare participants for a specific class of occupations or trades or for entry into further vocational/technical education programmes.
				B	Programmes designed to provide direct access to ISCED 5B.	*Vocational*	Education which prepares participants for direct entry, without further training, into specific occupations. Successful completion of such programmes leads to a labour-market relevant vocational qualification.
				C	Programmes not designed to lead directly to ISCED 5A or 5B. Therefore, these programmes lead directly to the labour market, ISCED 4 programmes or other ISCED 3 programmes.		

4	POST-SECONDARY NON-TERTIARY	Main criteria	Types of programmes which can fit into level 4		Destination for which the programmes have been designed to prepare students:		Programme orientation
	These programmes straddle the boundary between upper secondary and post-secondary education from an international point of view, even though they might clearly be considered as upper secondary or post-secondary programmes in a national context.	Students entering ISCED 4 programmes will typically have completed ISCED 3.	The first type are short vocational programmes where either the content is not considered "tertiary" in many countries or the programmes do not meet the duration requirement for ISCED 5B - at least 2 years.	A	Programmes designed to provide direct access to ISCED 5A or 5B.	*General*	Education which is not designed explicitly to prepare participants for a specific class of occupations or trades or for entry into further vocational/technical education programmes.
	They are often not significantly more advanced than programmes at ISCED 3 but they serve to broaden the knowledge of participants who have already completed a programme at level 3. The students are typically older than those in ISCED 3 programmes.		These programmes are often designed for students who have completed level 3, although a formal ISCED level 3 qualification may not be required for entry.	B	Programmes not designed to lead directly to ISCED 5A or 5B. These programmes lead directly to the labour market or other ISCED 4 programmes.	*Vocational*	Education which prepares participants for direct entry, without further training, into specific occupations. Successful completion of such programmes leads to a labour-market relevant vocational qualification.
	ISCED 4 programmes typically have a duration of between 6 months and 2 years.		The second type of programmes are nationally considered as upper secondary programmes, even though entrants to these programmes will have typically already completed another upper secondary programme (i.e. second-cycle programmes).				

5	FIRST STAGE OF TERTIARY EDUCATION	Classification criteria for level and sub-categories (5A and 5B)			Cumulative theoretical duration at tertiary		Position in the national degree and qualifications structure
	ISCED 5 programmes have an educational content more advanced than those offered at levels 3 and 4.	Entry to these programmes normally requires the successful completion of ISCED level 3A or 3B or a similar qualification at ISCED level 4A.					
5A	ISCED 5A programmes are largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skills requirements.	1. have a minimum cumulative theoretical duration (at tertiary level) of three years; 2. typically require that the faculty have advanced research credentials; 3. may involve completion of a research project or thesis; 4. provide the level of education required for entry into a profession with high skills requirements or an advanced research programme.		**A**	Duration categories: less than 5 years; 5 years or more.	**A**	Categories: First; Second or further.
5B	ISCED 5B programmes are generally more practical/technical/occupationally specific than ISCED 5A programmes.	1. are more practically oriented and occupationally specific than programmes at ISCED 5A and do not prepare students for direct access to advanced research programmes; 2. have a minimum of two years' duration; 3. the programme content is typically designed to prepare students to enter a particular occupation.		**B**	Duration categories: None.	**B**	Categories: None.

6	SECOND STAGE OF TERTIARY EDUCATION (LEADING TO AN ADVANCED RESEARCH QUALIFICATION)						
	This level is reserved for tertiary programmes that lead to the award of an advanced research qualification. The programmes are devoted to advanced study and original research.	1. requires the submission of a thesis or dissertation of publishable quality that is the product of original research and represents a significant contribution to knowledge; 2. are not solely based on course-work; 3. prepare participants for faculty posts in institutions offering ISCED 5A programmes, as well as research posts in government and industry.					

ANNEX D

Regions

Africa (53 countries or territories)

Algeria; Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; Cape Verde; Central African Republic; Chad; Comoros; Congo; Côte d'Ivoire; Democratic Republic of the Congo; Djibouti; Egypt; Equatorial Guinea; Eritrea; Ethiopia; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Kenya; Lesotho; Liberia; Libyan Arab Jamahiriya; Madagascar; Malawi; Mali; Mauritania; Mauritius; Morocco; Mozambique; Namibia; Niger; Nigeria; Rwanda; Sao Tome and Principe; Senegal; Seychelles; Sierra Leone; Somalia; South Africa; Sudan; Swaziland; Togo; Tunisia; Uganda; United Republic of Tanzania; Zambia; Zimbabwe

America, North (31 countries or territories)

Anguilla; Antigua and Barbuda; Aruba; Bahamas; Barbados; Belize; Bermuda; British Virgin Islands; Canada; Cayman Islands; Costa Rica; Cuba; Dominica; Dominican Republic; El Salvador; Grenada; Guatemala; Haiti; Honduras; Jamaica; Mexico; Montserrat; Netherlands Antilles; Nicaragua; Panama; Saint Kitts and Nevis; Saint Lucia; Saint Vincent and the Grenadines; Trinidad and Tobago; Turks and Caicos Islands; United States

America, South (12 countries or territories)

Argentina; Bolivia; Brazil; Chile; Colombia; Ecuador; Guyana; Paraguay; Peru; Suriname; Uruguay; Venezuela

Asia (50 countries or territories)

Afghanistan; Armenia; Azerbaijan; Bahrain; Bangladesh; Bhutan; Brunei Darussalam; Cambodia; China; Cyprus; Democratic People's Republic of Korea; Georgia; Hong Kong (Special Administrative Region of China); India; Indonesia; Iran, Islamic Republic of; Iraq; Israel; Japan; Jordan; Kazakhstan; Kuwait; Kyrgyzstan; Lao People's Democratic Republic; Lebanon; Macao (China); Malaysia; Maldives; Mongolia; Myanmar; Nepal; Oman; Pakistan; Palestinian Autonomous Territories; Philippines; Qatar; Republic of Korea; Saudi Arabia; Singapore; Sri Lanka; Syrian Arab Republic; Tajikistan; Thailand; Timor-Leste; Turkey; Turkmenistan; United Arab Emirates; Uzbekistan; Viet Nam; Yemen

Europe (44 countries or territories)

Albania; Andorra; Austria; Belarus; Belgium; Bosnia and Herzegovina; Bulgaria; Croatia; Czech Republic; Denmark; Estonia; Finland; France; Germany; Gibraltar; Greece; Holy See; Hungary; Iceland; Ireland; Italy; Latvia; Liechtenstein; Lithuania; Luxembourg; Malta; Monaco; Netherlands; Norway; Poland; Portugal; Republic of Moldova; Romania; Russian Federation; San Marino; Serbia and Montenegro; Slovakia; Slovenia; Spain; Sweden; Switzerland; The Former Yugoslav Republic of Macedonia; Ukraine; United Kingdom of Great Britain and Northern Ireland

Oceania (17 countries or territories)

Australia; Cook Islands; Fiji; Kiribati; Marshall Islands; Micronesia (Federated States of); Nauru; New Zealand; Niue; Palau; Papua New Guinea; Samoa; Solomon Islands; Tokelau; Tonga; Tuvalu; Vanuatu

This report presents one of the most comprehensive statistical analyses to date of enrolments in formal technical and vocational education and training (TVET) throughout the world. It is an international and comparative study that describes access to formal TVET by level, age and gender.

Collection and analysis of TVET data, particularly on the international level, present a conceptual and administrative challenge. This is due to the fact that TVET is complex, multifaceted, and qualitatively different from general education, with a wide range of institutions and overlapping responsibilities.

Growing international recognition of the importance of skills for development on the one hand and the lack of statistical data that could be used for cross-national comparisons on the other have provided impetus for this report. This survey is a first step in exploring the potential of statistics on access to formal TVET to assist policy decision-making at national and international levels.

The target audience for the report includes TVET policy-makers, donors, researchers, practitioners, administrators and education planners.

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