Proposed Indicators for Assessing Technical and Vocational Education and Training

Inter-Agency Working Group on TVET Indicators

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I. Introduction

This paper draws together the work on conceptual clarification and methodological approaches on developing indicators for monitoring and evaluating Technical and Vocational Education and Training (TVET) developed by the Inter-agency Group on TVET (IAG-TVET). The IAG-TVET was established in 2009 with the aim of coordinating activities of the agencies active in the field of TVET particularly in developing countries. It comprises the United Nations Educational, Scientific and Cultural Organisation (UNESCO), the Organisation for Economic Co-operation and Development (OECD), the World Bank (WB), the International Labour Organisation (ILO), the European Commission (EC), the European Training Foundation (ETF) and the Asian Development Bank (ADB).

This joint work comes at a significant time of challenge and opportunity for TVET. Technical and vocational education and training strategies and policies are receiving renewed attention. Through its diverse forms, many policymakers see TVET as potentially making a difference to individuals, enterprises, communities and societies at large.

However, TVET is a diverse sector. It comprises formal, non-formal and informal learning. It takes place across a wide range of settings including schools, public and private vocational centers and institutes, higher education institutions and workplaces in both the formal and informal economies. TVET also has a multitude of very different institutional arrangements, organisational approaches and regulations.

Recent years have seen an increased interest in evidence-based policy making in TVET and use of valid and robust evaluation and monitoring instruments and indicators. However, there are several longstanding problems related to monitoring and evaluating TVET. These include, among others, the fragmented provision of TVET in many countries, the various methodological challenges related to definition of TVET programmes and generation of relevant indicators and the absence of adequate mechanisms to collect, process and aggregate data available.

It is against this background that the IAG-TVET established a Working Group on TVET Indicators (WGI) in 2010 to make recommendations on a set of TVET indicators that can support countries assess the efficiency and effectiveness of national TVET systems, with a particular focus on low-income countries. The primary purpose of the Working Group is to strengthen the ability of national governments of developing countries to design, monitor and evaluate their TVET sectors. The Working Group also benefited from input from the UNESCO Institute for Statistics, the German Federal Ministry for Economic Cooperation and Development (BMZ) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

The WGI mapped the indicators commonly collected or used by the international organizations in an initial phase and then identified five pertinent policy areas: Access and participation; Relevance; Quality and innovation in TVET; Governance and TVET Financing. The detailed conceptual framework of these policy areas is presented in the next section.

In developing a set of indicators to monitor TVET, it is important to underscore that the preliminary list of indicators presented in this report is a work in progress and that, after further consultation and piloting in different countries, it will likely be refined based on data availability, country priorities, and other considerations.

The report is organized into three main parts. The **first part** presents the conceptual framework used to develop the five broad policy areas and describes their scope.

The **second part** focuses on the main indicators for each policy area. A range of indicators is proposed covering fundamental indicators for which data is available, fundamental indicators for which data is difficult to obtain in the context of developing countries and other indicators which are desirable in terms of the data they contain but which may not be widely available.

The **third part** suggests that monitoring and evaluating TVET requires national ownership and capacity development. It pays attention to ways for strengthening national institutions in the field.

II. Conceptual framework

In view of the diversity of TVET provision in developing countries, different types of TVET can be examined separately wherever possible. For example, the following types of TVET may be used and different indicators considered for different types of TVET provision.

Figure 1: Typology of TVET provision

<table>
<tr><td rowspan="5">1. Institution-based training</td><td rowspan="2">(i) Provided by the formal education system</td><td colspan="2">(a) Under the supervision of the Ministry of Education</td></tr>
<tr><td colspan="2">(b) Outside the supervision of the Ministry of Education</td></tr>
<tr><td rowspan="3">(ii) Provided outside the formal education system</td><td colspan="2">(a) Public</td></tr>
<tr><td rowspan="2">(b) Non-public</td><td>For profit</td></tr>
<tr><td>Not for profit</td></tr>
<tr><td rowspan="3">2. Workplace-based training</td><td rowspan="2">(i) Pre-employment training</td><td colspan="2">(a) Modern apprenticeship</td></tr>
<tr><td colspan="2">(b) Traditional apprenticeship</td></tr>
<tr><td colspan="3">(ii) In-service training</td></tr>
<tr><td colspan="4">3. Combination of multiple types of training (e.g. sandwich programs, dual systems)</td></tr>
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Monitoring and evaluating TVET performance and identifying the possibilities for improving its quality and coverage require an understanding of the nature of TVET, its functions, goals and key characteristics.

To shape and organise the discussion, the WGI developed a conceptual framework that considers key interlocking components and related policy areas: Relevance, access and participation, quality, finance and governance. Each component can add substance to on-going policy dialogue and help define indicators on TVET performance.

The conceptual framework set-out in figure 2 builds on the assumption that policymakers and stakeholders have to optimally combine priorities related to the first three components (Relevance, equity, quality) giving financial resource available within a given context of institutional settings and governance.

Figure 2: Conceptual framework for selected policy areas

The components for monitoring and evaluating TVET policies and reform are summarised in the table below.

Table 1: Interlocking components for monitoring and evaluating TVET performance

Governance context

Governance considers the extent to which TVET system, across all levels and in all the various sub-parts, is characterised by participation, transparency and accountability. Governance also raises questions concerning quality assurance and multiple voices, because new actors are assuming responsibility and taking part in decisions.

Governance structure is largely dependent on institutional arrangements and the respective roles of key stakeholders. Such considerations ultimately encourage questions about the roles that governance systems play in generating and steering the relevance, access and participation and quality/innovation components for delivery of specific models of TVET and within the available resources.

Component 1: Finance

TVET financing is largely determined by the rules and regulations whereby financial resources are collected, allocated, and managed. It largely depends on the economic situation and **available resources**, but also on the priority levels that decision makers of various types of TVET have with regard to relevance, equity and quality; and on the trade-offs stemming from those priorities. This component equally looks at capacity of the system to ensure that resources are equitable and efficiently allocated.

Component 2: Access and participation

This component considers the extent to which various types of TVET promote **equity** and **inclusion** and the implications on expanding learning opportunities for excluded groups. This is examined through the lens of *access* and *participation*. While this second component focuses on important social aims of TVET, it simultaneously has a strong relation to the relevance dimension as it prioritizes increasing the numbers of people with viable and effective opportunities to benefit from high quality TVET leading to labour market outcomes.

Component 3: Quality

This component addresses the policy options leading to a TVET system focused on the **teaching and learning process and its effectiveness**. It is a measure of the quality of any TVET programme, that it is effectively conducted and relevant in terms of meeting skill needs. Quality facilities and equipment is also fundamental to the provision of quality TVET. Equally important, this component looks at the capacity of the systems to innovate and how teaching and learning process is a site of innovation itself, for example with rapid

changes in the use of information and communication technologies. The component equally looks at the availability of a systematic approach to quality assurance in order to support practitioners and policy-makers in improving the quality of training provision, and also guide students in making choices.

Component 4: Relevance

This component considers the extent to which TVET is **responsive** to labour market needs and requirements. The related policy area to be considered here are *labour market links to TVET programmes* and *outcomes of the TVET programmes*. This component reflects the assumption that the primary and key role of TVET is to raise skills levels and to help matching skills needs at all levels in today's complex and changing labour markets. Relevance also entails the mechanisms and available capacity to understand transition from school and all types of TVET programmes to work as well as to capture labour market signals and to anticipate emerging skills needs and the extent to which this informs TVET provision.

III. TVET indicators

The proposed indicators help in benchmarking the TVET sector. Benchmarking helps in linking the internal processes to external expectations, to develop appropriate internal mechanisms for the enhancement of TVET quality and effectiveness, respectively to compare the results with good practices elsewhere or with national goals.

Three categories of indicators are proposed. The categories reflect the expected feasibility and availability of indicators: the first cover indicators, that are most likely to be readily available and the next two columns contain indicators, which would be desirable as they complement the information provided by the first category, but which are not expected to be as readily available in developing countries. References to formal education and training should not be seen as minimising the role and importance of non-formal and informal education and training. These references merely demonstrate the difficulties of getting reliable data on non-formal and informal education and training.

Table 2: Categories and types of indicators used in TVET evaluation

This list is work-in-progress and is subject to change by WG member organizations during the field testing.

Area	**Indicators and data availability**		
	Data readily available	*Data not readily available*	*Data often not available*
1. Financing	1.1 Spending in formal TVET	1.2 Total TVET spending by student	1.3 Share of companies providing apprenticeship and other types of training (by size of the company) 1.4 Share of apprenticeship and other types of training spending in labour cost (by size of the company)
2. Access ***Access as opportunities*** ***Access as participation*** ***Access as transition***	2.1 Enrolment in vocational education as a percentage of total enrolment in the formal education system. 2.2. Enrolment by type of TVET programme	2.6 Typology of Admission Policies to formal school-based TVET 2.7 Transition paths from upper secondary TVET education	2.3 Work-based learning participation rate 2.4 Equity 2.5 Unsatisfied demand for TVET 2.8 Policies on articulation with schooling/higher education
3. Quality and Innovation	3.1 Student/teacher ratio in formal TVET and in general programmes 3.2 Completion rate in TVET programmes and in general programmes	3.3 Share of apprentices completing registered programmes as a percentage of all apprentices starting registered programmes 3.4 Share of qualified teachers in TVET and in general programmes	3.5 Relevance of quality assurance systems for TVET providers 3.6 Investment in training of teachers and trainers 3.7 Utilisation of acquired skills at the workplace 3.8 Share of ICT training activities in TVET 3.9 Satisfaction of employers with TVET graduates

4. Relevance	4.1 Employment to population ratio 4.2 Unemployment rate 4.3 Employment status 4.4 Employment by economic sector 4.5 Employment by occupation 4.6 Literacy rate	4.7 Informal employment rate 4.8 Time-related unemployment rate	4.9 Working poverty rate 4.10 Average real earnings 4.11 Number of vacant jobs 4.12 Net job creation 4.13 Youth outside labour force 4.14 Discouraged workers

III.1. Indicators measuring finance

While the access, labour market outcomes and the quality indicators measure the effectiveness of the system, the financial resources allocated to TVET programmes express their efficiency as well as policy priorities and trade-offs. In this sense the analysis should integrate quantitative and qualitative information, interpreting financing choices and mechanisms from the point of view of aims underpinning national TVET policies and final impacts.

Many countries have to reconcile limited public and private resources with the need to spread them over many levels and programmes. A key policy issue is therefore how to achieve the best use of resources, while ensuring a sustainable budget. As a consequence, the policy debate increasingly focuses on augmenting the volume of financing through diversification, but equally on efficiency while ensuring equity. Diversification happens mainly by engaging enterprises, individuals and other innovative sources of funding (philanthropic, sponsors, etc.) and through public–private partnerships. The formal apprenticeship system represents an illustration of public-private partnership in which different actors play their own roles in the financing mechanisms. The system works through interaction between public institutions (central, regional or local), which contribute to financing the school-based part of training, and the enterprises that contribute to financing the company-based component.

At the same time, acting on the twin themes of efficiency and equity means that financing policies and mechanisms need to ensure that equity and efficiency complement each other. This comes with an emphasis on assuring that further developments of TVET systems meet the needs of the excluded (UNESCO, 2010), in particular early school leavers, low skilled persons, migrants, persons with disabilities and the unemployed.

It is important for TVET financing to distinguish (in general) between sources of funds and how these funds are allocated and to which programmes and then used. In other words, the distinction should be made between resource mobilisation, resource allocation, respectively resource utilisation.

Resource mobilization varies significantly from country to country. Thus, a first step is to describe precisely the various financing schemes for the different types of TVET programmes. This guarantees that the country's characteristics are well captured and that the basic common features (of all TVET systems) are sufficiently described. These common characteristics include:

(i) whether training levies are in place (i.e. taxes on company payrolls, which can be recovered through agreed training expenditures);
(ii) the scope of funding system and type of TVET programmes funded
(iii) the existence of student fees (cost-sharing);
(iv) the existence of a TVET fund. Moreover, this area, in developing countries, should cover the level of donor funding as a percentage of total TVET funding;

(v) In-kind contributions to the TVET system, especially in countries where traditional apprenticeship is a major element of TVET.

The resource allocation mechanisms to different institutions involved in the TVET system should be studied. The utilisation of resources depends on the administrative system and government regulations under which TVET institutions operate. The overall governance structure impacts the effectiveness of the available resources. The policy issue here is to what extent the system in place provides incentives and flexibility to TVET institutions, companies, communities and individuals to use their (often limited) resources in the most efficient and effective way.

Relevant indicators depend on the coverage and scope of public and private funding of the various types of TVET programmes. For example, calculating the percentage of formal TVET spending to total education spending would be less relevant in a country where the majority of TVET programmes are provided outside of the formal education and training system.

Hence, as discussed in the access and participation section., it is important to start by a mapping of available TVET programmes and work to capture financial data such as expenditure on personnel services; maintenance and operating costs; capital expenditures; and other services provided to trainees. Mapping could also include items on financial resources such as budget for training; fees collected from the trainees; financial assistance/subsidies; and income generation by TVET providers as well as the resources made available by companies for TVET and apprentices.

Finally, the impact of TVET policy and programmes on the labour market outcomes of participants in various TVET programmes are very important for decision makers. Budgetary constraints mean that public and private interventions and expenditure must be more strongly defended and justified and their beneficiaries need to be increasingly more accurately targeted in line with skills demands in the labour market. The purpose of impact evaluation is to measure the effect that a political measure may have on its target recipients (families, individuals, companies or other organisations). There are several approaches used to undertake impact evaluation. The choice of one approach has implication on the type of indicators used.

Contemporary methods of impact evaluation seek methodological rigor: an impact evaluation must estimate the counterfactual, that is, what would have happened had the project never taken place or what otherwise would have been true[1]. Baker (2000, p.1) states that:

> *"to determine the counterfactual, it is necessary to net out the effect of the interventions from other factors which is a somewhat complex task. This is accomplished through the use of comparison or control groups (those who do not participate in a programme or receive benefits), which are subsequently compared with the treatment group (individuals who do receive the*

[1] See "Evaluating the Impact of Development Projects on Poverty: A Handbook for Practitioners", Baker, J. L., 2000.

intervention). Control groups are selected randomly from the same population as the programme participants, whereas the comparison group is more simply the group that does not receive the programme under investigation. Both the comparison and control groups should resemble the treatment group in every way, the only difference between groups being programme participation."

A cost-effectiveness and cost-benefit analysis can also be performed as part of an impact evaluation. This comprises relating the effects of the programme to its costs. In a cost-effectiveness analysis, effects are measured using physical variables (number of additional diplomas, number of jobs created, etc.) whereas in a cost-benefit analysis, these effects are measured in monetary terms (salary increases, added value, etc.) In the latter case, ratios such as internal rate of return can be calculated, so that the return on an investment in such a programme can be compared with the return on other measures. Although it is rarely used, a cost-effectiveness analysis, like a cost-benefit analysis, is a powerful tool that can assist public decision-making (ETF 2006).

Category 1: Indicators for which data is readily available

Indicator 1.1: Spending in formal TVET

Policy objectives	The indicator expresses the specific investment in formal TVET programmes.
Indicator	It is calculated as the percentage of formal TVET spending in total education spending, by education level. It should be expressed by: - Public expenditures - Private expenditures (if at all available).
Sources and concerns with the indicator or source	National office of statistics, budget offices in various ministries in charge of general and vocational education. The relevance of the indicator depends on the quality of the detailed breakdown of expenditure by education level and type of education and for the total government expenditure. Ideally actual expenditure should be used, and not budgets, but the actual expenditure is not always available.
Alternatives and interpretation	The total amount of spending is not necessarily a good measure of TVET financing. It is more important to have information about the adequacy and sustainability of spending. Data on private funding may not be available, in which case focus should be on public expenditure.

Category 2: Indicators for which data is not readily available

Indicator 1.2: Total TVET spending by student

Policy objectives	The indicator shows the amount of TVET financial resources allocated per each student, which is a better measure of investment in this type of education than the indicator 1.1.
Indicator	It is calculated by education level, if possible, as the ratio between the total spending in TVET education and the number of enrolled students in TVET programmes. If international comparison is a national priority, the total TVET expenditures should be expressed in dollar terms if possible. It should be disaggregated by: Public TVET spending per student; Private TVET spending per student. And ideally, it should be disaggregated by type of programme.

Sources and concerns with the indicator or source	National education statistics, and TVET providers.
Considerations	Private expenditure is likely to be underestimated or missing. It may also be difficult to get detailed data on different programmes.

Category 3: Indicators for which data is often not available

Indicator 1.3: Share of companies providing apprenticeship

Policy objectives	The indicator shows the proportion of enterprises financing training through apprenticeship.
Indicator	It is calculated as the percentage of companies that allocate financial resources for apprenticeship purposes in the total number of companies registered in the economy.
Sources and concerns with the indicator or source	Surveys. Ideally, the indicator should be disaggregated by small, medium, and large enterprises.
Considerations	Often data can only be had for formal apprenticeship.

Indicator 1.4: Share of apprenticeship spending in labour cost

Policy objectives	The indicator expresses the relative cost of financing apprenticeship and other types of training at company level.
Indicator	It is calculated as the percentage of apprenticeship and other types of training cost in total cost of labour.
Sources and concerns with the indicator or source	Surveys. Ideally, the indicator should be disaggregated by small, medium, and large enterprises.

III.2. Indicators measuring access and participation

There is a diversity of definitional understandings of "access" as a general term and "access to education", and "access to TVET" in particular. For the purpose of developing indicators, access will be looked at around three strands:

(i) A narrow sense of **participation**, which is reflected in enrolment in education and training programs, including its breakdown by individual subgroups (gender, socio-economic background, participation by sector and profession, etc.);

(ii) Another dimension is related to **opportunities** for access to TVET. Although TVET is seen as a second chance in many countries, access to TVET is in itself limited and there are many barriers and constraints (for example cultural barriers in certain countries that impede or limit the female participation to education in general and TVET in particular;

(iii) Finally, increasingly TVET policy makers look beyond the notion of access as participation to focus also on **transition** from and within TVET tracks. In this context, there are many policy challenges that require broader analysis. In many countries forms of vocational and academic secondary and post-secondary TVET are often weakly articulated. A major barrier are the absence of forms of pathways and transfer across study programs at the same level and transitions to higher level.

Often indicators measuring access and participation cover only the formal TVET. In many developing countries no indicators are currently used to monitor TVET in all its multiple settings, including workplace and community-based TVET.

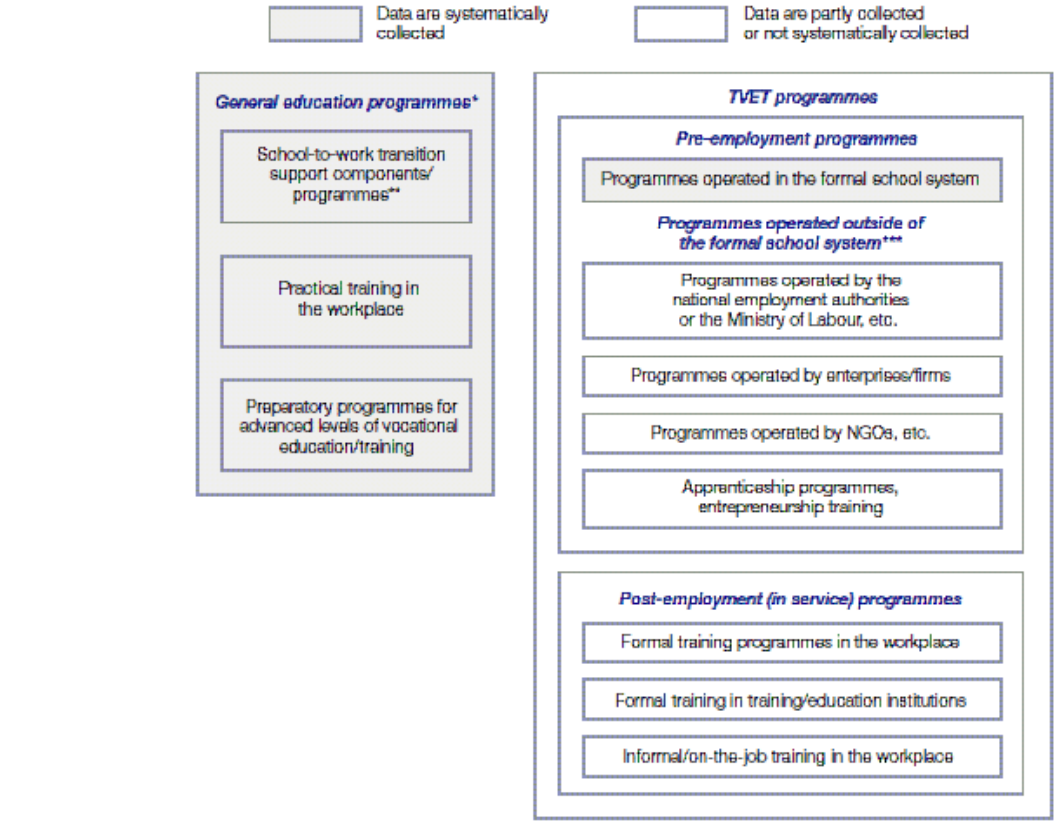
Hence it is important to start with a mapping to provide first illustrative information on TVET programmes available in the selected country. For this purpose, a set of criteria is needed for selecting and classifying these programmes. The following criteria are suggested for the selecting and classifying these exemplary programmes.

- *Range/diversity*. In cases where several types/levels of programmes are available in the country, examples of different types should be provided. Diversity of providers, target groups, qualification/skills level and duration is also an issue to be considered.
- *Frequency/high profile.* Examples of programmes should have a high profile and more frequent programmes (in terms of the numbers of holders/enrolments) should be preferred.
- *'Referencing character'*. In the TVET system very often specific programmes are referred to as main programmes: (i) community-based training; (ii) apprenticeship and company-based training (including the dual system); (iii) training provided by main public training institutions; and (iv) training provided by accredited private or non-profit training institutions. These 'reference programmes' are certainly potential candidates to be include as examples.

For instance, internationally, available indicators (UNEVOC-UIS, 2006; UIS, 2011) reflect mainly the way in which programmes and training services are provided. The UIS mainly collects TVET data from the programmes in the formal school system, which in many countries covers a small part of the entire TVET sector (Figure 3).

In the current data collection of UIS and the proposed revision of ISCED in 2011, the "pre vocational" components are viewed as a part of general programmes, and they are not distinguished from other components of general programmes.

Figure 3: Currently available internationally comparable TVET data



Notes: * Within general education programmes, TVET-related data are not distinguished from the rest of the general programmes.
** School-to-work transition programmes are only included if they form part of formal education, but they are not explicitly distinguished as TVET-related activities.
*** Workplace training components are only included if they form part of formal education, but they are not explicitly distinguished as TVET-related activities. There are long-term "sandwich" training programmes, which divide one training programme into multiple training components, including school-based training and substantial workplace-based training. Often only the school-based component of such programmes is recorded and the workplace component is not, thus a substantial part of the training curriculum is not captured in data collection.

Source: Authors' elaboration.

Figure taken from UIS (2011).

Programmes that allow young people to combine learning in classrooms with work raise special issues for public policy, as they require co-operation between employers and TVET institutions. Around the world, there is a wide variety of such programmes, including but extending well beyond those that are described as apprenticeships. And so the first substantive task of building relevant indicators is to describe the available programmes at national level: their scale relative to other parts of the TVET system; who takes part in them; how they are structured, managed and delivered. However, in many countries regular statistics are not

collected on the number and type (for example by age, gender) of apprentices and more broadly on participation in formal apprenticeship as a percentage of formal TVET.

There is also growing policy attention to disparities in opportunities for quality TVET and rising calls to address exclusion and inequalities in TVET. Here also, there is an urgent need for further developing data and indicators so the concerns can be addressed. For this purpose TVET data should be disaggregated by various factors of exclusion such as gender, poverty, disability, ethnic origins, language, social origins, parental status, etc.

Within the wider discussion on access, the policy issue of effective transition from and within TVET is increasingly becoming important. There is a growing emphasis placed on whether policies for TVET enable students to progress to tertiary education. The policy challenge is to find an acceptable mechanism for managing the educational transition effectively and that balances various interests: students; TVET institutions; government. For instance, the effectiveness of the transition can be judged from different perspectives. From the perspective of students, effectiveness means access to TVET that will open mobility within education system (for example to post-secondary or tertiary education) or beyond (e.g. in terms of opportunities on the labour market). For TVET institutions, what matters is their ability to have a responsibility for the selection of students, the alignment of their enrolments with their capacity, and the adequacy of resources to serve the number and characteristics of the students they admit. From a government perspective, a successful transition means a fair and efficient process that yields outcomes that serve socio-economic (national as well as individual) needs within affordable limits. Additionally, governments may be concerned with providing reasonably equitable access across socio-economic groups, gender, and geographic regions to meet community aspirations, increase social equity and sustain the viability of regional institutions (OECD/WB, 2009).

Based on the discussion above, the set of indicators proposed for this policy area will cover: (i) participation indicators; (ii) equity indicators and (iii) transition indicators.

Participation indicators

Category 1: Indicators for which data is readily available

Indicator 2.1: Enrolment in school-based TVET by sex as a share of formal enrolment

Policy objectives	Shows the relative weight of TVET within the formal education system.
Indicator	Calculated by dividing the number of pupils (students) enrolled in a given level of TVET by the total population enrolled in formal education at the same level, and multiplying the result by 100. Breakdown by gender and education level for TVET and split into education and training if possible.
Sources and concerns with the indicator or source	National statistics. Statistical units within the ministries responsible for TVET and the national statistical office.
Alternatives and interpretation	Enrolled students by education level and type of education. The quality of the indicator depends on the precision of the number of students in TVET.

Indicator 2.2: Enrolment by type of TVET programme

Policy objectives	Shows the participation by type of TVET programme.
Indicator	Calculated by dividing the number of individuals enrolled in a given TVET programme regardless of age by the estimated overall enrolment in all programmes (TVET as well as general), and multiplying the result by 100.
Sources and concerns with the indicator or source	National statistics. Statistical units within the ministries responsible for TVET and the national statistical office.
Alternatives and interpretation	The quality depends on a comprehensive overview of programmes and the availability of data on the number of students in all mapped TVET programmes.

Category 3: Indicators for which data is often not available

Indicator 2.3: Work-based learning participation rate

Policy objectives	To demonstrate the extent of work-based learning in TVET and within overall education system.
Indicator	Formal apprenticeship as share of all formal secondary TVET. Formal apprenticeship as share of all secondary.
Sources and concerns with the indicator or source	Sources: National TVET Agency; National Departments of Education; Chambers registers. To the extent data are available on nonformal apprenticeships, these should also be made available.
Alternatives and interpretation	Guidelines on methods for data collection: analyse available literature on work-based learning.

Equity indicators

Category 3: Indicators for which data is often not available

Indicator 2.4: Equity

Policy objectives	Address disparities and inequalities in access to learning and training opportunities through TVET.
Indicator	Participation in TVET of youth (aged 15-24 years) by sex, socioeconomic situation and type of TVET.
Sources and concerns with the indicator or source	National household surveys could be used to estimate the percentage of those participating in various types of TVET programmes.
Alternatives and interpretation	Guidelines on methods for data collection: analyse available literature on equity.

Indicator 2.5: Unsatisfied demand for TVET

Policy objectives	This indicator attempts to measure how many individuals chose to study VET and due to several barriers were not offered a place.
Indicator	The number of individuals applying for TVET programs divided by the total number of

	TVET students in the corresponding level of education/qualification/programme.
Sources and concerns with the indicator or source	No known source at present. This can be an administrative source of information to be collected from schools, employment services or other agencies in charge of selection of students.
Alternatives and interpretation	If the indicator is available, the quantitative information provided should be complemented by qualitative aspects: the reason for which the applicant was not offered a place: they failed to entry theoretical exams or to aptitude tests, etc. It would be also interesting to see what carrier path those individuals followed after being refused a place: other forms of education, apprenticeship, out of the labour market and education, etc.

Admission and transition indicators

Category 2: Indicators for which data is not readily available

Indicator 2.6: Typology of Admission Policies to formal school-based TVET

Policy objectives	Offers qualitative information about the admission policy in TVET programmes.
Indicator	**1.1.A. Access to secondary TVET** **Basic Education leaving exams:** National Basic Education leaving exams score only National Basic Education leaving exam score, plus application dossier **Entrance to TVET:** Application dossier Application dossier, plus entry test Guidance and Counselling Standardised aptitude test scores Standardised aptitude test scores, plus application dossier **1.1.B. Access to post-secondary TVET** **Secondary leaving exams** National exam score only National exam score, plus secondary school academic performance National exam score, plus application dossier Regional/state exam score, plus secondary school academic performance **Entrance exams** National exam score only National exam score, plus secondary school academic performance Institutionally administered exam scores only Institutionally administered exam scores, plus secondary school academic performance **Multiple exams** National entrance exam scores, plus institutionally administered entrance exam scores National entrance exam scores, institutionally administered entrance exam scores, and/or secondary school academic performance National secondary leaving exam scores, plus institutionally administered entrance exam scores National secondary leaving exam scores, plus standardised aptitude test scores Multiple exams administered by multiple entities
Sources and concerns with the indicator or source	Information to be collected from schools, employment services or other agencies
Alternatives and interpretation	The set of proposed indicators offers information about the entrance conditions in TVET schools. When examination tests and tests for aptitudes are imposed to candidates, this may limit the access to those who fail to these exams. In general,

	the entry examination is theoretical, which may unnecessarily limit the access to those not having sufficient theoretical knowledge. The leaving exam scores offer an idea about the students' performance during education; generally speaking, good performance is equivalent to better access to higher levels of education, while those not performing very well are expected to enter the labour market. It would be interesting to observe if this rule applies in each country included in the analysis; if this is the case, the labour market "receives" graduates with an insufficient level of qualification.

Indicator 2.7: Transition paths from upper secondary TVET education

Policy objectives	Shows the paths taken by graduates from upper-secondary TVET, by gender if possible.
Indicator	Percentage of upper-secondary TVET graduates who continue to study in post-secondary non-tertiary TVET programs, by gender, Percentage of upper-secondary TVET graduates who found a job within one year of graduation. Percentage of upper-secondary TVET graduates who continue to study in tertiary education. Calculation: Divide the annual number of graduates enrolled in the first year of post-secondary non-tertiary TVET programs (or in a job within one year or in tertiary education respectively) by total number of students graduating from upper-secondary TVET, and multiply the result by 100. Calculations should be done for total and by gender.
Sources and concerns with the indicator or source	National statistics: statistical units within the ministries responsible for TVET and upper secondary education. Tracer studies or employer surveys. Necessary information: - Number of graduates from upper secondary TVET programs; - Participants in the first year of post-secondary non-tertiary TVET programs, including information as to what kind of education prepared these students for this training (sorting out alternative ways of entry to post-secondary non-tertiary TVET); - Number of graduates who have found a job within one year of graduation; - Number of graduates who continue to study in tertiary education. The validity of the indicator depends on the precision of tracer studies conducted on the TVET graduates.

Category 3: Indicators for which data is often not available

Indicator 2.8: Policies on articulation with schooling/higher education[2]

Policy objectives	Locating TVET within overall education policy, including issues of access and progression.
Indicator	Articulation can be defined as "the mechanisms that enable student mobility within and among the institutions that comprise the [education] system" (Ng'ethe et al, 2008). This can include credit accumulation systems, as well as recognition of prior learning. Information to be collected: - Student admission criteria for entrance of TVET students to higher education; - Differences between academic schooling and TVET qualifications in terms of accessing to tertiary education.
Sources and concerns with the indicator	Sources: National TVET Agency; National Departments of Education; University policies; Government Gazettes and Education Acts; National curriculum statements; National qualifications framework policies and regulations.

[2] Adapted from UNESCO report on TVET in SADC region.

or source	
Alternatives and interpretation	Many policies provide the basis for entrance to higher education, but universities may have. additional requirements for entrance into particular faculties/departments. Guidelines on methods for data collection: analyse available literature on articulation using the categories provided in the indicator.

III.3. Quality and innovation indicators

Quality and innovation is one of the broadest policy areas in education and training, and at the same time it is a domain with some of the most difficult challenges. In the specific context of TVET, high quality is often taken to mean that the education and training received by students is relevant to the needs of industry and self-employment needs in the labour market, authentic and rigorous, resulting in graduates who are ready for employment. Hence quality can be measured by the graduates' employability and – ultimately - employers' satisfaction or the satisfaction of those who are self-employed[3].

This section will explore the effectiveness of the TVET programmes, which can be said to be a measure of the quality of the teaching. Lacking exact measures of what happens in the class-rooms, it is also possible to consider the educational and occupational background and training of teachers as a proxy for quality. The better the teachers are prepared to teach and train, the better one would expect the teaching and training to be. Not only must the educational and occupational qualifications of teachers be taken into account, but also the teachers' possibilities of being re-trained at a later stage. How regular are teachers and trainers given training to upgrade their skills? And what is the share of teachers who have undergone training in a given period?

At the most basic level, access (in the sense of tutored time) to a teacher is also often seen as an intuitive proxy measure of quality. The more access a student or trainee has to a teacher, the better the student is assumed to acquire skills. Student/teacher ratios are therefore very popular indicators in most national debates on education and training, regardless of the level and type of programme. In a similar vein, good facilities (foremost buildings, equipment and learning material) are expected to lead to better results, partly because having access to good facilities can motivate and empower students, and partly because being able to use the equipment furthers the internal learning process of the student. It is therefore of interest to measure the extent to which students have access to good equipment and new technology. Equipment must be updated regularly and maintained on a continuous basis.

Systemic innovation is a useful analytical framework for the assessment of innovation policies in TVET; a coherent and targeted system should be in place to promote and support

[3] Those aspects will be examined more closely in the section on relevance of TVET. In the same section, literacy has been included as a measure of a country's human capital. Literacy is of course also an indication of output from the general education system and thereby an indirect indication of quality. It is however a better measure of the extent of basic education than of the quality provided, especially of the quality beyond basic education.

successful innovations in TVET and to induce system-wide change; TVET systems need a (preferably) formalised, coherent, well-sustained and up-to-date knowledge base to increase their innovation capacity, to address knowledge gaps and to benefit fully from systemic innovations; and TVET systems may be losing innovation opportunities due to a lack of evaluations and knowledge feedback. Innovation in TVET (as well as in other education sectors) is conducted to provide quality, which in turn is a measure of performance.

At a systemic level, it is important to determine whether a quality assurance (QA) framework exists. The implementation of such frameworks may obviously differ from country to country, which may make it difficult to define a precise indicator, but setting up a quality assurance framework does imply the existence of an environment conducive to quality improvements and hence possibly to innovation. Quality assurance frameworks also help countries monitor the implementation progress of policy reforms.

Category 1: Indicators for which data is readily available

Indicator 3.1: Student/teacher ratio in TVET and general programmes[4]

Policy objectives	The indicator is a (poor) proxy measure of quality; higher quality of training is associated with lower numbers of students per teacher. .
Indicator	It is calculated as the number of students divided by the number of teacher at each education level in respective TVET and general secondary institutions disaggregated by type of institution and programme/field of study.
Sources and concerns with the indicator or source	National statistics: education statistics, and TVET providers.
Alternatives and interpretation	A high student-teacher ratio is often cited for criticizing proportionately underfunded schools or school systems, or as evidence of the need for more funding. Classes with too many students are often disrupting to education. Also, too many students in a class results in a diverse field of students, with varying degrees of learning ability and information uptake. Consequently, the class will spend time for less academic students to assimilate the information, when that time could be better spent progressing through the curriculum. In this way, student-teacher ratios are compelling arguments for advanced or honors classes. The ratios for both TVET and general programmes should be calculated, so the relative allocations of teachers can be assessed. It should be borne in mind though, that many TVET subjects by their nature demand closer supervision than is traditionally seen in general programmes, where larger classes are common. Comparison with the norms of other countries is therefore typical when this indicator is analysed at a national level.
Considerations	The number of teachers in TVET and general programmes must be comparable. In practical terms, this means that part time teachers must be converted into full-time equivalent teachers, i.e. three teachers with a respective workload of 1/3 corresponds to 1 full time equivalent. There are often more part time teachers in TVET institutions, which would drive down the student/teacher ratio unless one corrects for full time equivalents. The data should be as disaggregated as possible, as student/teacher ratios differ greatly between different programmes, fields of studies and institutions. Aggregated data may hide substantial differences between institutions and should be interpreted with great caution.

[4] Indicators 3.2, 3.4 to 3.7 are based on European Quality Assurance Reference Framework for VET (EQARF). A number of instruments such as the European Qualifications Framework (EQF), the European Credit System for VET (ECVET) and the EQARF have been developed to support national reforms in the European Union and enhance transparency, recognition and quality in the provision of competences and qualifications. See www.enqavet.eu.

Indicator 3.2: Completion rate in TVET and general programmes

Policy objectives	The indicator shows the success of TVET education from the point of view of trainees. It is an indication of the internal efficiency of TVET programmes.
Indicator	Three indicators are calculated: a) Percentage of those completing (i.e. attaining a formal qualification) initial TVET programmes, which lead to a formal qualification, in total number of students who entered the programmes; it is calculated by each type of programme. b) Percentage of those completing (i.e. attaining a formal qualification) continuous TVET programmes, which lead to recognition, in total number of those entering the programmes; it is calculated by each type of programme. c) Percentage of those completing general secondary programmes.
Sources and concerns with the indicator or source	Administrative sources: TVET and general secondary schools.
Alternatives and interpretation	The completion rate is a tricky issue because it is difficult to track individuals within the TVET system. The issue of "skills, not qualifications" becomes therefore important. Surveys of student intentions would be useful. Only a few countries measure why vocational students start a particular study and why they would be willing to discontinue their studies. A unique student identifier would link up separate enrolments by the same student, and show their progression through courses. In this case, if one course is dropped in favour of another, then the completion of the second course could be considered as a completion for that student, rather than one drop-out and one completion for two qualifications. Even subtler is the case where the training package changes part-way through the course, and so the course identifier changes. This creates a false non-completion. Thus tracking students, rather than courses, is one way to improve measurement of completion rates. Drop out rates could also be calculated to measure the internal efficiency of TVET programmes. It would especially be important to have information on why students drop out of programmes, i.e. drop out rates by reason for dropping out.

Category 2: Indicators for which data is not readily available

Indicator 3.3: Share of apprentices completing registered programmes (by trade, age and gender)

Policy objectives	The indicator measures the extent to which apprentices complete their programmes.
Indicator	The number of apprentices who have completed an apprentice programme as a percentage of the apprentices that start a given programme. The indicator should be broken down by trade, age and by gender.
Sources and concerns with the indicator or source	Administrative records in TVET institutions.
Alternatives and interpretation	It gives an indication of the effectiveness of the apprenticeship programmes to guide students successfully through the programmes.
Considerations	The indicator is only reliable where apprentices are registered. Apprentices in the informal sector are not registered, so countries with significant informal sectors should use this kind of indicator with caution.

Indicator 3.4: Share of qualified teachers in TVET and in general programmes

Policy objectives	The indicator shows the (presumed) quality of the teaching staff by measuring the extent to which the teachers live up to the national standards.
Indicator	Two indicators are calculated: a) The share of teachers in initial TVET programmes, who have the

	required educational background out of all TVET teachers; b) The share of teachers in general secondary programmes (at a level corresponding to the level in initial TVET), who have the required educational background out of all general teachers. Alternatively, data on the qualifications of teachers by TVET programme in which they teach could be provided.
Sources and concerns with the indicator or source	Administrative sources: TVET and general schools. The share of qualified teachers in TVET may well be lower than the share of qualified general teachers, as TVET institutions often have more part-time teachers in order to cater to very specific and narrow demands from the students.
Considerations	The national requirements as to when a teacher is qualified to teach changes over time. In some countries, teachers who are already working are not required to fulfill criteria established after the recruitment of the teacher. In other countries, older teachers are required to be re-trained in order to retain their post when the requirements change. Furthermore, national requirements are not identical, so this indicator should not be compared across countries. Even within a given country comparison over time should only be done with caution. This data is likely to change over time as new teachers have to live up to heightened demands. Data by different age groups of the teachers would therefore be of great interest to any policymaker.

Category 3: Indicators for which data is often not available

Indicator 3.5: Relevance of quality assurance systems for TVET providers

Policy objectives	The indicator looks at the accreditation system and the qualification framework existing in the country.
Indicator	Two indicators are calculated: a) Percentage of TVET providers showing evidence of applying quality assurance principles within a defined quality assurance system; b) Percentage of accredited TVET providers.
Sources and concerns with the indicator or source	Administrative sources: accreditation institutions.
Alternatives and interpretation	The monitoring of the first indicator helps in developing the culture of quality improvement in TVET. However, the use of different quality standards in different countries may alter the significance of the indicator. It is therefore important to distinguish between QA systems defined by law and regulated at national and at provider level, respectively systems where QA is undertaken by external, independent bodies. The system of accreditation, which concerns the second indicator, may also vary significantly across countries.
Good practice	In Slovenia, Act for VET (2006) introduced a Quality Assurance system in VET at system and provider level in line with EQAVET/CQAF. By this law the Council of Experts for VET (a counseling body for the Ministry) determined a set of seven indicators at system level on the basis of the proposal put forward by the Institute for VET. The Institute for VET is legally responsible for the preparation and publication of the yearly report on indicators. At the level of VET providers, an internal quality assurance system must be implemented by law. To that end, VET providers set up a commission with teachers, students, parents and employers. This commission has to prepare a yearly report on quality assurance on their internet site.

Indicator 3.6: Investment in training of teachers and trainers

Policy objectives	The indicator offers information about the efforts of authorities to train the trainers, which is a guarantee for the quality of TVET education.
Indicator	Two indicators are calculated: a) Percentage of teachers and trainers participating at accredited in-service

	training programmes in total number of registered teachers and trainers; b) Total amount of funds annually invested per teacher and trainer in teachers' and trainers' further education and training.
Sources and concerns with the indicator or source	Administrative sources.
Alternatives and interpretation	The indicators may help the national competent authorities, companies and individual TVET providers in ensuring a maximum number of teachers/trainers who have formal qualifications and/or professional development and in promoting teachers and trainers' ownership of the process of quality development in TVET. However, even if teachers/trainers' education and training are recurrently associated with learners' performance, they do not necessarily correlate. The value of this indicator may be affected by the teacher demographics (age, gender), by the existence/ non-existence of schemes recognizing informal learning and prior experience, respectively by the existence/non-existence of training programmes allowing for the accumulation of credits or training hours.
Good practice	In Estonia a similar indicator is used, but it is calculated differently by using the following variables: - Fulfillment of qualification requirements based on professional standards and competence-oriented curricula - Further occupational training of teaching staff based on the amount of training hours per teacher during school year, namely TVET teachers who are required to participate a minimum of two months of professional training every three-years. Teachers/trainers' seniority status also requires an amount of 160 hours of in-service training within the preceding 5 years - Age structure of teachers and a different pedagogy - Personnel flow, i.e. number of teachers who leave the system and number of newly recruited teachers - Further training of teachers is promoted and supported by the state (3% of salary fund of teachers is used for training) and the further training for TVET teachers is provided in a special programme, which is co-financed by the European Social Fund.

Indicator 3.7: Utilisation of acquired skills at the workplace

Policy objectives	The indicator offers information about the extent to which the acquired knowledge and skills are effectively used at the workplace.
Indicator	Four of indicators are calculated: a) Percentage of TVET programme completers working in relevant occupations; b) Percentage of employees of a given sector who, within a period of 12 months from completing the TVET programme, consider that their training is relevant for their current occupation; c) Percentage of employers of a given sector who are satisfied to find TVET programme completers with relevant qualifications and competences required for the work place; d) Percentage of employers of a given sector who are satisfied with programme completers.
Sources and concerns with the indicator or source	Administrative sources: employer/employee surveys. The indicator measures the labour market relevance of the different programmes. With data for several years it is possible to determine the improvement or deterioration of this relevance and hence make a qualified statement as to changes in quality.
Alternatives and interpretation	There may be difficulties in finding a one-to-one correspondence between training domains/qualifications attained and sectors of economic activities. On the other hand, successful programme completion does not necessarily translate into successful employment. The indicator requires a mixture of both quantitative and qualitative data and needs to consider vulnerable groups.

Good practice	Romania uses two methodologies for tracer studies: one for the initial VET pre-university level and the other one for higher education, conceived as exhaustive surveys among the graduates 6 and 12 month after the completion of school.

Indicator 3.8: Share of ICT training activities in TVET

Policy objectives	The indicator is a proxy for the degree of innovation of the training system, as the ICT sector is considered a driver of innovation and overall progress.
Indicator	It is calculated by training programme with the following formula: $$\frac{N_{ICT} * H_{ICT}}{N_{TVET} * H_{TVET}} * 100$$ Where: N_{ICT} is the number of participants in ICT training H_{ICT} is the number of hours of training in ICT N_{TVET} is the total number of participants in TVET H_{TVET} is the total number of TVET training hours
Sources and concerns with the indicator or source	Annual education census
Alternatives and interpretation	The indicator does not measure the actual effect of the training, so it should not be over-interpreted. See also the example below, which indicates that training in itself is not a guarantee of quality. It is a proxy for innovation, as it can be said to indicate the level of investment (broadly speaking) in innovation.
Good practice	A survey done in Vietnam shows that ICT applications capability of teachers teaching in TVET institutions is good, but concentrated in a number of basic applications such as word processing (Word), spreadsheet (Excel) presentation tools, Internet. Although there is a high number of teachers in TVET institutions trained in ICT, many of the teachers have poor skills in advanced ICT applications.

Indicator 3.9: Satisfaction of employers with TVET graduates

Policy objectives	The indicator measures how satisfied employers are with the skills offered by TVET graduates.
Indicator	The share of companies responding that they are satisfied with the skills of TVET graduates.
Sources and concerns with the indicator or source	Employer satisfaction surveys need to exist or a question added to enterprise surveys. Depending on the level of detail in the surveys, more specific indicators could be imagined, for example regarding specific skills that are lacking.
Alternatives and interpretation	An alternative source could be the World Bank's enterprise surveys, which include a variable on firms identifying an inadequately educated workforce as a major constraint. Any interpretation of results from different years should pay attention to possible changes in methodology.

III.4. Relevance of TVET: measuring labour market transitions

Building bridges between the world of work and training providers in order to match skills provision to the needs of enterprises is essential. Policy-makers in the majority of developing countries lack the education, training and labour statistics and the evidence-based analysis to identify and address the factors that impact the transition to decent work. The set of indicators to be collected and analyzed represents an important step to develop, implement, monitor, evaluate, and revise sound TVET policy.

The means and mechanisms put in place to ensure a smooth and rapid transition of TVET graduates to activity or to other forms and levels of education/training are important. Guidance and counselling is an important element in this respect, and public or private employment services have a crucial role here.

Specificities of the labour market that may stimulate or obstruct the insertion of TVET graduates should also be considered. Administrative and institutional barriers may hinder the smooth transition of TVET graduates to the world of employment (rigid contractual provisions and conditions for hiring/firing people, for example[5]. On the other hand, the skills spectrum demanded by the labour market may change more rapidly than the TVET sector is able to respond.

Ideally, the TVET outcome on the labour market should be measured by the share of TVET graduates that obtained a job after completion of training, the time span between graduation and placement, the ratio between the average wage of TVET graduates and the average wage of those who did not follow the TVET path, etc.

From a qualitative perspective, it is important to know: if a graduate remains with the job for a long period of time, meaning that the acquired skills correspond effectively with company's needs; the extent to which his/her competences are fully used in practice; the quality of job the graduate obtained. Consequently, the assessment of TVET performance from this point of view should rely on student, graduate and employer satisfaction ratings (see also indicator 3.9). It is often necessary for TVET providers to conduct their own surveys and analyse the collected data; this may imply additional costs, but these surveys offer valuable information about whether employers or individuals are gaining something meaningful from the training programmes. This is beyond the reach of the majority of developing countries.

A note on data sources:

Labour Force surveys (LFS): collect information on the labour force such as whether an individual is employed, unemployed, or outside of the labour force. It allows for the generation of some relevant indicators such as length of unemployment, status in employment, employment by sector. LFS facilitate the comparison of investments in TVET with outcomes (employment, unemployment etc).

Even where LFS do exist, they are not specifically intended to ask detailed questions needed to identify the wide range of barriers that job-seekers may face. They do not typically allow for the examination of contract situations, earnings, job satisfaction, labour protection and certainly not the ease or difficulty of transiting to the labour market. Normally they do not capture youth in small and micro enterprises that are in informal apprenticeship. This youth is under a learning contract and thus should be considered "in education" rather than "at work". Only by providing a specific category of "apprentices" in labour force surveys can this group of youth be adequately captured.

[5] The difficulty often lies in distinguishing these effects from a lack of employment opportunities.

Few developing countries are able to maintain a large statistical programme due to the high costs and weak capacity. Progress is made every year in expanding the number of labour force surveys in developing countries, typically through external aid. A high priority should be to facilitate all countries to implement LFS.

Surveys which target educational/training systems and communities (administration, faculty, school counselors, students and parents): have the benefit of providing key information on the transition to work issue from the perspective of the training of the potential labour supply of youth.

Establishment surveys (ES): can be a key source of information in defining the skills needs of employers in the formal sector. However, where a large portion of employment is found in the informal sector, such surveys will be of limited use for helping to define TVET strategies.

Other sources of labour market information such as population censuses, administrative records from government sources and/or employment services, and livelihood surveys are important, but each source has its strengths and relevance in terms of coverage, timeliness, cost, etc. Administrative records - Public Employment Services: difficulties with respect to determining the quality, timeliness, coverage and precision or reliability of information the registers maintain, the data are collected indirectly (as compared to a survey or census), and monitoring of the system for statistical purposes, particularly in developing countries. Other methodologies have been developed to strengthen the information base as a key step toward designing and monitoring more appropriate labour market transitions, particularly the quality dimension (See Innovative practice section below)

A combination of methodologies allows countries to better monitor progress and outcomes of training as well as assess the quality and relevancy of TVET.

Category 1: Indicators for which data is readily available

Indicator 4.1: Employment to population ratio (by sex and age and level of educational attainment)

Policy objectives	This indicator provides information on the ability of a country to create employment.
Indicator	The employment-to-population ratio is defined as the proportion of a country's working-age population that is employed. The youth and adult employment-to-population ratios are the proportion of the youth and adult populations – persons aged, typically, 15 to 24 years and 25 years and over – that are employed. A high ratio means that a large proportion of a country's population is employed, while a low ratio means that a large share of the population is not involved directly in market-related activities, because they are either unemployed or (more likely) out of the labour force altogether.
Sources and concerns with the indicator or source	LFS. For most cases, household labour force surveys are used, and they provide estimates that are consistent with ILO definitional and collection standards. A small number of countries use other sources, such as population censuses, official estimates or specialized living standards surveys, which can cause problems of comparability at the international level.
Alternatives and interpretation	Although a high overall ratio is typically considered as positive, the indicator alone is not sufficient for assessing the level of decent work or decent work deficit. Additional indicators are required to assess such issues as earnings, hours of work, informal sector employment, underemployment and working conditions.

	In fact, the ratio could be high for reasons that are not necessarily positive – for example, where education options are limited, young people tend to take up any work available rather than staying in school to build their human capital. For these reasons, it is strongly advised that indicators should be reviewed collectively in any evaluation of country-specific labour market policies.
Considerations	Comparability of employment ratios across countries is affected most significantly by variations in the definitions used for the employment and population figures. Perhaps the biggest differences result from age coverage, such as the lower and upper bounds for labour force activity.

Indicator 4.2: Unemployment rate (by sex and age and level of educational attainment)

Policy objectives	The overall unemployment rate for a country is a widely used measure of its unutilized labour supply.
Indicator	The unemployment rate simply tells us the proportion of the labour force that does not have a job but is available and actively looking for work. Youth unemployment is the best-known and most used labour market indicator that gives a measure of the inability of the economy to generate employment for young persons who are not employed but are available and actively seeking work. Unemployment rates by specific groups, defined by age, sex, occupation or industry, are also useful in identifying groups of workers and sectors most vulnerable to joblessness. The unemployment rate is defined mathematically as the quotient resulting from dividing the total number of unemployed (for a country or a specific group of workers) by the corresponding labour force, which itself is the sum of the total persons employed and unemployed in the group. It should be emphasized that it is the labour force or the economically active portion of the population that serves as the base for this statistic, not the total population. This distinction is not necessarily well understood by the public. Indeed, the terms “labour force” and “employment” are sometimes mistakenly used interchangeably.
Sources and concerns with the indicator or source	Household labour force surveys are generally the most comprehensive and comparable sources for unemployment statistics. Other possible sources include population censuses and official estimates. Administrative records such as employment office records and social insurance statistics are also sources of unemployment statistics, however, coverage in such sources is limited to “registered unemployed” only. A national count of either unemployed persons or work applicants that are registered at employment offices is likely to be only a limited sub-set of the total persons seeking and available for work, especially in countries where the system of employment offices is not extensive. This may be because of eligibility requirements that exclude those who have never worked or have not worked recently, or to other discriminatory impediments that preclude going to register.
Alternatives and interpretation	The national definition of unemployment may also be different from the international one, like for the employment indicator. The unemployment rate expresses the share of jobless persons in the labour market, but no information is provided on the duration of the phenomenon, respectively the unemployment insurance schemes. The actual unemployment rate might be much higher than the official rate if persons who are not anymore receiving unemployment benefits do not register with employment services because there is no incentive to do so.
Considerations	Low unemployment rates may well disguise substantial poverty in a country, whereas high unemployment rates can occur in countries with significant economic development and low incidence of poverty. In countries without a safety net of unemployment insurance and welfare benefits, many individuals, despite strong family solidarity, simply cannot afford to be unemployed. Instead, they must eke out a living as best they can, often in the informal economy or in informal work arrangements. In countries with well-developed social protection schemes or when savings or other means of support are available, workers can better afford to take the time to find more desirable jobs. Therefore, the problem in many developing countries is not so much unemployment but rather the lack of

	decent and productive work, which results in various forms of labour underutilization (i.e. underemployment, low income and low productivity).

Indicator 4.3: Employment status (by sex and age and level of educational attainment)

Policy objectives	This indicator provides information on the distribution of the workforce by status in employment and can be used to answer questions such as what proportion of employed persons in a country (a) work for wages or salaries; (b) run their own enterprises, with or without hired labour; or (c) work without pay within the family unit?
Indicator	Breaking down employment information by status in employment provides a statistical basis for describing workers' behaviour and conditions of work, and for defining an individual's socio-economic group.2 A high proportion of wage and salaried workers in a country can signify advanced economic development. If the proportion of own-account workers (self-employed without hired employees) is sizeable, it may be an indication of a large agriculture sector and low growth in the formal economy. Contributing family work is a form of labour – generally unpaid, although compensation might come indirectly in the form of family income – that supports production for the market. It is particularly common among women, especially women in households where other members engage in self-employment, specifically in running a family business or in farming. Where large shares of workers are contributing family workers, there is likely to be poor development, little job growth, widespread poverty and often a large rural economy.
Sources and concerns with the indicator or source	LFS.
Alternatives and interpretation	The indicator can be used to study how the distribution of the workforce by status in employment has changed over time for a particular country; how this distribution differs across countries; and how it has developed over the years for different countries. However, there are often differences in definitions, as well as in coverage, across countries and for different years, resulting from variations in information sources and methodologies that make comparisons difficult.
Considerations	Some definitional changes or differences in coverage can be overlooked. For example, it is not likely to be significant that status-in-employment comparisons are made between countries using information from labour force surveys with differing age coverage. (The generally used age coverage is 15 years and over, but some countries use a different lower limit or impose an upper age limit.) In addition, in a limited number of cases one category of self-employed – the members of producers' cooperatives – are included with wage and salaried workers (e.g. Slovakia). The effects of this non-standard grouping are likely to be small. More detailed comparisons within the group of self-employed are difficult if only combinations of subcategories are available; for example, in a number of countries own-account workers include employers (e.g. Bahamas, Ukraine), members of producers' cooperatives (e.g. Poland) or contributing family workers (e.g. Azerbaijan) for certain periods.

Indicator 4.4: Employment by economic sector (by sex and age and level of educational attainment)

Policy objectives	The indicator divides employment into three broad groupings of economic activity: agriculture, industry and services, – and expresses each as a percentage of total employment. It is particularly useful in identifying broad shifts in employment and stages of development. In the textbook case of economic development, labour flows from agriculture and other labour-intensive primary activities to industry and finally to the services sector; in the process, workers migrate from rural to urban areas.
Indicator	This indicator disaggregates employment into three broad sectors – agriculture, industry and services. Sectoral employment flows are an important factor in the analysis of productivity trends, because within-sector productivity growth needs to be distinguished from growth resulting from shifts from lower to higher productivity sectors. The indicator can also be expressed for economic activities at more detailed

	levels of disaggregation (for example ISIC-Rev. 4 1-digit or 2-digit) but caution should be exercised to ensure that reliable estimates can be produced at high levels of disaggregation. For youth, it expresses the proportion of young employed persons, classified by the broad sector of employment: agriculture, industry, and services. Employment in each sector implies differences in terms of pay, job attachment, and work conditions. Changes over time inform on possible areas of economic growth.
Sources and concerns with the indicator or source	Information for this indicator has been assembled from a number of international repositories and is derived from a variety of sources, including household or labour force surveys, official estimates and censuses. In a very few cases and only where other types of sources are not available, information is derived from insurance records and establishment surveys.
Alternatives and interpretation	The economic sectors are not always defined identically across countries. In some cases, the constructions are included in the industrial sector, while other countries place this activity in the services sector, for example
Considerations	Information on a country provided by the employment-by-sector indicator can differ according to whether the armed forces, the self-employed and contributing family members are included in the estimate. Information obtained from establishment surveys covers only employees (wage and salary earners); thus, the self-employed and contributing family members are excluded. In such cases, the employment share of the agriculture sector in particular is severely underrepresented in comparison with countries that report total employment without exclusion of status groups.

Indicator 4.5: Employment by occupation (by sex and age)

Policy objectives	Occupational information is particularly important for the identification of changes in skill levels in the labour force. In many advanced economies, but also in developing economies, occupational employment projection models are used to inform policies aiming to meet future skills needs, as well as to advise students and jobseekers on expected job prospects.
Indicator	The indicator for employment by occupation classifies jobs into major groups, with the groups defined by the classification that is used. Most internationally comparable data currently available are classified according to the International Standard Classification of Occupations, 1988 (ISCO-88), with the following major groups (1) Legislators, senior officials and managers; (2) Professionals; (3) Technicians and associate professionals; (4) Clerks; (5) Service workers and shop and market sales workers; (6) Skilled agricultural and fishery workers; (7) Craft and related trades workers; (8) Plant and machine operators and assemblers; (9) Elementary occupations; and (10) Armed forces.
Sources and concerns with the indicator or source	Most of the information derives from labour force surveys. In a limited number of countries the information is derived from other household surveys, population censuses, official estimates and establishment surveys.
Alternatives and interpretation	The breakdown of the indicator by sex allows for an analysis of gender segregation of employment. Division of labour markets on the basis of sex is one of the most pervasive characteristics of labour markets around the world, which is reflected in differentials in occupational distributions between men and women. Such differentials can be analysed at detailed levels of the occupational classification, but even at the most aggregated level, large differences by sex are evident
Considerations	Information on a country provided by the employment by occupation indicator can differ according to whether the armed forces are included in the estimate. Armed forces constitute a separate major group, but in some countries are included in the most closely matching civilian occupation depending on the type of work performed by the individual armed forces member concerned or are included in non-classifiable workers.

Indicator 4.6: Literacy rate (by sex and age)

Policy objectives	In general terms, the indicator expresses the level of human capital of the country.

Indicator	It is calculated as the adult and youth literacy rate by sex and age. In case of youth, the indicator reflects the levels and distribution of the knowledge and skills base of this age segment of the labour force. It therefore provides an indication of the capacity of countries to achieve social and economic goals.
Sources and concerns with the indicator or source	The sources are typically based on data collected during national population censuses and household surveys, LFS, demographic and health surveys, and UNICEF's Multiple Indicator Cluster Survey. Functional literacy has also been assessed in various international assessments. Internationally comparable data is available along with information about model estimation methodology on the UIS website.
Alternatives and interpretation	Traditionally, literacy represents the ability to read and write. According to UNESCO, literacy is the "ability to identify, understand, interpret, create, communicate, compute and use printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society." The two definitions are slightly different; it is therefore advisable to specify how the literacy is defined in a particular country. UNESCO further defines functional literacy as follows: a person is functionally literate who can engage in all those activities in which literacy is required for effective function of his or her group and community and also for enabling him or her to continue to use reading, writing and calculation for his or her own and the community's development.

Category 2: Indicators for which data is not readily available

Indicator 4.7: Informal employment rate (by sex and age and level of educational attainment)

Policy objectives	The informal economy represents a challenge to policy-makers that pursue the following goals: improving the working conditions and legal and social protection of persons in informal sector employment and for employees in informal jobs; increasing the productivity of informal economic activities; developing training and skills; organizing informal sector producers and workers; and implementing appropriate regulatory frameworks, governmental reforms, urban development, and so on.
Indicator	It is calculated as the percentage of persons in informal employment in total employment.
Sources and concerns with the indicator or source	LFS Problems with data comparability for the measure of employment in the informal sector result especially from the following factors: • differences in data sources; • differences in geographic coverage; • differences in the branches of economic activity covered. At one extreme are countries that cover all kinds of economic activity, including agriculture, while at the other are countries that cover only manufacturing; • differences in the criteria used to define the informal sector, for example, size of the enterprise or establishment versus non-registration of the enterprise or the worker; • different cut-offs used for enterprise size; • inclusion or exclusion of paid domestic workers; • inclusion or exclusion of persons who have a secondary job in the informal sector but whose main job is outside the informal sector, e.g. in agriculture or in public service.
Alternatives and interpretation	The conceptual change from the informal sector to the informal economy has resulted in challenges for the measurement of a concept that was already fraught with difficulties. However, because it takes time for a "new" statistical concept to take hold some countries will continue to report on the concept of employment in

	the informal sector for a few years to come
Good practice	Manual on Surveys of Informal Employment and Informal Sector (ILO in collaboration with members of the Delhi Group[6]) provides technical guidelines for measuring informal employment and the informal sector as a means to improve compatibility and quality of data. Informal employment and employment in the informal sector are indicators which are especially relevant for monitoring the situation of employed youth. The manual has two primary objectives. The first objective is to assist countries planning a statistical programme to produce data on the informal sector and informal employment, in undertaking a review and analysis of the options available to them. The second objective is to provide practical guidance on the technical issues involved with the design and conduct of such surveys as well as on the tabulation and dissemination of the data collected.

Indicator 4.8: Time-related underemployment rate (by sex and age and level of educational attainment)

Policy objectives	Underemployment reflects under-utilization of the productive capacity of the labour force.
Indicator	This indicator relates to the number of employed persons whose hours of work in the reference period are insufficient in relation to a more desirable employment situation in which the person is willing and available to engage. The indicator was previously known as "visible underemployment". There are 2 time-related underemployment rates: the number of persons in time-related underemployment as a percentage of the labour force, and as a percentage of total employment. It signals the proportion of the employed population that are willing to work additional hours, are available to do so, and worked less than a given threshold number of hours during the survey reference period. The international definition is based on three criteria: it includes all persons in employment who, during a short reference period, were (a) willing to work additional hours, (b) available to work additional hours and (c) had worked less than a threshold relating to working time.
Sources and concerns with the indicator or source	Statistics for this indicator are based exclusively on household surveys.
Alternatives and interpretation	Failure to isolate the definitional components will greatly limit comparability between countries. Despite the fact that all the information for this measurement comes from household surveys, a variety of other potential limitations to comparability result from differences in the timing of surveys, sampling procedures, collection questionnaires, and so on.
Considerations	National definitions of time-related underemployment vary significantly between countries.

Category 3: Indicators for which data is often not available

Indicator 4.9: Working poverty rate (by sex and age)

Policy objectives	The indicator expresses a qualitative aspect of TVET labour market outcomes: the proportion of those receiving an insufficient level of remunerated income.
Indicator	It is calculated as the percentage of employed persons living in a household with per-capita consumption or income below the poverty line.
Sources and concerns with the indicator or source	Household Income and Expenditure Surveys (HIES) and Living Standards Surveys (LSS), which provide details of income and expenditure information together with labour market status. Ensuring comparability and consistency in the tabulation of working poverty

[6] http://mospi.nic.in/Mospi_New/upload/DelhiGroup/draft_manual_11th_meeting.htm

	estimates requires a standardised approach to defining employment and poverty status. Ideally this would combine household income and expenditure surveys (including living standards surveys and similar surveys) alongside labour force surveys, collecting income and consumption expenditure from the former to define poverty status, and obtaining labour market status from the latter.
Alternatives and interpretation	Poverty rate of overall population can be also calculated, to be compared with the working poverty rate. The importance of working poor comes from the fact that, contrary to those officially in poverty and without employment, they are usually not subject to government support or only to a much lower extent.

Indicator 4.10: Average real earnings by occupation and industry (by sex and age)

Policy objectives	Information on wage levels is essential to evaluate the living standards and conditions of work. It helps to assess how far economic growth and rising labour productivity translate into better living standards for ordinary workers and to the reduction of working poverty
Indicator	It is calculated as the monthly average earnings per person; for international comparison, it should be expressed in dollar terms. It can be disaggregated by economic sectors, occupation, and gender. Changes in average wages within industry or sector may be due not only to changes in levels of wage rates or earnings but also to changes in the occupational composition of employment and in the proportion of men and women employed Earnings relate to remuneration in cash and in kind paid to employees at regular intervals for time worked or work done together with remuneration for time not worked.
Sources and concerns with the indicator or source	Income and Expenditure Survey LFS
Alternatives and interpretation	The indicator is a proxy for job quality. There is also a particular need for information on average wages in planning economic and social development, establishing income and fiscal policies, fixing social security contributions and benefits, and in regulating minimum wages and for collective bargaining.
Considerations	Statistics of real wages are not primary statistics. They result from the combination of two types of primary statistics – nominal wages and prices. “Real wages” have been defined in the ILO resolution adopted by the Eighth International Conference of Labour Statisticians (ICLS) in 1954, as “the goods and services which can be purchased with wages or are provided as wages”. The information required for the computation of real wages includes: (a) a wage measure expressed in monetary terms; (b) a series of prices of goods and services commonly purchased by employees; and (c) information on the consumption pattern of employees. Thus, in a given country, to provide an indication of changes in the purchasing power of wages resulting from changes in prices of consumer goods and services, the wage information – item (a), above – is combined with a consumer price index which, in principle, reflects items (b) and (c).

Indicator 4.11: Number of vacant jobs

Policy objectives	The indicator expresses the unmet demand for specific occupations and in particular sectors of the economy.
Indicator	It is calculated as the number of vacant positions by occupation and economic activity. The number of vacancies represents a good indication of the needs of the labour market in terms of skills, qualifications, and occupations. However, a part of vacancies may be determined by unattractive wages or difficult working conditions; in this case, the unmet demand is not caused by an insufficient supply. At the same time, the number of vacancies is not equivalent to the number of new jobs created in the economy. Information on job vacancies is used for business cycle analysis and assessing mismatches on labour markets.
Sources and concerns with	PES administrative records.

the indicator or source	
Alternatives and interpretation	Alternatively, the Job Vacancy Rate (JVR) can be calculated with the following expression: $JVR = \frac{V}{N+V}$ Where: V is the number of vacant jobs. N is the number of occupied jobs.
Considerations	It could also be beneficial to look at further information that could be available from administrative records of Public Employment Services (PES) such as: Number of job-seekers registered PES), by skill level and sex, age Number of job-seekers referred to vacancies by PES, by educational attainment/skill level by sex, age and migrant, disability, if available) Number of job seekers placed in a job by PES, by educational attainment/skill level by occupation, sex, age and migrant, disability, if available) Length of time for job placement by PES, by educational attainment/skill level, occupation, by sex, age and migrant, disability, if available).

Indicator 4.12: Net job creation

Policy objectives	The indicator shows the dynamic evolution of the economy, its restructuring tendency, as well as the diversification trends. It provides a benchmark for the demands on the education and training system to provide sufficiently skilled graduates, who can enter the new jobs.
Indicator	The net job creation NJC is the difference between the number of jobs created JC and the number of jobs destroyed JD within a specific period of time (usually one year): NJC = JC - JD The indicator is calculated by economic activity (ISIC-Rev. 4 1-digit or 2-digit) and possibly by occupation. Job creation should not be confounded with employment creation. Employment creation has a broader meaning and expresses the number of persons hired within a period of time. This number includes those employed to replace the persons who left the company (retirement, voluntary leave, new job with other company). The overall demand for labour coming from a company is therefore the sum of replacement demand (for replacing employees who left the enterprise – therefore for already existing positions) and the new demand (job creation), coming from the expansion of activity. The job creation expresses therefore the expansionary trend in the economy; job destruction indicates the contractionary tendency of certain sectors or activities. The two elements offer valuable information regarding the shift in the economic structure, which induces invariably a shift in employment structure through a change in labour demand composition. When historical data on job creation/destruction is combined with forecasting of demand coming from firms, the policy makers are able to anticipate the future tendencies in the structure of skills and qualifications and therefore adapt the general and TVET education systems according to these expected tendencies.
Sources and concerns with the indicator or source	Enterprise surveys
Alternatives and interpretation	For comparative purposes, the net employment creation can be also calculated. This indicator would represent a good proxy for net job creation when statistical information does not exist on the number of jobs created, respectively destroyed. The job turnover (JT) could be equally a good indicator to observe. It is calculated as the sum between the number of jobs created and the number of jobs destroyed every period: JT = JC + JD JT offers information on the labour market dynamism. A high job turnover means that the intra- and inter-sectoral restructuring is very important, therefore the economic diversification is significant. It is also a good proxy for the degree of flexibility on the labour market, which is high when JT takes large values.

	In countries recording a high job turnover the unemployment rate and the average duration of unemployment is much lower than in economies with low JT.

Indicator 4.13: Youth outside labour force

Policy objectives	The indicator shows how many young are not in employment, education or training.
Indicator	It is calculated as the share of youth neither in education nor in employment (youth unemployed + inactive youth for reason other than education) in total youth population of the corresponding age. The inactivity rate is the sum of all persons who are neither employed nor unemployed as a percentage of the working-age population. As an inverse to the labour force participation rate, the inactivity rate serves as a measure of the relative size of the population who are not counted as supplying labour.
Sources and concerns with the indicator or source	LFS
Alternatives and interpretation	Young people who spend extended periods of time outside the labour force and full-time education may find it difficult to end this time by moving back to the labour force if their skills and qualifications have become out-dated in the meantime. Those young people who cycle in and out of the labour force may also be at risk, with prior experience of time outside the labour force and full-time education having an apparent scarring effect, decreasing their likelihood of returning to the labour force or full-time education.

Indicator 4.14: Discouraged workers (by sex and age)

Policy objectives	The indicator allows for the identification of those who have withdrawn from the labour market.
Indicator	The indicator is calculated as the sum of all persons who want a job, are without work and available for work but did not seek work (and therefore could not be classified as “unemployed”) for reasons of discouragement over job prospects.
Sources and concerns with the indicator or source	LFS
Alternatives and interpretation	A discouraged worker is a person of legal employment age who is not actively seeking employment or who does not find employment after long-term unemployment. This is usually because an individual has given up looking or has had no success in finding a job. Even if a person is still looking actively for a job, s/he may have fallen out of the core statistics of unemployment rate after long-term unemployment and is therefore by default classified as "discouraged" (since this person does not appear in the core statistics of unemployment rate). Discouragement may be caused by lack of jobs, discrimination (age, sex, religion, race, disability), lack of necessary skills, training, or experience.
Considerations	The indicator might be considered as a proxy for people whose skills are not anymore demanded by the market because of obsoleteness. This category could therefore be targeted for professional reconversion, requalification or retraining though specific programmes.

IV. Using indicators for TVET policy design

The proposed list of indicators is not exhaustive – no single set of indicators can be expected to cover every single country in the world. The indicators have been chosen to address five important policy areas to help policymakers design TVET policy and a given country may wish to complement this list to capture other aspects and characteristics of the TVET system, as well as certain country specificities. On the one hand, some indicators may not necessarily be considered important for the purpose of policy design. On the other hand, the indicators to be used depend on the availability and quality of information, the cost of constructing new databases for building new indicators and the human and institutional capacity of bodies in charge of collecting data, constructing samples, and running surveys and censuses.

IV.1. Designing country-specific policies and indicators

The number and type of indicators to be used also depends on the final scope of TVET policy to be designed: a deep reform of the system (when TVET is underdeveloped and does not respond properly to the requirements of the market), or just an improvement of the system performance (when TVET is relatively well developed but insufficiently adapted to the changing needs of the economy). In both situations, the quality of information and its availability is crucial.

The first step in designing a policy, which is also an elementary condition for its success, is to define the policy objectives to be achieved and the quantitative and qualitative indicators measuring progress towards these policy objectives. This is not always easy, as relatively often governments define qualitative objectives in a very general manner, which do not lend themselves to being measured. On the other hand, ambitious targets are set for quantitative objectives, which can make them unrealistic and dramatically affect the credibility of the whole policy. A necessary precondition for setting policy objectives is to have a solid analysis of the current situation and to conduct comparisons with similar TVET systems, and such analyses will also have to rely upon reliable indicators (see also annex on general context indicators).

Once the strategic objectives have been defined, a set of operational objectives can be derived from these. A task force did this in 2006-2007 in Jordan (see box) before embarking upon defining the indicators which could be used to measure progress towards these operational objectives for the TVET sector. In the case of Jordan, the task force could base itself upon strategic documents produced by the government. It is crucial for an efficient production of data that clear links be established between strategic objectives and the relevant indicators measuring progress. If such links are not established, there is a real risk that data is produced for no discernable reason, and similarly that pertinent indicators can not be produced because

the necessary resources are spent on the production of data which are not used for analytical or policy making purposes.

TVET objectives in Jordan

A. Strategic objectives:

1. Developing links between students leaving the education system and economic and social development requirements;
2. Continuing the development of infrastructures for general and vocational education;
3. Developing the qualitative aspects and dimensions of general and vocational education;
4. Improving the efficiency and effectiveness of the education system, paying particular attention to the education economy, including the 'input-output' and processes aspects;
5. Promoting the democracy of education and its role in social mobility;
6. Providing each individual with the opportunity to enroll in, and successfully complete, a training course to the best of his or her abilities, motivation and desires;

B. Operational objectives:

1. Preparing Jordanians for working life either as employees or self-employed workers;
2. Improving horizontal and vertical mobility in the labour market;
3. Obtaining equitable results in technical and vocational education and training;
4. Rationalising investments in training;
5. Maximising the value of public expenditure in TVET.

Source: Sauvageot, 2007.

IV.2. Dealing with and assessing data sources

The statistical information that is necessary for indicators can be extracted from several sources: national statistics, international statistical databases, censuses and surveys.

National statistics are available in all countries for basic economic indicators and education indicators. However, two problems have to be surmounted when using country's statistics:

a) Reliability of information: concerns are often expressed about data quality, timeliness of the data and that data is not always available at disaggregated level (for example by regions or by economic sectors for certain indicators).
b) Differences between national and international definitions. The use of national classifications or categories may make cross-border comparability problematic.

The Working Group focused on the use of indicators in a national context where cross-border comparability is of lesser importance. Comparability should nonetheless be strived for when possible, as it allows for broader analysis and the possibility of drawing inspiration from other countries.

When possible, data should therefore be crosschecked with alternative sources. This is especially important when the quality of information is doubtful. As a principle, indicators calculated according to international definitions should be given priority, but this is not a must. It is more important to present an indicator that is not internationally comparable, than it is to follow international definitions and not be able to present an indicator because the required data is not available according to the international requirements. Nonetheless, when a group of indicators expressing the situation within a specific domain (labour market indicators, for example) is studied, all of the indicators should be calculated on the basis of the same classifications or categories to ensure consistency, even if this means that only national classifications can be used.

International statistics are useful in certain situations, but as the information delivered by international sources is generally based on data provided by national authorities, the quality of the international data is strongly correlated with the quality of the national data. Cross-country comparisons in TVET should clearly state systemic differences known to exist between countries, e.g. the existence of non-formal training may be dominant in one country without being reflected in the available data, but not in another country, which would bias any analysis that attempted a comparison of the two countries without explicitly recognising this fundamental difference.

A *census* is a systematic and periodical collection of information about all the members of a given population. Apart from population censuses, in many countries the statistical offices also run housing, business, or traffic censuses. In developing and low income countries, this procedure is often limited to population censuses, in general run once every ten years. Even if business censuses exist, which could prove very useful for TVET purposes, the low frequency of most censuses represents a serious impediment for depicting the situation accurately because many significant changes can take place between two consecutive rounds of data collection.

Surveys are often the most important mechanism for collecting data for a large number of TVET indicators. As compared to censuses, surveys collect information only on a sample of the total population, which makes them significantly less costly to run. Their advantage relies on the fact that both qualitative and quantitative information can be obtained. A survey can be carried out only once, or it can be repeated periodically, to monitor the evolution of a phenomenon over time which enhances the value of the survey significantly. In the second situation, panel surveys are sometimes used, which follow the evolution of the same members of the sample to observe the changes taking place in their status over time.

In the TVET sector, surveys are used for detecting information that administrative information cannot provide: the level of satisfaction, for example. For the evaluation of the TVET sectors in developing countries, which is the objective of the Inter-Agency Working Group, surveys are essential for getting the closest picture of the reality. Official statistics may offer a wide range of quantitative indicators, but the qualitative aspects of many features of the system are captured almost entirely through well conducted surveys.

Surveys that target educational systems and communities (administration, faculty, school counsellors, students and parents) can provide key information on the transition to work issue from the perspective of the potential labour supply of youth. Establishment surveys (ES) can be a key source of information in defining the skills needs of employers in the formal sector. However, where a large portion of employment is found in the informal sector, such surveys will be of limited use for defining TVET strategies, so efforts should be made to ensure that the labour demand of the informal sector is also captured in some format.

Many countries in the world, including those in the target group, carry out one or more of three regular "standard" surveys: LFS; HBS (Household Budget Surveys); ES (Enterprise Surveys). If run properly, these surveys can offer a large amount of information that is useful for at least a partial diagnosis of TVET. However, certain developing countries and LICs are unable to collect and maintain a sufficiently large statistical database due to the high costs and relatively weak institutional capacity. At the same time, comparability can be problematic due between different surveys within the same country although cross-country comparability is not the main objective of this exercise. This is often caused by the surveys not being carried out at regular intervals. Regularity is important for the reliability of employment data, for example, as employment naturally fluctuates with the seasons. Moreover, the LFSs do not typically allow for the examination of contract situations, employment policy, skills certification systems, earnings, job satisfaction, labour protection and other variables important for TVET. Certainly the ease or difficulty of entering the labour market is not directly measurable from LFS.

It is therefore recommendable to examine the way these surveys are carried out (data collection procedures, sampling methods used, representativeness of samples, relevance of questions asked, methods used in adjusting the results, etc.). Depending on how reliable these surveys are, one or several customised surveys can be carried out in order to obtain the missing elements and the information that is insufficiently reliable.

Ideally, a single survey should be conducted, incorporating all the questions to which answers are needed. Too many surveys are costly, time consuming, and it would be difficult to find a sufficiently large number of specialists for running them. On the other hand, a single survey containing a large number of questions is not recommendable because the efficiency of the results obtained through surveys is generally inversely correlated with the number of questions and their length.

There are many examples of surveys carried out all over the world in the TVET sector. Of particular interest would be one that focuses on two fundamental elements: the satisfaction of employers and employees with TVET, respectively the needs of the labour market in terms of skills and competences. Such surveys should strive to cover self-employment, micro entrepreneurs and employment in the informal sector. The Australian experience may prove

very useful in measuring the satisfaction; the country runs an annual NCVER[7] Student Outcomes Survey and a biennial NCVER Employer Satisfaction Survey.

Another important type of survey in the TVET sector is the one conducted by ILO (School to Work Transition Survey[8]), which is aimed at enhancing the capacity of national and local institutions to undertake evidence-based analysis that feeds social dialogue and policy-making process. The introduction of this survey was motivated by the fact that current restrictions in labour market make the school-to-work transition of young people long and difficult. The analytical framework associated with the survey allows assessing the characteristics of youth who are still in school, employed or self-employed, unemployed or outside of the labour force for reasons other than full-time study. The results of the survey are used to estimate the number of young people who have completed their transition into "decent work", those who are still in transition, respectively the number of young people who have not yet made the transition either because they remain in school or are outside of the labour market with no plans to work in the future. Similar surveys are also conducted by other organisations, including the ETF.

Irrespective of the information used, the collection of statistical data may prove difficult in some cases. Choosing the appropriate method for collecting data is therefore essential. As a rule, the type and volume of data to be collected will very much depend on the focus of the exercise. A trade-off exists between large databases (desirable for understanding as much as possible the reality) and the opportunity cost of collection. The size of the database should be therefore decided according to the principle: measure only what needs to be measured, rather than what is measurable.

Administrative data may be available from a number of alternative sources. Training/Education Boards (TEB), for example, collect student unit record data on courses, assessed results and demographic data, as well as data on registered institutions. This information refers to all affiliated courses delivered by registered institutions. Line ministries, on the other hand, collect data about non-affiliated courses provided by their various agencies. Private and NGO providers of training hold administrative data for non-TEB affiliated courses. Since TVET activity is dispersed across many public agencies, private providers and community based NGOs, aggregating and centralizing the administrative data requires close collaboration with national statistical offices for identifying a coherent set of variables to be collected and classifications that should be adopted. The cost of administrative data is lower than the cost of other statistical sources; it is therefore advisable to start the process of data collection by making an inventory of available information of administrative type, then decide which other sources to be used and what methodologies for collecting the missing information need to be adopted.

[7] National Centre for Vocational Education Research.
[8] http://www.ilo.org/employment/Areasofwork/lang--en/WCMS_140862/index.htm

IV.3. Capacity building and using the indicators for policy-design

The agencies in the Inter-Agency Working Group on TVET indicators are actively working with partner countries to develop national capacities of TVET-related organizations in the use and creation of indicators. Each agency has its own focus, but each agency encourages partner countries to use indicators for policy making so policies become evidence-based and so that policy making also becomes more transparent and inclusive.

The indicators proposed in this report constitute a set, which in its entirety aims at giving any policy makers a broad overview of the most important factors influencing their country's TVET system within the chosen policy areas. Regardless of how much data is available at the national or regional level, it is the hope that the organization(s) responsible for developing the TVET policy at various levels, including the national, regional, community, enterprise, etc. can use these indicators as a reference to develop TVET policy, and that a country can use the list of these indicators as a benchmark for what data it is useful to have. The list can thus serve as a starting point for a national discussion of where efforts must be made to produce missing data in case not all areas are sufficiently covered by data. Any organization(s) wishing to improve their data availability for better TVET policy-design is well advised to heed the concerns expressed in IV.2 concerning the various possible data sources. All countries should independently assess the pertinence of these indicators in the light of their national context and resource constraints.

Capacity building may take place at micro, meso and macro level. For example, the ETF works with policy makers to assess VET systems (see box 1[9]) and UNESCO has activities designed to strengthen the capacities of core staff from ministries dealing with TVET (see box 2). Additional activities are undertaken by the other agencies to strengthen institutional and human capacities to create, understand and use indicators.

[9] http://www.etf.europa.eu/web.nsf/pages/Torinet for further information.

Box 1: ETF and capacity building

VET system review and capacity building.

In 2010, ETF launched the "Torino Process" as a participatory review of progress in vocational education and training policy carried out every two years by all 30 ETF partner countries neighbouring the European Union.

The "Torino Process" provides a concise, documented analysis of vocational education and training (VET) reform in each country, including the identification of key policy trends, challenges, constraints, as well as good practice and opportunities, in order to support countries' evidence-based policy-making, with a view to improving the contribution of VET to sustainable development, and in particular competitiveness and social cohesion.

To support this longer term objective, in 2011, the ETF also launched a new initiative called Torinet aimed at building capacity in evidence-based policy making throughout the policy cycle, and at the different levels of governance which are relevant for the specific context of each partner country's VET systems and their economic and social priorities. The rationale for Torinet derives from the assumption that to take informed policy decisions, and to be able to foresee their impact, the right information and the right capacity to use the information is needed at the right time. The project complements the Torino Process policy analysis by analysing in depth the gap in evidence in the partner countries; mapping the roles, responsibilities and capacities of institutions engaged in the VET system; identifying the experiences and lessons learned which could be shared to enhance the role of evidence in policy and finally by developing tools, actors, networks to build an evidence approach to policy making.

Box 2: UNESCO interventions for capacity building[10]

UNESCO is implementing a Strategy for TVET (2010-2015), by focusing its actions on three core areas: (i) provision of upstream policy advice and related capacity development; (ii) conceptual clarification of skills development and improvement of monitoring; and (iii) acting as a clearinghouse and informing the global TVET debate.

Under **core area 1**, UNESCO acts to strengthen Member States capacities to develop evidence-based policies using the analytical framework for policy reviews developed by the Organisation. Policy reviews are structured around a critical understanding of the beneficiary country's own socio-economic development model, labour markets, TVET system key building blocks (such as relevance to labour market, governance, funding, etc.), its articulation with other parts of the education system. UNESCO's policy reviews aim at establishing a policy dialogue with concerned governments to support their actions towards developing relevant policies. Several countries have requested UNESCO support: Malawi, Benin, Lao, Cambodia, Al Salvador and Eastern Caribbean countries.

To further support capacity development, UNESCO is implementing an extra-budgetary programme called Capacity Building for Education for All (CapEFA)[1] in selected Member States. Under **core area 2** of its strategy, UNESCO's works through CapEFA with country counterparts to carry out an audit and diagnosis of the existing TVET information systems and the general management of statistics. It then draws up a baseline of information on capacity strengths, needs and gaps within each concerned ministry or department, and a list of indicators needed and draft tools for statistical collection for each of these Ministries using the norms of National Education Statistical Information Systems (NESIS). The programme works to boost the capacities of a core group of staff from the various Ministries covering TVET covering computing skills, data analysis, statistics and management of the database. When possible, the process feeds into existing education statistical management systems. Specific interventions have been implemented in Madagascar, Afghanistan and Lao.

The UNESCO UNEVOC International Centre acts as a key component of UNESCO's international programme on technical and vocational education and training. It works to support UNESCO's activities under **core area 3** of its strategy supporting clearing house functions and activities for capacity development of its Member States in the field of TVET. The Centre achieves this through taking action to strengthen and upgrade the world-wide UNEVOC Network and through designing and implementing regional and cross-regional training workshops and seminars targeting decision makers and practioners. UNEVOC Network includes institutions from around 160 countries. With the aim to assist UNESCO Member States develop and strengthen TVET through knowledge sharing, collaboration and joint activities.

As part of the ongoing capacity building efforts of each agency in developing countries, the proposed indicators can be tested in various settings and contexts. The feasibility of the indicators will thus be verified and the results can be reported to the Inter-Agency Group in a revised report.

[10] See http://www.unesco.org/new/en/education/ and http://www.unevoc.unesco.org/snippet.php

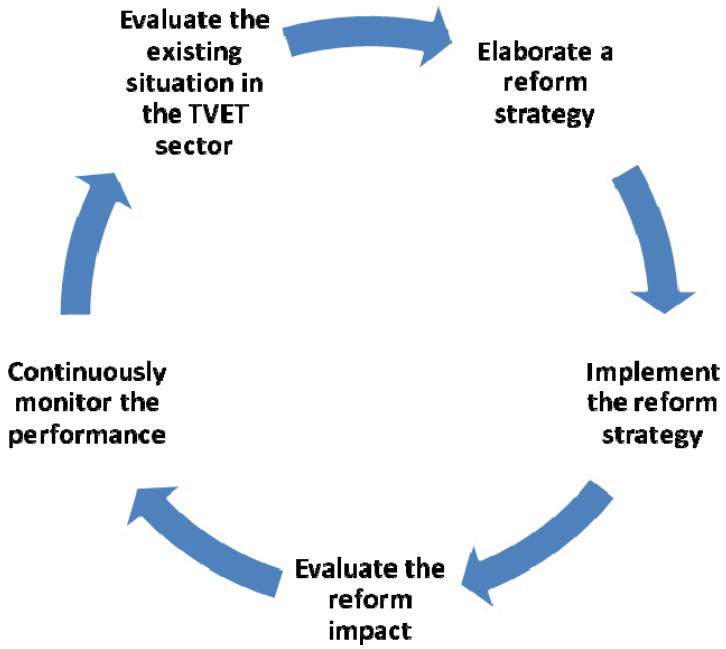
V. Concluding remarks and recommendations

The list of indicators proposed in this report should serve policy-makers to design appropriate TVET policies. Several steps are necessary for building an effective and efficient TVET as depicted in figure 4:

1. Evaluation of the existing situation in the TVET sector;
2. Elaboration of a strategy to reform the system;
3. Implementation of the reform strategy;
4. Evaluation of the reform impact;
5. Continuous monitoring the performance in the sector.

The principal objective of developing the indicators is to evaluate the situation, such that reform measures can be designed. Consequently, for the first step of a reform a short-list of indicators can be used –the indicators with a high feasibility of finding the relevant data (see table 2: *Categories and types of indicators used in TVET evaluation.* When the reforms are in place, this list can be enlarged to include the whole range of indicators, as necessary.

Figure 4: Five steps building an effective and efficient TVET



The TVET sector needs to be understood in the overall economic and social context of the country and linked with other major policy measures, strategies and related programme documents of the government (overall development objectives, education and training strategy, labour market and employment programmes and policies, public finance strategy, etc.). An analysis at the national level should be carried out in close collaboration with all the relevant stakeholders – relevant ministries, employers' and workers' organisations, training authorities, etc. The relevant stakeholders would thereby have sufficient national ownership over the outcomes, which is essential in any reform process.

The assessment of the situation in the TVET sector needs to be carried out in several successive phases, starting from more general issues before entering the specific assessment of the system. The first step is an overview of the economic, social and demographic situation of the country. The Annex to the report contains a list of possible indicators to be included for the assessment of the general context.

As a second step, the situation in the education and training sector in general should be described, so as to have a comparative basis for assessing the TVET sector. In the last phase, the diagnosis of the TVET sector can be made, on the basis of the general characteristics and particularities of the education and training system.

The agencies involved in the drafting of this report will make use of the proposed indicators in their future work. The ILO has already used the key indicators in its revision of the questions in the School to Work Transition Survey which is to be implemented in 28 developing countries in 5 regions in 2012-2015. UNESCO will make use of the list when working with countries to assess TVET systems, and the ETF has drawn upon the list in its elaboration of an analytical framework for assessing TVET (known as the Torino process) in its 30 partner countries in 2012. Ultimately, individual countries should be able to make use of these indicators to assess their TVET systems. The agencies will, on the basis of their respective use of the indicators, make an assessment of the usefulness of the indicators in this report and report this to the Inter-Agency Group on TVET by the end of 2012.

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Annex: General context indicators

The evaluation of the TVET system should be done within three contextual stages:

1. The **general** (economic, social, demographic) **context**: provides information about the overall situation of the country, in order to place correctly the TVET sector and to have the possibility of making international comparisons.
2. The **general education context**. TVET is a part of the overall education system of the country; its performance is therefore influenced by the overall policies in education. The scope of the "general education context" (including formal TVET) is broader than that of the Ministry of Education. Therefore, when analysing the general education context, it is necessary to include the analysis of policies and activities of non-education ministries and any other organizations that provide formal education services, such as the ministries of labour, agriculture, health, industry, defence, religious affairs, social development, as well as local governments, private bodies, etc., depending on the general education context of each developing country.
3. The **TVET context**: evaluation of the sector, through specific indicators, as compared to the situation in the other parts of the education and training sector, and in the overall social, economic and demographic context.

Indicators measuring the general context

The demographic context

1. Population by 5 years age group and sex
2. Population growth rate
3. Share of urban population
4. Life expectancy at birth
5. Infant mortality rate

The economic context

1. GDP (GNP) per capita in PPP (US$)
2. Real GDP (GNP) growth
3. Sectoral contribution to Value Added (Agriculture, Industry, Transport, etc.)
4. Exports of goods and services (% GDP)
5. Total external debt stock (US$)

The social context

1. Poverty rate (total urban, rural)
2. Income share held by highest 10%
3. Income share held by lowest 10%
4. Human Development Index
5. Ratio of girls to boys in education, by levels of education