

ETF MANUAL ON THE USE OF INDICATORS



CONTENTS

ABBREVIATIONS AND ACRONYMS	03
GLOSSARY OF INDICATORS (IN ALPHABETICAL ORDER)	04
INTRODUCTION	05



1.0 GENERAL CONCEPTS	07
1.1 WHAT IS AN INDICATOR?	07
1.2 WHAT ARE THE CHARACTERISTICS OF A GOOD INDICATOR?	07
1.3 WHAT DATA SOURCES ARE AVAILABLE?	08
1.4 QUANTITATIVE, QUALITATIVE AND PROCESS INDICATORS	08
1.5 WHAT IS A BENCHMARK AND HOW TO CHOOSE IT?	09



2.0 SELECTING, CREATING AND ANALYSING INDICATORS	10
2.1 AVAILABLE DATA AND SOURCES	10
2.2 FROM ANALYTICAL QUESTIONS OR OBJECTIVES TO INDICATORS	11
2.2.1 QUANTITATIVE INDICATORS: THE TORINO PROCESS INDICATORS FOR VET ANALYSIS	12
2.2.2 PROCESS INDICATORS: ENTREPRENEURIAL LEARNING	15
2.3 CONSTRUCTION OF INDICATORS	17
2.4 VERIFYING THE CONSISTENCY OF RESULTS	19
2.5 INDICATOR ANALYSIS	19
2.6 REVIEWING THE CHOICE OF INDICATORS	20
2.7 PRESENTING RESULTS: TABLES AND FIGURES	21



3.0 LIST OF INDICATORS	25
A. E&E 2020: Employment and education targets set by the EU for 2020 (selected objectives)	25
B. Torino Process for VET analysis	25
C. Quality in VET (selected indicators from the EU's eqavet project)	25
3.1 QUANTITATIVE INDICATORS	26
A. E&E 2020: Employment and education targets as set by the EU by 2020 (selected objectives)	26
B. Torino Process for VET analysis	28
C. Quality in VET indicator from the EU's eqavet project	44
3.2 QUALITATIVE INDICATORS	45
A. E&E 2020: Employment and education targets as set by the EU by 2020 (selected objectives)	45
B. Torino Process for VET analysis	46
C. Quality in VET indicator from the EU's eqavet project	49
3.3 PROCESS INDICATORS: ENTREPRENEURIAL LEARNING	50
A. Policy framework for entrepreneurial learning	50
B. Entrepreneurial learning in lower secondary education (ISCED 2)	55



4.0 INTERNATIONAL CLASSIFICATIONS	57
4.1 ISCED (UNESCO)	58
4.2 NACE-STATISTICAL CLASSIFICATION OF ECONOMIC ACTIVITIES IN THE EU (EUROSTAT)	63
4.3 ISCO-INTERNATIONAL STANDARD CLASSIFICATION OF OCCUPATIONS (ILO)	64
4.4 ICSE-INTERNATIONAL CLASSIFICATION BY STATUS IN EMPLOYMENT (ILO)	64

REFERENCES	65
WEBLINKS	66

ABBREVIATIONS AND ACRONYMS

ALMP	Active labour market programme
BTI	Bertelsmann Transformation Index
CPI	Corruption Perceptions Index
EDI	Equivalised disposable income
EQAVET	European Quality Assurance in Vocational Education and Training
ETF	European Training Foundation
EU	European Union
Eurostat	Statistical Office of the EU
E&E 2020	Employment and education targets established by the EU for 2020
GDP	Gross domestic product
HDI	Human Development Index
ICSE	International Classification by Status in Employment
IEF	Index of Economic Freedom
ILO	International Labour Organisation
ISCE	International Classification by Status in Employment
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
ISIC	International Standard Industrial Classification of All Economic Activities
MPI	Multidimensional Poverty Index
NACE	Statistical Classification of Economic Activities in the EU
OECD	Organisation for Economic Cooperation and Development
PIRLS	Progress in International Reading Literacy Study
PISA	Programme for International Student Assessment
PPP	Purchasing power parity
R&D	Research and development
SME	Small and medium enterprises
TIMMS	Trends in International Mathematics and Science Study
UIS	Unesco Institute of Statistics
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USA	United States of America
USD	US dollar
VET	Vocational education and training
WB	World Bank



GLOSSARY OF QUANTITATIVE AND QUANTIFIABLE QUALITATIVE INDICATORS (IN ALPHABETICAL ORDER)

Active labour market programmes	35	Participation in lifelong learning	28
Activity rate	33	Participation in VET by field of study	40
At-risk-of-poverty rate	38	Percentage of VET students	39
Bertelsmann Transformation Index	48	Percentage of VET students who continue to higher levels of education	36
Changes in employment by detailed economic sector	32	PIRLS	46
Changes in employment by occupational field	32	PISA literacy	45
Changes in employment by status and gender	34	Population growth rate	28
Competitiveness index	49	Population in poverty	48
Corruption perception index	47	Poverty headcount ratio	37
Cost of continuing vocational training and adult learning	43	Proportion of 15–24 year-olds in the total population	29
Cost per pupil attending VET and general programmes	42	Proportion of microenterprises and small companies among active businesses	33
Dropout rate	40	Public employment as a share of total employment	35
Early school leaving rate	27	Public expenditure on VET and general education by level	42
Ease of doing business	49	Registered unemployed involved by active labour market programmes	37
Economic freedom of the Arab world	48	Student-teacher ratio	41
Educational attainment	27	TIMSS	46
Employment rate by gender, age group 15–64	26	Total population	28
Enterprise start-up rate	32	Training of trainers	41
First-job-seeker rate	39	Unemployment rate	34
GDP annual growth rate	31	Proportion of young people not in employment, education or training	37
GDP per capita (PPP, current international USD)	31	Long term unemployment as a share of the total unemployed	39
Gini coefficient	38	Investment of training of teachers and trainers	44
Gross domestic expenditure on research, development and innovation as % of GDP	26	Proportion of dependents in total population	29
Human development index	43	Quality assurance implementation	44
Index of economic freedom	47	Destination of learners	45
Literacy rate	30	Utilisation of skills at workplace	49
Multidimensional poverty index	47		
Net migration	29		





INTRODUCTION

The present manual addresses a broad readership of people working with data and indicators in education and training. The technical detail provided in certain sections is intended for those who actually create indicators, that is, statistics experts in partner countries of the European Training Foundation (ETF) and policy officials and experts analysing and using the data produced by these teams. Most of the content is, however, written to provide practical guidance to readers with no background in statistics.

The aim is to offer a practical guide to using indicators to support the formulation of national policy. The guide provides an introduction to indicators and a general overview of their use. It also offers the reader tools and ideas for subsequent steps.

Two assumptions are fundamental to this work: first, that the analytical process is reiterative; and second, that the use of the correct indicators is crucial. Hence the need for a manual dealing specifically with the construction of indicators. The first question we must ask is what are the policy objectives. The second is how can we turn a policy objective into an indicator that can measure the progress that has been made towards achieving the goal. These are just some of the issues dealt with in the initial sections of this guide.



After outlining the most important basic concepts, the authors move on to the creation, analysis and presentation of indicators. Some steps are suggested for implementing the routine analysis of indicators to produce information that can inform the national policy debate; these include an inventory of possible sources, the different levels of breakdown possible, presentation tools, and the importance of ensuring consistency. This manual also presents examples in the form of a list of selected indicators, the data required for their calculation, and the sources of these data. These examples relate to the following initiatives: the employment and education targets established by the EU for 2020 (E&E 2020); the ETF's framework for analysing vocational education and training (VET) systems (the Torino Process); the quality indicators for VET proposed by the European Quality Assurance in VET (EQAVET) initiative; and ETF's Entrepreneurial Learning project, which was established to assess entrepreneurship training in education. Finally, the main international classifications are also described because adherence to these classifications is a prerequisite for international comparison.

This manual builds on a practical guide written for the Central Asia region by Claude Sauvageot and Nicole Bella (ETF, 2003). In view of the growing importance of three aspects of VET—competitiveness, economic growth, and the development of skills for sustainable development—the ETF is now engaged in dialogues with all of its partner countries on how national evidence bases can be strengthened and used more effectively to inform policy. As part of this process, the practical guide has been revisited and updated to reflect current thinking. This manual provides a general overview of the use of indicators and is intended to serve as an introduction.



1.0 GENERAL CONCEPTS

This chapter defines the concept of an indicator and explains its characteristics. The data sources that can be used to create indicators are also discussed. An indicator is only as reliable as the data it is based on, so close attention must be paid to data sources.

1.1 WHAT IS AN INDICATOR?

The Organisation for Economic Cooperation and Development (OECD, 2002a, p.25) defines an indicator as 'a quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention, or to help assess the performance of a development actor'. In other words, an indicator is an aggregation of raw or processed data that helps us to quantify the phenomenon under study and a tool that helps us to grasp complex realities. An indicator is not raw data, but rather uses that data to characterise or assess a particular issue. For example, the absolute number of literate adults is not a particularly useful datum until we use the statistic to create an indicator such as, for example, the adult literate population as a proportion of the total adult population in the country.

1.2 WHAT ARE THE CHARACTERISTICS OF A GOOD INDICATOR?

Several issues must be considered when creating an indicator. A good indicator should be relevant, should summarise information without distorting it, and should be coordinated, structured, comparable, accurate and reliable.

Indicators need to be relevant to policy goals, and it is therefore essential to identify these goals before deciding what to measure and how to do it. For example, if the goal were to increase access to education, the relevant indicator could be the rate of participation in education. An indicator should summarise existing information without distortion. For example, if we are interested in the number of students per teacher, we need data on both the number of students and the number of teachers to obtain the student-teacher ratio. However, such data is susceptible to distortion; for example, if we include both full-time and part-time teachers, the ratios we obtain will be lower but they will not be a faithful reflection of the real situation. Thus it is important to clearly understand the nature of the data available before constructing the indicator.

Indicators must also be coordinated and structured; in other words, we have to ensure that they are constructed and used in a consistent, comparable and comprehensive way. Consistency is particularly important when we are monitoring data and trends over time or comparing data between countries.



If we are to produce comparable results, the definitions and calculation methods we use must be consistent. Comparable results can only be obtained using clearly defined indicators based on identical definitions to ensure consistency even when data are collected at different times and indicators are calculated by different people. Indicators should also be comprehensive, that is, they should always encompass all relevant aspects of the phenomenon under study. Finally, indicators and the data on which they are based should be accurate and reliable, and any deficiencies in the data should be made clear. An indicator is only reliable when we can trust what it shows.

1.3 WHAT DATA SOURCES ARE AVAILABLE?

To calculate an indicator, we need data, and this can be obtained from different sources. A good data source is comprehensive in coverage, unbiased, and consistent over time. Potential data sources include surveys, censuses, administrative databases, reports, interviews and focus groups. In education, most data comes from schools in the form of statistics, such as the number of students enrolled or the number of graduates. Some of this data is aggregated at the national level by education ministries. School inspection reports can be used to assess the quality of education programmes. Surveys carried on among students provide information about student satisfaction and the effectiveness of interventions. Expert surveys can be used to assess the overall quality of VET systems. All these types of data can be used to create indicators relevant to policy goals.

It is important to distinguish between primary and secondary data sources. Primary sources are original documents or data providing first-hand and direct evidence (e.g. interviews with country officials). Secondary sources include the information from primary sources that has been processed and interpreted. Other secondary sources include international organisations (e.g. World Bank (WB), the International Labour Organisation (ILO), etc), whose published data and indicators are usually based on information provided directly by countries and other primary data. Thus, when data for the calculation of indicators are available from different sources, we should expect the data from each source to produce the same results if the same definitions and calculation methods are used. Sometimes, however, national and international bodies provide disparate data; in such cases, the reasons for the differences should be identified before deciding which source to use.

1.4 QUANTITATIVE, QUALITATIVE AND PROCESS INDICATORS

Decision making procedures should be based on the systematic and regular use of evidence. Evidence is the key to an in-depth understanding of the problems that affect education and training systems and is thus a prerequisite to making informed policy choices. Consequently, having and making good use of a solid evidence base is of great importance in the fields of VET and labour market research.



In VET, as in any kind of research, evidence can be divided into two main types: quantitative and qualitative. Quantitative evidence is objective information about the real world and is numerical in nature. Thus quantitative indicators are expressed as numbers, for example, the number of inhabitants in a country, or the public expenditure on VET systems as a percentage of national expenditure on education. Qualitative evidence, on the other hand, deals with the qualities of the object of study and may include subjective information, opinions or judgements about an issue. Qualitative evidence is typically expressed in the form of descriptive information, although it can also be quantified and expressed numerically. There are many sources of qualitative evidence, such as case studies, observations, reports, discussions and in-depth interviews. In this manual, we restrict ourselves to the type of qualitative evidence that can be quantified. It should be noted, however, that this is only one kind of qualitative information that can be used to analyse VET. For example, we present indicators that measure the intensity of a perception, such as the results of a survey that asks experts how much corruption they perceive in a particular country. The answers, which take the form of qualitative observations, can then be assigned a score, and the resulting numerical data can be used to quantitatively compare corruption perception and to calculate summary statistics (averages, for example).

The third kind of indicator described in this manual is the process indicator. Process indicators can be used to identify problems or gaps in a particular area by measuring the actual values of the process indicators against pre-defined targets or standards. They can be based on quantitative evidence (objective information) or qualitative evidence (subjective information). In chapter 3, we provide examples of how quantitative, qualitative and process indicators are created. The indicators discussed relate to the employment and education targets established by the EU for 2020 (E&E 2020), Quality Assurance for VET (EQAVET) and the ETF Torino Process and Entrepreneurial Learning initiatives.

1.5 WHAT IS A BENCHMARK AND HOW TO CHOOSE IT?

The United Nations defines a benchmark as ‘a concrete point of reference (in the form of a value, a state, or a characteristic) that has been verified by practice (in the form of empirical evidence, experience, or observation) to lead to fulfilment of more overall objectives or visions (in isolation or together with the fulfilment of other benchmarks)’ (United Nations, 2010, p. 17). While indicators serve to quantify a phenomenon, benchmarks serve as a standard or point of reference against which the current situation may be compared. Finding appropriate standards for this purpose is not always an easy task, and context is crucial for the ETF because we need to make comparisons between different partner countries. If we want to compare countries within a single region (for example, North Africa), the results may be more instructive if we find a benchmark in that region rather than use a reference from elsewhere (an EU member state for instance), which might have higher standards but in a completely different context in terms of aspects such as labour market needs and institutions. The usefulness of the exercise is vastly increased if the context of the benchmark and that of the case under study are similar.



2.0 SELECTING, CREATING AND ANALYSING INDICATORS

Ideally, any analysis starts with two basic questions, 'What do we want to know?', and 'How can it be measured?' This process leads us to ask how we can identify and select the necessary indicators, and eventually to the question of how to translate objectives into indicators, a topic discussed in detail in chapter 3.

The following sub-sections deal with a number of fundamental issues, such as data sources, verifying the consistency of outcomes, indicator analysis, and choice of indicator. The first step in the creation of an indicator is to identify available sources and data. The next stage—calculation—is not as easy as it might appear, primarily because different calculation methods can be used. At this stage, it is crucial to elaborate precise definitions of the selected indicators and to complement these definitions with a glossary of the terms used.

2.1 AVAILABLE DATA AND SOURCES

Data on VET can be obtained from annual school censuses, school staff surveys, expert surveys, examination results, and reports on infrastructure. They can also be obtained from ministries of education and national statistics offices. While data on pupils and institutions are normally available from national statistics offices, internal data on staff, including their status, contractual conditions, and initial and in-service training, are more often held by the relevant ministry.

Demographic data, often the responsibility of the national statistics offices, are extremely important, as it is essential to have data that is disaggregated by age for the time period under study. Moreover, inter-census data and post-census estimates (based on the latest census) must be of high quality because inaccurate data may distort enrolment ratios. Regional breakdown of data is also important so that regional disparities in enrolment can be analysed. Lastly, accurate demographic projections are needed for forecasts of school enrolment numbers and staff recruitment needs. Consequently, forecasting indicators may also be required. Financial data can be obtained from the ministry of finance or another national institution responsible for financial matters and from the national statistics office. Many indicators make use of data such as the gross domestic product (GDP) or statistics obtained from analyses of the state budget. It is also possible to make use of data on specific regions or on sample subgroups of pupils.



School inspection reports are another important source of information. They provide information on teaching materials and the pedagogical support offered to teachers. Such information can be used to illustrate an analysis. Selected data gathered for the purposes of a particular study or report can also be used in this way.

It is sometimes necessary to use sample-based studies, given the often prohibitive cost of comprehensive surveys. The level of accuracy achieved is acceptable for the analysis of many of the problems encountered in an education system. Before using such data, however, it is important to be sure that the sample is well constructed and representative.

In the case of VET, it is essential to mobilise all available information on formal, non-formal, and informal training. Once again, it is necessary to define exactly what is meant by such terms, highlighting the need for a glossary defining the main terms used in gathering data and calculating indicators.

VET poses particular problems for the creation of many common indicators (see UNESCO–UNEVOC, 2007). Unlike initial VET programmes, continuing VET courses do not usually coincide with the standard school year, so enrolment rates may be overstated if students enrol in several short courses. Thus, the data must specify the duration of the course as well as the gender of the participants and the population segment they belong to (e.g. young people, adults, etc). The same is true of data on the number of participants in different types of VET programmes, the forms of certification awarded, and the training specialisation.

It is also necessary to build up a comprehensive picture of the various sources of funding for VET (ministries, local authorities, private enterprises and households). Finally, forecasts of the future needs of the economy and society provide useful background that allow us to put predictions and training schemes into perspective.

2.2 FROM ANALYTICAL QUESTIONS OR OBJECTIVES TO INDICATORS

Indicators need to reflect project goals or objectives and are only meaningful if they reflect issues that need to be highlighted. This section describes how indicators can be developed to analyse the objectives of a project.

Our starting point is a simple question: what is it that we wish to know? Once the initial list of objectives or questions has been defined, the next step is to identify the information that will provide the answers we seek. Correct policy choices can only be reached through an in-depth understanding of the phenomena being studied, and gaining such an understanding is usually the most fundamental part of the process.

The two cases reported below illustrate how researchers succeeded in finding the best indicators for their project. We cannot overemphasise the importance of each country's particular problems and circumstances in the choice of appropriate indicators. The two examples in this section relate to the Torino Process¹ and ETF's Entrepreneurial Learning initiative. Detailed descriptions of these and other indicators are given in chapter 3.



2.2.1 QUANTITATIVE INDICATORS: THE TORINO PROCESS INDICATORS FOR VET ANALYSIS

To support partner countries in the reform of their VET systems, the ETF has compiled a set of key indicators for monitoring developments. This set of indicators is central to the Torino Process for assessing VET systems, a project launched in 2010 that will be repeated at regular intervals. The choice of indicators for 2012 was driven by a number of key questions relating to external efficiency, internal efficiency, and governance.

External efficiency

Question 1. What are the main socio-demographic factors in the country and how do they shape the demand for skills at national/regional level?

Indicators:

- total population, population growth rate and dependency rates;
- number and/or share of 15–24 year-olds in the population;
- migration trends (inward and outward);
- ethnic composition of the population (Roma and others);
- educational attainment of the population by age and sex;
- educational attainment by urban/rural populations;
- literacy rates.

Question 2. What are the key economic sectors and what kind of skills do these sectors require? In what way do other economic factors influence the demand for skills?

Indicators:

- GDP growth rate;
- GDP per capita;
- changes in employment by detailed economic sector;
- changes in employment by occupational field;
- employment by sector compared to GDP by sector;
- enterprise start-up rates;
- competitiveness index;
- share of microenterprises and small companies among active businesses.



Question 3. What are the main labour market trends and employment challenges and how do they influence the demand for skills?

Indicators:

- activity rates by sex and educational level;
- employment rates by sex and educational level;
- unemployment rates by sex and educational level;
- youth unemployment rates by sex and educational level;
- size of the informal economy and extent of informal employment;
- changes in employment by status and sex;
- public employment as a percentage of total employment.

Question 4. How does the VET system promote entrepreneurial attitudes and skills?

Indicator:

- Small Business Act for Europe entrepreneurial learning index (source: ETF's entrepreneurial learning team);

Question 5. How well does VET match the aspirations of individual learners and what suggestions have been made for improving its attractiveness?

Question 6. How successful has the VET system been at the national/regional level in providing learning opportunities for adults aimed at enhancing their labour market prospects or upgrading their skills?

Indicators:

- participation in lifelong learning;
- expenditure on active labour market policies as a percentage of GDP;
- percentage of registered unemployed covered by active labour market policies;
- percentage of VET students who continue to higher levels of education.

Question 7. How does the VET system develop active citizenship skills that enable people to contribute to sustainable societies?



Question 8. Overview of the main social inclusion issues in the country, including poverty, inequality, regional/rural disparities, ethnic/religious divisions, etc., and identify key vulnerable groups.

Indicators:

- illiteracy rates;
- educational attainment of the population by age and sex;
- educational attainment by urban/rural populations;
- early school leaving rate;
- number of people with disabilities, and key information concerning immigrants, the Roma community and other ethnic minorities;
- share/number of young people not in employment, education or training;
- poverty and inequality rates or shares;
- share/number of first job seekers and long-term unemployed in the total unemployment pool (15+);
- VET students as a percentage of the total student population;
- percentage of students participation in VET by field of study;
- dropout rates in upper secondary education, general education and VET, by sex.

Internal efficiency

Question 9. How is quality defined in initial and continuing VET in the country?

Question 10. What are current issues or quality concerns with regard to the main elements of VET delivery? For example, occupational standards/qualifications, curricula, textbooks, teacher skills and professional development, school management and budgets, modern learning processes, involvement of employers/apprenticeship systems, assessment and certification of skills.

Question 11. What are the main priorities for improving the quality of VET delivery? What (further) policies or actions are already foreseen to address issues related to the internal efficiency and quality of VET, and how will these policies or actions be implemented at national/regional levels?

Indicators:

- completion rates, placement rates, dropout rates, repetition rates, scores in national or international tests (PISA, PIRLS and TIMSS);
- student-teacher ratio by programme;
- funds invested in teacher training and/or regularity of teacher training for ensuring quality.



Governance

Question 12. Overview of total investment over the last 5 years in the secondary and post-secondary VET system, including cost per VET student and investment in public and private adult training; role played by donors in financing the VET system.

Indicators:

- public expenditure on VET as a percentage of total national expenditure on education;
- public expenditure on VET and on general education by level;
- cost per pupil attending VET programmes compared to cost per pupil attending general upper secondary education programmes;
- information on the cost of continuing vocational training.

2.2.2 PROCESS INDICATORS: ENTREPRENEURIAL LEARNING

The ETF encourages partner countries to develop entrepreneurial learning through their education systems. To support this central pillar of the effort to promote competitive economies, the ETF has developed a number of indicators that cover the most important aspects of entrepreneurial learning.

Objective 1: To assess the policy framework for entrepreneurial learning

Indicators:

- policy partnership
- policy elaboration process
- policy support resources
- monitoring and evaluation
- good practice exchange
- non-formal learning.

Objective 2: To evaluate lower secondary education (ISCED 2)

Indicators:

- organisation
- entrepreneurship as a key competence
- learning environment.



Objective 3: To evaluate upper secondary education (ISCED 3)

Indicators:

- organisation
- entrepreneurial learning
- learning environment.

Objective 4: To evaluate tertiary education (ISCED 5 and 6)

Indicators:

- national higher education policy on entrepreneurial learning
- good practice in higher education
- cooperation between higher education and the business community.

Objective 5: To assess entrepreneurship among women.

Indicators:

- policy support framework for the promotion of entrepreneurship among women
- training
- financing
- national network of women entrepreneurs.

Objective 6: To evaluate enterprise skills

Indicators:

- training needs analysis
- access to training
- quality assurance
- start-ups
- enterprise growth



2.3 CONSTRUCTION OF INDICATORS

In the case of quantitative indicators, the first step is to devise a formula for calculating the indicator. It is then possible to draw up a detailed list of the basic information required to calculate the indicator. For example, to determine the net enrolment rate for primary education (typically calculated for the 6–11 and 7–12 age brackets), we need the statistics on school enrolment and total population for the relevant age groups. Since the same indicators can be calculated in different ways by different people, the formula for each indicator should be explained to avoid ambiguity. At this stage, it is also helpful to consider which breakdowns will be most useful for the indicator in question (for example, sex, age, minority group membership).

Here is an example of a quantitative indicator from the Torino Process:

- *indicator name*: gross enrolment ratio;
- *indicator objective*: to measure the capacity of schools to accept pupils;
- *measurement level*: national and regional;
- *data breakdown*: by sex;
- *calculation method*: total number enrolled in an educational cycle (regardless of age) divided by the theoretical population of the cycle (e.g. primary age group 7–12 years);
- *source*: annual school census;
- *frequency*: annual.

It is helpful if sources can indicate the validity of their data, as this facilitates a more accurate appraisal of the information provided.

As well as clearly stating the objective, descriptions of qualitative indicators and process indicators should also specify the measurement instrument used. In the following examples relating to entrepreneurial learning, the instrument used in each case is a statement to be responded, and the measurement units quantify these responses as a series of levels.

- *indicator name*: policy partnership for entrepreneurial learning;
- *indicator objective*: to measure the degree of policy coherence between the stakeholders involved in lifelong entrepreneurial learning;
- *statement*: government, private sector and civil society groups work in partnership to develop lifelong entrepreneurial learning;



- *measurement units*: five levels reflecting an increasing degree of coherence expressed as statements that can be assessed by country experts, as follows: level 1, no structured cooperation between public, private and non-governmental sectors on entrepreneurial learning; level 2, an ongoing national dialogue with a view to structuring cooperation between public, private and non-governmental sectors on entrepreneurial learning; level 3, a national entrepreneurial learning partnership has been established between public, private and non-governmental sectors to promote entrepreneurial learning; level 4, state funds ensure the sustainable contribution of the entrepreneurial learning partnership to national developments (e.g. administrative support, work plan, capacity development); and level 5, an entrepreneurial learning partnership advises on a range of national strategies (education, employment, SME, R&D) and action plans.
- *indicator name*: utilisation of skills;
- *indicator objective*: to measure the extent to which individuals are satisfied with the way the skills they have acquired help them in their work;
- *statement*: 'how useful has the education and/or training been to you in carrying out your work in your current position?';
- *measurement units*: a 7-point scale in which 1 represents 'not at all satisfied' and 7 represents 'very satisfied'.

In the final report, it is important to define the terms used and to provide a glossary. Examples of glossary definitions are given below. Note that glossaries can vary from country to country, depending on how indicators are interpreted. However, to facilitate cross-country comparison, the same definition should be used in every country.

The following are some examples of glossary entries.

- *Public expenditure* on education: all money spent on education by local, regional and national administrations, including local authorities. Household contributions are excluded. Public education outgoings include current and capital expenditure.
- *School*: an administrative unit where education takes place.
- *Formal education*: a hierarchically structured, chronologically graded education system, running from primary school through to university and including, in addition to general academic studies, a variety of specialised programmes and institutions for technical and professional training.
- *Lifelong learning*: All learning activity undertaken throughout life for personal, social and/or professional reasons which results in improved knowledge, know-how, skills, competences and/or qualifications.
- *Civil society*: A 'third sector' of society, beside the state and the market, comprising institutions, groups and associations (either structured or informal) that act as mediators between citizens and public authorities.



2.4 VERIFYING THE CONSISTENCY OF RESULTS

Once the indicators have been calculated, it is essential to verify the consistency of the results obtained. This can be done by comparing and contrasting different types of data and data from different sources. For example, we can check that net enrolment ratios do not exceed their theoretical limit of 100%, and that employment and unemployment rates are consistent. Likewise, education expenditure figures supplied by the ministry of education should be in the same range of magnitude as those provided by the ministry of finance or the national statistics office. Data verification is a very important step as it guarantees the validity of the whole exercise.

Realistic and correct estimates require reliable data over several years. If anomalies are present, these should be indicated citing the sources of the data and, if necessary, explaining the differences found. The terminology and concepts associated with each type of data must also be explained clearly and comprehensibly.

Accuracy is not absolutely essential. Even without entirely accurate data, it is still possible to monitor education system developments, identify crucial problems, and to make reliable statements regarding trends. It is important, however, that the indicators be calculated in the same way each time the situation is studied. Possible sources of error should be identified and pointed out so that their impact can be estimated or, at least, their existence can be taken into account.

2.5 INDICATOR ANALYSIS

The analysis of indicators is an essential stage in a successful project. The analysis should be accessible to everyone involved in education, which means that it should be comprehensible to the non-specialist and made available in some published form. Simple presentation of complex information is not easy, but the quality of a document is judged on the clarity of the text.

An analysis of each indicator should be provided and this should also show how the results have evolved over time. Recent results should be examined in greater detail, with breakdowns by sex, region, or any other pertinent variable. The commentary on the data should be clear, objective and precise, and it should also be understandable to non-specialists.

On the basis of the empirical information provided we can carry out a descriptive or explanatory analysis. It is usually assumed that before we can gain an in-depth understanding of a phenomenon (understand the WHY), we first need a good description of it (to know WHAT is happening). However, our approach in each case will depend on our main objectives, the data available, and the audience we want to reach. Providing an insightful description of complex phenomena is not an easy task, and it is important to be as precise and methodical as possible.



² For a more in-depth discussion of descriptive and explanatory analysis see King, Keohane and Verba (1994).

One of the aims of descriptions is to distinguish between random effects or apparent trends on the one hand and systematic phenomena caused by an underlying factor affecting a particular group on the other. For instance, we might be interested in understanding changes in dropout rates in VET programmes at the ISCED 3 level in a particular region over the period 2006–2012. A closer look at the rates might reveal a systematic trend (decrease or increase). For some purposes, good descriptive inference is good enough, while for others it may be insufficient or inadequate. If we are interested in understanding the possible causes behind the high rates (for instance, the quality of VET programmes or the economic situation of the students), we need to go further from description and conduct an explanatory analysis.²

2.6 REVIEWING THE CHOICE OF INDICATORS

Analysis of a phenomenon can result in a change in the choice of indicator. The example shown in the table below corresponds to an analysis of the evolution of boy-girl disparities at a given educational level in a given country.

School year	Enrolment				Gross enrolment rate	
	Total	Boys	Girls	% Girls	Boys	Girls
2005/06	301 218	208 634	92 584	30.7	39.3	16.7
2006/07	346 907	237 456	109 351	31.5	44.5	19.7
2007/08	359 406	246 156	113 250	31.5	44.6	19.7
2008/09	421 869	289 092	133 777	31.7	51.1	22.8
2009/10	471 792	317 654	154 138	32.7	55.2	25.7



In this example, the data on the enrolment of girls as a percentage of total enrolment appear to indicate a narrowing of the gender gap. However, when the data is processed in another way, we see that the gap between the gross enrolment rate for boys and girls has in fact risen. It is therefore preferable to choose an indicator that reflects this trend; analysis of the data from a different angle, by calculating the boy-girl ratio (or vice-versa) demonstrates the slight decline in this measure between 2005/06 and 2009/10, from 2.25 to 2.06 boys for every girl. The percentage figures in the table are influenced by the fact that number of girls in the age cohort has risen slightly faster than the number of boys. This example shows how two different indicators based on identical data can give entirely different impressions of the same situation. The contradiction is, however, only apparent; the absolute gaps and the relative growth are two aspects of the same situation that complement rather than contradict each another.

It follows that we must be careful when choosing an indicator and that thorough analysis is crucial in the decision on how the indicator should be calculated.

2.7 PRESENTING RESULTS: TABLES AND FIGURES

The presentation of an indicator is also important. Data is generally presented in tables and figures, which serve to make it more interesting and allow the reader to assimilate information on several indicators or categories at a glance.

The formats of tables and figures should be chosen carefully to provide as much information as possible with as little data as possible. Care should be taken not to include too much information, as this makes a text difficult to digest. Tables and figures may present a time series, a breakdown of an indicator by categories or, if the data are available, the regional distribution. The figures most often used are line charts to present time series (representing changes over time), bar charts to present breakdowns by sex, region, etc, and maps to highlight regional diversities and disparities.

The data in tables and figures must be presented clearly, especially if we want to show data for a number of years or periods and breakdowns by sex, age or other variables. The data source should always be noted and, when necessary, the symbols or colours used should be explained in a legend. Notes can be added to aid the comprehension of complex figures or tables. It is also important to use precise terminology to avoid confusion. Finally, if the data relating to a given phenomenon come from several different sources, this must be noted and the reason should be clearly explained. Transparency is essential if the document is to be credible.

Some examples of how data can be presented are shown below.



2.7 PRESENTING RESULTS: TABLES AND FIGURES (CONTINUED)

Quantitative Indicator:

Table 2.1 Activity rates by sex in montenegro (15–64 years) <

	2007	2008	2009 <
Total	61.0	61.2	60.3
Men	69.1	69.5	68.4
Women	53.0	53.0	52.4

Title

Breakdown by sex

Year

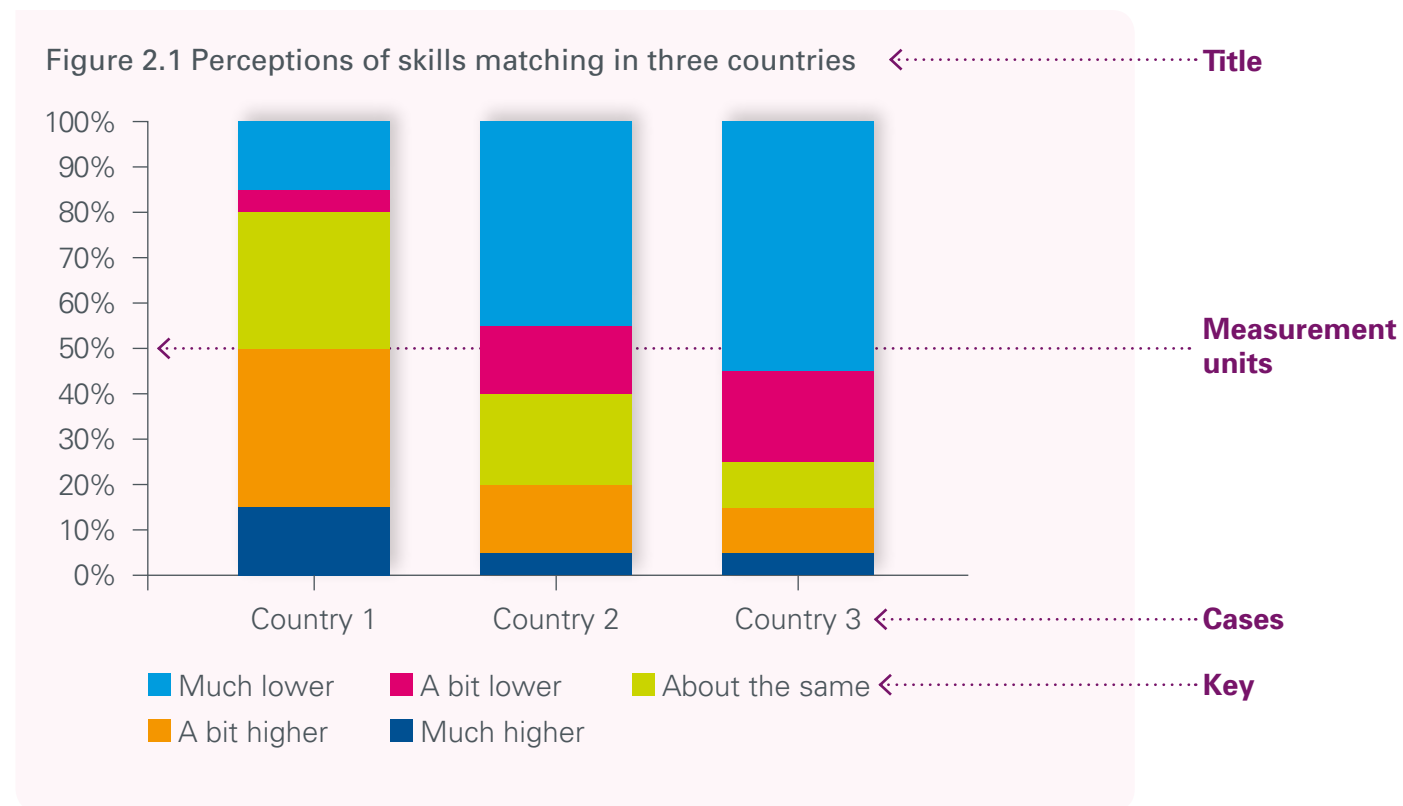
Sources: Montenegro Statistical Office (2010), Labour Force Survey 2009, Podgorica; Montenegro Statistical Office (2009), Labour Force Survey 2008, Podgorica; Montenegro Statistical Office (2008), Labour Force Survey 2007, Podgorica.

Sources



2.7 PRESENTING RESULTS: TABLES AND FIGURES (CONTINUED)

Qualitative Indicator:



Note: entries are percentages of responses to the following question: How well do your skills and abilities (including your experience, talent, motivation etc.) match the skills needed to do your job? (Much higher than needed; A bit higher than needed; About the same as needed; A bit lower than needed; Much lower than needed) **Note**

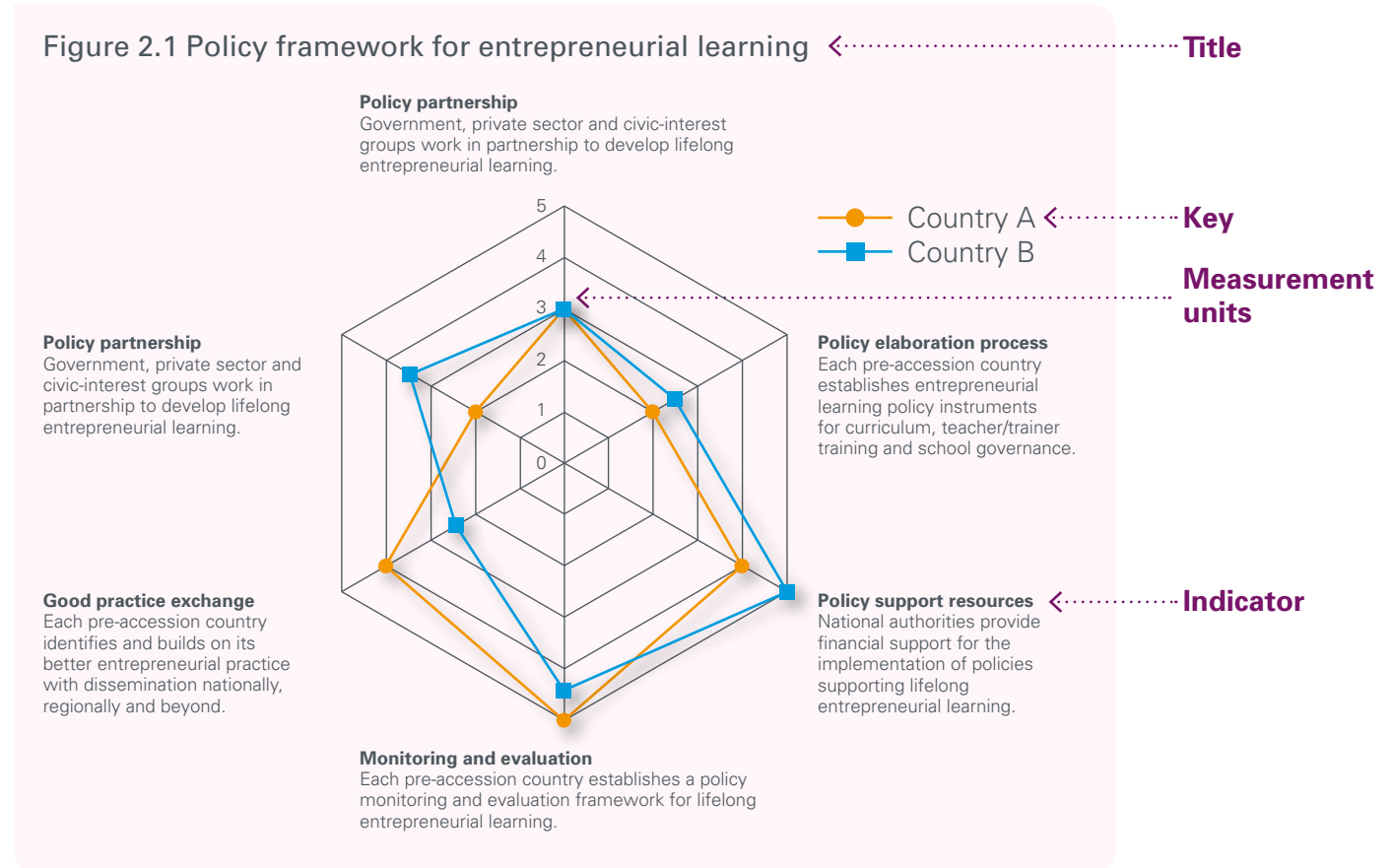
Source: ETF's Youth Transition Survey (fictitious data).



2.7 PRESENTING RESULTS: TABLES AND FIGURES (CONTINUED)

Process Indicator:

Figure 2.1 Policy framework for entrepreneurial learning ←.....Title



Note: entries are examples of responses in the self-assessment of selected indicators for a policy framework for entrepreneurial learning. Assessment values range from 0 to 5 (see next section for more details on the indicators used) ←.....Note

Source: ETF elaboration with fictitious data



3.0 LIST OF INDICATORS

This chapter is intended as a practical reference to the indicators developed for the EU’s employment and education targets for 2020 (E&E 2020) and Quality in VET project (EQAVET). Also included are the indicators developed by the ETF for the Torino Process and the Entrepreneurial Learning project. Indicators that have to be compared internationally should preferably be based on international classifications. The most important international classifications of relevance to labour market and education and training indicators are also included in the descriptions, and references to the relevant classifications are provided. For example:

Indicator: Educational attainment

Definition Educational attainment refers to the highest education level achieved by individuals, shown as a percentage of all persons who have completed a given level of education, for instance tertiary education. The indicator is commonly disaggregated by sex (> ISCED)

International Classification

If an indicator has been described elsewhere in the manual, the reader will find a reference to the relevant section. For example:

Indicator: Early school leaving rate

Definition > see E&E 2020

The examples have been grouped by type of indicator (quantitative, qualitative, and process) and by theme or project.



3.1 QUANTITATIVE INDICATORS

As discussed above, quantitative indicators present objective information about the real world, and are expressed as numbers. Examples of the quantitative indicators used to analyse VET are shown below. These indicators relate to the E&E 2020 (Commission of the European Communities, 2011), the ETF's Torino Process project for the assessment of VET systems in partner countries (ETF, 2012), and the EQAVET framework for VET quality assurance (European Commission, 2012).

A. E&E 2020: Employment and education targets set by the EU for 2020 (selected objectives)

Indicator A1: Employment rate by sex, age group 15–64	
Definition	The total employment rate is usually calculated by dividing the number of persons in the 15–64 years age group in employment by the total population in the same age group.
Data required	Total number of people in the population aged 15–64 years (typically); number of people who are employed in the same age group. This indicator is usually disaggregated by sex and age.
Formula	$\frac{\text{employed population 15–64 years old}}{\text{population 15–64 years old}} * 100$
Sources	Labour force surveys

Indicator A2: Gross domestic expenditure on research, development and innovation as % of GDP	
Definition	According to the Frascati Manual (§63): 'Research and experimental development comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications'. Research and development is an activity where there are significant transfers of resources between units, organisations and sectors and where it is important to trace the flow of funds.
Data required	Gross domestic expenditure disaggregated, total gross domestic expenditure



Formula	$\frac{\textit{expenditure on R+D+I}}{\textit{total GDP}} * 100$
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Sources	National statistics offices
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Indicator A3: Early school leaving rate

Definition	The EU defines early school leavers as people aged 18–24 years who have lower secondary education or less and are no longer in education or training. Thus, early school leavers are people who have only achieved pre-primary, primary, lower secondary or a short upper secondary education of less than two years. The indicator is based on the share of the population aged 18–24 years with lower secondary education at most who are no longer in education or training. (> ISCED).
-------------------	--

Data required	Population aged 18–24 years with lower secondary education or less who are no longer in education or training; population aged 18–24 years.
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Formula	$\frac{\textit{early school leavers}}{\textit{total population 18–24}} * 100$
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Sources	UIS
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Indicator A4: Educational attainment of 30–34 year olds

Definition	Educational attainment refers to the highest educational level achieved by individuals expressed as a percentage of all persons in that age group. In this example, the level under study is tertiary education. This indicator is commonly disaggregated by age and sex (> ISCED)
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Data required	Population and educational attainment data by age groups
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Formula	$\frac{\textit{population 30–34 years old with tertiary education}}{\textit{total population 30–34 years old}} * 100$
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Sources	UIS, national statistics offices
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Indicator A5: Participation in lifelong learning

Definition Lifelong learning is the continuous building of skills and knowledge throughout the life of an individual. In this indicator the measurement is whether the individual has participated in any training or learning activity in the four-week reference period prior to the interview. The indicator is expressed as the percentage of people aged 25–65 years who have recently participated in lifelong learning.

Data required Population aged 25–64 years participating in education and training; population aged 25–64 years

Formula
$$\frac{\text{population 25–65 years old participating in lifelong learning activities}}{\text{total population 25–65 years old}} * 100$$

Sources Labour force surveys

B. Torino Process for VET analysis

Indicator B1: Total population

Definition Total population

Data required Total population per country

Sources WB

Indicator B2: Population growth rate

Definition The population growth rate between two consecutive years (annual growth) is the percentage change from one year to the next.

Data required Total population for two consecutive years (t and t+1)

Formula
$$\frac{\text{Population } t_{+1} - \text{Population } t_t}{\text{Population } t_t} * 100$$

Sources WB, national statistics offices



Indicator B3: Proportion of dependents in the total population

Definition The ratio of dependents (people aged under 15 and over 64) to the working-age population (those in the 15–64 age group).

Related indicators/definitions

Age dependency ratio, old: The ratio of older dependents (aged over 64) to the working-age population (those aged 15–64).

Age dependency ratio, young: The ratio of younger dependents (aged under 15) to the working-age population (those aged 15–64).

Data required Total population by age group (0–14; 15–64; 65+)

Formula
$$\frac{\text{dependents (0–14 and 65+)}}{\text{working age population (15–64)}} * 100$$

Sources WB

Indicator B4: Proportion of 15–24 year-olds in the total population

Definition Number of people aged 15–24 expressed as a percentage of the total population

Data required Total population; population aged 15–24

Formula
$$\frac{\text{population aged 15–24 years}}{\text{total population}} * 100$$

Sources UNDP, national statistics offices

Indicator B5: Net migration

Definition The difference between the number of migrants (including both citizens and non-citizens) entering and leaving a state in a specified period, also called the migratory balance. The balance is called net immigration when arrivals exceed departures and net emigration is when departures exceed arrivals.

Related indicators/definitions



Migrant flow: The number of migrants counted as moving (or being authorised to move) from or to a given location in a specific period.

Migrant stock: The number of migrants residing in a country at a particular time

Data required	Number of immigrants who arrived in a given territory during the specified period; number of emigrants leaving a given territory during the specified period.
Formula	<i>number of immigrants – number of emigrants</i>
Sources	WB

Indicator B6: Educational attainment

Definition > see E&E 2020 (3.1.A)

Indicator B7: Educational attainment of population by urban/rural

Definition > see E&E 2020 (3.1.A)

Indicator B8: Literacy rate

Definition The percentage of the population in a given age bracket who can both read and write, with understanding, a short simple statement on their everyday life. Generally, literacy also encompasses numeracy, which is the ability to make simple arithmetic calculations. The illiteracy rate is the percentage of the population in a given age bracket who cannot read or write, with understanding, a short simple statement on their everyday life.

Data required	Population; number of literate persons by age bracket
Formula	$\frac{\text{population in a given age bracket who can read and write}}{\text{total population in the same age bracket}} * 100$
Sources	UIS



Indicator B9: GDP annual growth rate

Definition	Annual percentage growth rate of GDP at market prices based on constant local currency.
Data required	GDP at market prices based on constant local currency for two consecutive years (years t and t+1).
Formula	$\frac{GDP_{t+1} - GDP_{t_1}}{GDP_{t_1}} * 100$
Sources	WB

Indicator B10: GDP per capita (PPP, current international dollar)

Definition Gross domestic product (GDP) per capita based on PPP. GDP per capita is the market value of all final goods and services produced within a country in a given period of time, divided by the total population of that country. PPP GDP is gross domestic product converted to international dollars using PPP rates. An international dollar has the same purchasing power over GDP as the US dollar has in the USA.

Related indicators/definitions

GDP at purchaser's prices: The sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current US dollars.

Purchasing Power Parity (PPP): An exchange rate calculated by comparing the cost of a common basket of commodities in every country and expressing them in an artificial common currency (purchasing power standard) that equalises the purchasing power of different national currencies. PPP is both a currency converter and a price deflator; as it eliminates the differences in price levels between countries.

Data required	GDP per capita at market price PPP; total population
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Formula	$\frac{GDP \text{ per capita (PPP, current international dollar)}}{total \text{ population}} * 100$
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Sources	WB
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Indicator B11: Changes in employment by detailed economic sector

Definition	Annual change in employment by sector (> NACE)
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Data required	Total number of people employed, aged 15–64, by economic sector for two consecutive years
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Formula	$total \text{ employment in agriculture } t_{+1} - \text{employment in agriculture } t_1$
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Sources	National statistics offices
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Indicator B12: Changes in employment by occupational field

Definition	Annual change in employment by occupation (> ISCO)
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Data required	Total number of people employed, aged 15–64, by occupation
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Formula	$total \text{ managers } t_{+1} - total \text{ managers } t_1$
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Sources	National statistics offices
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Indicator B13: Enterprise start-up rate

Definition	New enterprises (created within the last year) expressed as a proportion of all enterprises
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Data required	Total number of enterprises and number of new enterprises in a given territory and year
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Formula	$\frac{\text{number of new enterprises}}{\text{stock of all existing enterprises}}$
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Sources	OECD
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Indicator B14: Proportion of microenterprises and small companies among active businesses

Definition	The definitions of microenterprises and small companies vary from country to country, so the current national definition should be provided. The European Commission defines a microenterprise as a company with fewer than 10 employees and small enterprises as companies with fewer than 50 employees. This indicator reflects the proportion of microenterprises and small companies among active businesses.
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Data required	Number of microenterprises and small companies; number of active businesses
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Formula	$\frac{\text{microenterprises} + \text{small companies}}{\text{active businesses}} * 100$
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Sources	National statistics offices
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Indicator B15: Activity rate

Definition	A country's labour force comprises employed people (those who in the short past have worked for pay, profit or family gain) and unemployed people (those who had in the short past actively looked for a job or start an enterprise). Labour force does not include inactive population (those who are studying, retired, engaged in family duties, or other economically inactive). The activity rate (labour force participation rate) represents the labour force as a percentage of the working-age population (typically 15–64 years).
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Data required	Number of people aged 15–64 years (typically); number of employed and unemployed people in the same age group
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Formula	$\frac{\text{labour force 15–64 years old (employed + unemployed)}}{\text{population 15–64 years old}} * 100$
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Sources	Labour force surveys
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Indicator B16: Employment rate

Definition > see E&E 2020 (3.1.A)

Indicator B17: Unemployment rate

Definition The total unemployment rate reflects the number of unemployed persons aged 15 and over as a percentage of the labour force (see Activity rate for a definition of labour force).

Related indicators/definitions

Youth unemployment rate: Unemployed persons aged 15–24 years as a percentage of those aged 15–24 years who are part of the labour force

Data required Total labour force (employed and unemployed) aged 15–64 years (typically); number of unemployed people in the labour force in the same age group.

Formula
$$\frac{\text{unemployed population 15–64 years old}}{\text{labour force 15–64 years old (employed + unemployed)}} * 100$$

Sources Labour force surveys

Indicator B18: Changes in employment by status and sex

Definition The status in employment of an economically active person with respect to his or her employment, that is, the type of explicit or implicit contract of employment that the person has in his/her job. (>ICSE-93)

Data required Population by status in employment and sex for two years (t and t+1)

Formula
$$\sum \text{employment status person}_j \text{ at } t_{+1} - \text{employment status person}_j \text{ at } t_1$$

Sources Labour force surveys



Indicator B19: Public employment as a share of total employment

Definition Number of persons employed in the public sector as a percentage of all employed persons

Related indicators/definitions

Total public sector employment: All employment in the general government sector as defined in the US System of National Accounts 1993 plus employment by publicly owned enterprises and companies resident and operating at central, state or regional and local levels of government. The term encompasses all persons directly employed by such institutions, without regard to the particular type of employment contract.

Data required Number of people employed (total); number of people employed in the public sector

Formula
$$\frac{\text{population employed in public sector}}{\text{total population employed}} * 100$$

Sources Labour force surveys

Indicator B20: Participation in lifelong learning

Definition > see E&E 2020 (3.1.A)

Indicator B21: Active labour market programmes

Definition ALMPs include all social expenditure (other than education) aimed at improving the beneficiaries' prospects of finding gainful employment or otherwise increasing their earning capacity. This category includes spending on public employment services and administration, labour market training, special programmes for youth in transition from school to work, labour market programmes that provide or promote employment for the unemployed and other persons (excluding young people and people with disabilities) and special programmes for people with a disability. It can be expressed as a percentage of GDP.

Data required Social expenditure on ALMPs



Formula	$\frac{\text{social expenditure on ALMPs}}{\text{GDP}} * 100$
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Sources	National statistics offices
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Indicator B22: Registered unemployed involved in active labour market programmes

Definition	Number of registered unemployed persons involved in active labour market programmes, expressed as percentage of the total population of registered unemployed.
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Related indicators/definitions

Registered unemployed: Persons aged 15 and over who are registered with the official employment agency and are seeking temporary or permanent work. They must have the right to work, be available for work, be capable of working, and be without gainful employment on the day of the unemployment count.

Data required	Total number of registered unemployed people; number of registered unemployed people involved in ALMPs.
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Formula	$\frac{\text{registered unemployed involved in ALMPs}}{\text{total registered unemployed population}} * 100$
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Sources	Labour force surveys
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Indicator B23: Percentage of VET students who continue to higher levels of education

Definition	Number of VET students who in a referent period have continued to higher levels of education. Putting another way, it is the number in higher education in a referent period who have come from VET. It can be expressed as a percentage of the total number of VET students (> ISCED)
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Data required	Total number of VET students in a referent period; number of VET students who have continued to higher levels of education in the same referent period
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Formula	$\frac{\text{higher education students coming from VET in } t}{\text{total population of VET students in } t-1} * 100$
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Sources	UIS
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Indicator B24: Early school leaving rate

Definition	> see E&E 2020 (3.1.A)
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Indicator B25: Proportion of young people not in employment, education or training

Definition	Number of people aged 15–24 years not in employment, education or training as a percentage of the total number of people in the same age bracket
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Data required	Population aged 15–24 years; number of people aged 15–24 years not in employment, education or training
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Formula	$\frac{\text{population 15–24 years not in employment, education or training}}{\text{total population 15–24 years old}} * 100$
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Sources	Labour force surveys
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Indicator B26: Poverty headcount ratio

Definition	This ratio refers to the percentage of the population living on less than USD 1.25 or USD 2.00 a day at 2005 international prices
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Data required	Total population; population living on less than USD 1.25 or USD 2.00 a day at 2005 international prices
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Formula	$\frac{\text{population living on less than USD 1.25 a day}}{\text{total population}} * 100$
----------------	--

Sources	WB
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Indicator B27: At-risk-of-poverty rate

Definition This rate refers to the proportion of people with an equivalised disposable income (EDI) below the at-risk-of-poverty threshold, which is set at 60% of the national median equivalised disposable income after social transfers).

Related indicators/definitions

Equivalised disposable income: The household's total income, after tax and other deductions, divided by the household's equivalised size, a concept that takes account of both the size and composition of the household. The equivalised size of a household is calculated by equalising (making equivalent) its members by weighting each one according to the modified OECD equivalence scale. Weights in this scale are assigned as follows: 1.0 to the first adult, 0.5 to any other household member aged 14 and over, and 0.3 to each child under 14.

Data required Total population; population with an EDI below the at-risk-of-poverty threshold.

Formula
$$\frac{\text{population with an EDI under 60\% of national median EDI}}{\text{total population}} * 100$$

Sources WB

Indicator B28: Gini coefficient

Definition This Gini coefficient measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A value of 0 indicates total equality and a value of 1 (sometimes expressed as 100 on the percentile scale) indicates maximal inequality.

Data required Gini index

Formula Complex formula, see WB

Sources WB



Indicator B29: First-job-seeker rate

Definition Unemployed persons aged 15+ who are looking for work for the first time, as a percentage of unemployed persons aged 15+.

Data required Unemployed population aged 15+; first-job-seeker population aged 15+

Formula
$$\frac{\text{unemployed aged 15 years or over seeking first job}}{\text{total unemployed aged 15 years or over}} * 100$$

Sources Labour force surveys

Indicator B30: Long-term unemployed as a share of the total unemployed

Definition Unemployed persons aged 15+ who are long-term unemployed as a percentage of unemployed persons aged 15+

Related indicators/definitions

Long-term unemployed: People who have been unemployed for 12 months or more

Data required Unemployed population aged 15+; long-term unemployed population aged 15+

Formula
$$\frac{\text{unemployed aged 15 years or over seeking first job}}{\text{total unemployed aged 15 years or over}} * 100$$

Sources Labour force surveys

Indicator B31: Percentage of vet students

Definition Number of students enrolled in VET as a percentage of the total number of students enrolled in the corresponding education levels. (> ISCED)

Data required Total number of students enrolled in a given education level; number of students enrolled in VET programmes at the same education level

Formula
$$\frac{\text{students in VET in ISCED 3}}{\text{total students in ISCED 3}} * 100$$

Sources UIS



Indicator B32: Participation in VET by field of study

Definition Number of students enrolled in VET programmes in a concrete field of study as a percentage of the total number of students enrolled in the same field of study (> ISCED)

Data required Total number of students enrolled in VET broken down by field of study; total number of students broken down by field of study

Formula
$$\frac{\text{students in VET in ISCED } x}{\text{total students in ISCED } x} * 100$$

Sources UIS

Indicator B33: Dropout rate

Definition Proportion of pupils from a cohort enrolled in a given level in a given school year who are no longer enrolled in the following year (with the exception of graduates). (> ISCED)

Data required Enrolment by level for school year t and enrolment and number of repeaters by level for year t+1

Formula
$$\frac{\text{students born in 1998-99 who were enrolled in grade 8 in 2012-13 and are no longer enrolled in grade 8 or 9 in 2013-14}}{\text{students born in 1998-99 enrolled in grade 8 in 2012}} * 100$$

Sources UIS



Indicator B34: Student-teacher ratio

Definition Average number of students per teacher at a specific level in a given school year. The indicator should consider whether teachers are full or part-time (> ISCED)

Data required Total number of students in a specific level of education in a given school year; total number of teachers in the same level of education in the same school year

Formula
$$\frac{\text{total number of students at ISCED 3 in 2012-13}}{\text{total number of teachers at ISCED 3 in 2012-13}} * 100$$

Sources UIS

Indicator B35: Training of trainers

Definition The training of trainers concept encompasses the theoretical and practical training of teachers and trainers. It relates to the training of professional teachers and trainers and of professionals whose job involves working with trainees (occasional teachers or trainers). It covers a wide range of skills, which include the following: knowledge specific to the field in question (general, technical or scientific); educational, psychological and sociological skills; management skills; familiarity with the world of work; and knowledge of training schemes and the target audience. Training of trainers covers the content, design, organisation and implementation of training activities, that is, it deals with all aspects of the task of imparting knowledge, know-how and skills.

The indicator should measure the number of teachers who have received teacher training in the last year as a proportion of all teachers.

Data required The number of teachers who have received training in the last year; the total number of teachers in the population under study

Formula
$$\frac{\text{number of teachers who received training}}{\text{total number of teachers}} * 100$$

Sources National statistics offices



Indicator B36: Public expenditure on VET by level

Definition Public expenditure on VET by level for national education levels that include VET programmes. This indicator can be defined in several ways as follows: expenditure as a proportion of GDP; expenditure as a proportion of total government expenditure; or expenditure as a proportion of total public expenditure on education. (> ISCED)

Related indicators:

Public expenditure on general education by level.

Data required Public expenditure on VET by level; GDP; total government expenditure.

Formula
$$\frac{\text{public expenditure on VET at ISCED 3}}{\text{GDP}} * 100$$

Sources UIS, national statistics offices

Indicator B37: Cost per pupil in VET and general education

Definition Expenditure on VET and on general education divided by the number of pupils enrolled in each case. It can be broken by level of study (> ISCED)

Data required Educational expenditure on VET and on general education; number of pupils enrolled in VET and in general education courses

Formula
$$\frac{\text{public expenditure on VET at ISCED 3}}{\text{students enrolled in VET at ISCED 3}} * 100$$

Sources UIS



Indicator B38: Cost of continuing vocational training and adult learning

Definition Continuing vocational training is training that takes place after initial education and/or entry into working life which aims to help people to improve or update their knowledge and skills or to acquire new ones.

Data required Public expenditure on vocational training and adult learning

Formula
$$+ \frac{\text{cost of vocational training after initial education in year } t}{\text{cost of vocational training during working life in year } t}$$

Sources National statistics offices

Indicator B39: Human development index

Definition The Human Development Index (HDI) is a composite measure of human development. It measures the average achievements in a country in terms of three basic dimensions of human development: life expectancy, literacy and education, and standard of living. The HDI is the geometric mean of normalised indices measuring achievements in each dimension.

Data required The Human Development Index

Formula Complex formula, see UNDP

Sources UNDP



C. Quality in VET (selected indicators from the EU's eqavet project)

Indicator C1: Quality assurance implementation

Definition	Share of providers applying internal quality assurance systems defined by law/at own initiative
Data required	Data about VET providers with information about whether or not they apply quality assurance systems
Formula	$\frac{\text{VET providers applying internal quality assurance systems}}{\text{Total VET providers}} * 100$
Sources	

Indicator C2: Training of trainers

Definition	> see the Torino Process (3.2.B)
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Indicator C3: Investment in training of teachers and trainers

Definition	Investment in training of teachers and trainers in VET
Data required	Data about investment in training activities of teachers by programme and educational level. (> ISCED)
Formula	$\text{total investment on teachers training from VET}$
Sources	WB



Indicator C4: Destination of VET learners

Definition	Proportion of those completing a given VET programme who are employed at a designated point in time after completion of training, according to the type of programme completed and individual criteria
Data required	Data about transition from education to labour market by education programme and individual criteria.(> ISCED)
Formula	$\frac{\text{number of learners who completed a VET programme and are employed}}{\text{total number of people who completed a VET programme}} * 100$
Sources	

3.2 QUALITATIVE INDICATORS

Qualitative indicators provide information about the quality of the phenomenon described. Although the results of most qualitative indicators are written descriptions, this manual only considers qualitative indicators expressed as numbers. We provide examples of measurable qualitative indicators from E&E 2020, the Torino Process and the EU EQAVET project.

A. E&E 2020: Employment and education targets as set by the EU by 2020 (selected objectives)

Indicator A6: Percentage of pupils with poor reading literacy (level 1 or below in PISA)

Definition	The Programme for International Student Assessment (PISA) is a worldwide study that evaluates education systems by assessing to what extent students nearing the end of compulsory education have acquired the knowledge and skills essential for full participation in society. The study is repeated every three years. PISA tests the students' general competence in reading, mathematical and scientific literacy in terms of the important knowledge and skills needed in adult life rather than how well they have mastered a specific school curriculum. In PISA, reading literacy is defined as the ability to understand, use and reflect on written texts in order to achieve one's goals, to develop one's knowledge and potential and to participate effectively in society. PISA level 1 or below means that the pupils are not likely to demonstrate success in the most basic type of reading that PISA seeks to measure. Such students have serious difficulties in using reading literacy as an effective tool to advance and extend their knowledge and skills in other areas. (> ISCED)
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Data required	Information on reading, mathematical and scientific literacy (PISA level)
Formula	$\frac{\text{number of students with PISA literacy of 1 or below}}{\text{total number students participating in PISA literacy}} * 100$
Sources	PISA

B. Torino Process for VET analysis

Indicator B40: PISA literacy

Definition	> see E&E 2020 (3.2.A)
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Indicator B41: PIRLS

Definition	Progress in International Reading Literacy (PIRLS) focuses on the achievement of young children in their fourth year of schooling as well as their experiences at home and at school with learning to read. PIRLS defines reading literacy as the ability to understand and use the written language forms required by society and/or valued by the individual. (> ISCED)
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Data required	Achievement in PIRLS
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Sources	International Association for the Evaluation of the Educational Achievement (IEA)
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Indicator B42: TIMSS

Definition	This study, carried out every four years at the fourth and eighth grades, provides data on trends in mathematics and science achievement over time. (> ISCED)
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Data required	Achievement in TIMSS
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Sources	IEA
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Indicator B43: Corruption Perceptions Index

Definition The 2010 Corruption Perceptions Index (CPI) measures the degree to which public sector corruption is perceived to exist in 178 countries around the world. It scores countries on a scale from 10 (very clean) to 0 (highly corrupt).

Data required The Corruption Perceptions Index

Sources Transparency International

Indicator B44: Index of Economic Freedom

Definition The Index of Economic Freedom (IEF) measures ten equally-weighted components of economic freedom, assigning a grade in each ranging from 0 to 100, where 100 represents maximum freedom. The ten component scores are then averaged to give an overall economic freedom score for each country.

Data required Index of Economic Freedom

Sources Heritage Foundation

Indicator B45: Multidimensional Poverty Index

Definition The Multidimensional Poverty Index (MPI) identifies multiple deprivations in health, education and living standards at the individual level. It uses microdata from household surveys, and all the indicators used to construct the measure come from the same survey.

Data required Multidimensional Poverty Index

Sources UNDP



IndicatorB46: Population in poverty

Definition	Percentage of the population that suffers deprivation in at least three of ten weighted indicators used to construct the MPI
Data required	Multidimensional Poverty Index
Sources	UNDP

Indicator B47: Economic freedom of the arab world

Definition	The Economic Freedom of the Arab World report is an initiative that measures economic freedom in the Arab world and examines how free enterprise is lifting individuals and families in the Arab world out of poverty.
Data required	Economic Freedom of the Arab World report
Sources	Fraser Institute

Indicator B48: Bertelsmann Transformation Index

Definition	The Bertelsmann Transformation Index (BTI), which provides the framework for an exchange of best practices among agents of reform, publishes two rankings, the Status Index and the Management Index. Both are based on in-depth assessments of 128 countries. A total of 17 criteria covering the democracy, market economy and political management dimensions are reflected in 52 specific questions. BTI countries are selected according to the following criteria: they have yet to achieve a fully consolidated democracy and market economy and they have a population of over two million.
Data required	Bertelsmann Transformation Index
Sources	Bertelsmann Stiftung



Indicator B49: Ease of Doing Business

Definition Economies are ranked on the ease of doing business in the country. A high ranking in this index means that the country's regulatory environment is more conducive to the start-up and operation of a local company. This index averages the country's percentile rankings on ten equally-weighted topics, made up of a variety of indicators. The rankings for all economies are benchmarked to June 2012 (for 2013 data).

Data required Ease of Doing Business ranking

Sources WB

Indicator B50: Competitiveness Index

Definition The World Economic Forum Competitiveness Index, scored between 1 (uncompetitive) and 7 (highly competitive), reflects the microeconomic and macroeconomic foundations of national competitiveness. Competitiveness is defined as the set of institutions, policies, and factors that determine the level of productivity of a country.

Data required Competitiveness Index

Sources World Economic Forum

C. Quality in VET indicator from the EU's eqavet project

Indicator C5: Utilisation of acquired skills at the work place

Definition Percentage of employers of a given sector who are satisfied to find VET programme completers with relevant qualifications and competences required for the work place (> ISCED)

Data required Data about utilisation of acquired skills at the work place

Formula
$$\frac{\text{employers satisfied with program completers' skills and competences}}{\text{total employers}} * 100$$

Sources



3.3 PROCESS INDICATORS: ENTREPRENEURIAL LEARNING

Process indicators can be used to identify gaps in a particular field by comparing the actual values of the process indicators to pre-defined targets or standards. The ETF has developed indicators to evaluate entrepreneurship development in partner countries. Evaluation of these indicators is based on self-assessment, with five measurement levels ranging from 1 to 5; each level corresponds to a statement describing a specific element that must be in place. The following tables present indicators for each of the six areas related to the assessment of the existing policy framework and those used to assess entrepreneurship training in lower secondary education.

A. Policy framework for entrepreneurial learning

Indicator 1	Policy partnership
Rationale	<i>Efficiency and effectiveness in lifelong entrepreneurial learning requires policy coherence between the stakeholders involved.</i>
Objective	<i>Government, private sector and civic-interest groups work in partnership to develop lifelong entrepreneurial learning.</i>
Level 1	There is no structured cooperation between public, private and non-governmental sectors on entrepreneurial learning.
Level 2	An national dialogue is underway with a view to structuring cooperation between public, private and non-governmental sectors on entrepreneurial learning.
Level 3	A national entrepreneurial learning partnership has been established between public, private and non-governmental sectors to promote entrepreneurial learning.
Level 4	State funds ensure the sustainable contribution of an entrepreneurial learning partnership to national developments (e.g. administrative support, work plan, capacity development).
Level 5	An entrepreneurial learning partnership advises on a range of national strategies (education, employment, SME, R&D) and action plans.



Indicator 2	Policy elaboration process
Rationale	<i>A range of complementary and interdependent policy instruments are required to sequence entrepreneurial learning across the education and training system.</i>
Objective	<i>Each pre-accession country establishes entrepreneurial learning policy instruments for curriculum, training of teachers/trainers, and school governance.</i>
Level 1	No evidence of clearly identifiable or articulated policy guidance on entrepreneurial learning is available for the education and training sector.
Level 2	Entrepreneurial learning is recognised as a developing feature in education and training policy instruments.
Level 3	Policy instruments specific to each level of the education and training system clearly identify entrepreneurial learning as a priority development area with due reference to curriculum, teacher/trainer training and school governance.
Level 4	Entrepreneurial learning policy linkages are clearly articulated with SME, employment, and R&D policy documents.
Level 5	National economic development plan includes a specific chapter on lifelong entrepreneurial learning detailing specific and complementary objectives for each part of the entrepreneurial learning framework.

Indicator 3	Policy support resources
Rationale	<i>Effective implementation of EU policy in the area of entrepreneurial learning requires financial commitment for all developments.</i>
Objective	<i>National authorities provide financial support for the implementation of policies supporting lifelong entrepreneurial learning.</i>
Level 1	There is no systematic allocation of financial resources to support entrepreneurial learning policy implementation.
Level 2	Pilot project funding (public and/or private) is available for developing entrepreneurial learning (e.g. teacher training, teaching materials).
Level 3	Dialogue is ongoing between state authorities, private sector and philanthropic actors on coordinated financial support for systemic lifelong entrepreneurial learning.



Level 4	National funds are allocated to the development of entrepreneurial learning in the educational system and detailed in the annual education budget.
Level 5	Financial allocation for entrepreneurial learning is clearly identifiable in the national education budget. National entrepreneurial learning developments include financial commitment from public-private partnerships.
Indicator 4	Monitoring and evaluation
Rationale	<i>Lifelong entrepreneurial policy and activities are more effective when they are systematically monitored and evaluated.</i>
Objective	<i>Each country establishes a policy monitoring and evaluation framework for lifelong entrepreneurial learning.</i>
Level 1	There is no system in place to monitor and evaluate entrepreneurial learning activities.
Level 2	Baseline data is being collected on entrepreneurial learning projects and is recorded on a national database.
Level 3	There is documented evidence of evaluation of entrepreneurial learning activity at each level of the education system.
Level 4	An annual report is published and made available online. This document details key developments in entrepreneurial learning in the country, including lessons learnt and good practice identified.
Level 5	Recommendations arising from the monitoring and evaluation of entrepreneurial learning are integrated into further policy reforms and action plans.



Indicator 5	Good practice exchange
Rationale	<i>Sharing of good practice contributes to better efficiency in the design and delivery of entrepreneurial learning.</i>
Objective	<i>Each pre-accession country identifies and builds on its entrepreneurial practice disseminating good practice nationally, regionally and beyond</i>
Level 1	There is no systematic exchange of good practice between lifelong entrepreneurial learning providers.
Level 2	A national network of lifelong entrepreneurial learning providers meets on a regular basis to exchange good practice.
Level 3	Examples of adapted entrepreneurial learning good practice (domestic and/or international) are being piloted in the country.
Level 4	Results of domestic good practice are being disseminated nationally (at least one annual event).
Level 5	Within the reporting period, at least one domestic good practice has been transferred to another education and training environment in a neighbouring country, European Union or beyond.

Indicator 6	Non-formal learning
Rationale	<i>Flexible learning opportunities outside formal education reinforce efforts to develop an entrepreneurial society.</i>
Objective	<i>Awareness and engagement of all parts of society in the promotion of entrepreneurial learning</i>
Level 1	Examples of actions to promote non-formal entrepreneurial learning (privately and/or publicly supported).
Level 2	A working group monitors non-formal entrepreneurial learning as part of a national lifelong entrepreneurial learning strategy; it also advises on improvements.
Level 3	Examples exist of agreements established between public authorities, enterprise, community groups or philanthropic organisations to develop entrepreneurial spirit and skills across society, with particular reference to children and young people.



Level 4	At least one annual, high-profile event at national level promotes awareness and information on broader entrepreneurial learning (formal and non-formal) and showcases successful projects. A high-profile event includes national recognition or awards for entrepreneurial learning practice.
Level 5	The transfer of know-how, principles or practice from at least two of the non-formal showcase projects in the previous year's high-profile event are integrated into other entrepreneurial learning environments national or internationally.

B. Entrepreneurial learning in lower secondary education (ISCED 2)

Indicator 7	Organisation
Rationale	<i>Early education plays a critical role in shaping the entrepreneurial character.</i>
Objective	<i>Each pre-accession country establishes a regulatory framework for the systematic promotion of entrepreneurship as a key competence.</i>
Level 1	In lower secondary schools, a traditional teaching and learning environment prevails that offers little or no scope for flexible teaching and learning arrangements conducive to promoting entrepreneurship as a key competence (e.g. opportunity identification, initiative, creativity, innovation and risk-taking by pupils).
Level 2	Evidence exists within lower secondary schools of more flexible teaching and learning arrangements that are conducive to promoting entrepreneurship as a key competence (e.g. opportunity identification, initiative, creativity, innovation and risk taking by pupils). Evidence in some lower secondary schools of school cooperation with local communities and enterprises is reported in baseline data (monitoring and evaluation sub-indicator).



Level 3	At least 5% of lower secondary schools are engaged in flexible teaching and learning arrangements conducive to promoting entrepreneurship as a key competence (e.g. opportunity identification, initiative, creativity, innovation and risk taking by pupils). This includes direct cooperation between schools, local communities and local enterprises. Evidence for this level will be drawn from schools' Annual Reports (Monitoring and evaluation sub-indicator).
Level 4	A regulatory framework is in place which provides for flexible teaching and learning arrangements that promote entrepreneurship as a key competence (e.g. opportunity identification, initiative, creativity, innovation, and risk taking by pupils) in lower secondary schools. This includes cooperation between lower secondary schools, local communities and local enterprises.
Level 5	At least 50% of lower secondary schools meet the regulatory framework criteria for flexible teaching and learning arrangements that promote entrepreneurship as a key competence (e.g. opportunity identification, initiative, creativity, innovation, and risk taking by pupils). This includes direct cooperation between the schools, local communities and local enterprises. Evidence for this level will be drawn from schools' Annual Reports (Monitoring and evaluation sub-indicator).

Indicator 8	Entrepreneurship as a key competence
Rationale	<i>Promotion of entrepreneurship as a key competence contributes to the entrepreneurial mindset of young people.</i>
Objective	<i>Entrepreneurship is introduced as a key competence into the national curriculum of each pre-accession country.</i>
Level 1	Entrepreneurial learning in lower secondary education is confined to ad-hoc projects which are not part of mainstream education curricula.
Level 2	Entrepreneurial learning in lower secondary education is confined to school-based individual initiatives which are known to the education authorities.
Level 3	Entrepreneurial learning in lower secondary education comprises entrepreneurship key competence provisions as an integral feature of the national curriculum.



Level 4	Entrepreneurial learning in lower secondary education complies with the entrepreneurship key competence provisions of the national curriculum and is included in the teaching plans of at least 25% of lower secondary schools. Evidence for this level will be drawn from schools' Annual Reports (Monitoring and evaluation sub-indicator).
Level 5	Entrepreneurial learning in lower secondary education complies with the entrepreneurship key competence provisions of the national curriculum and is included in the teaching plans of at least 50% of lower secondary schools. Evidence for this level will be drawn from schools' Annual Reports (Monitoring and evaluation sub-indicator).
Indicator 9 Learning environment	
Rationale	<i>Effective entrepreneurial learning depends on trained teaching staff, appropriate teaching materials, and school-enterprise cooperation.</i>
Objective	<i>Each pre-accession country ensures teacher training for entrepreneurship, the availability of teaching materials, and school-enterprise cooperation arrangements.</i>
Level 1	No evidence exists of entrepreneurial learning materials, staff expertise or partnerships with local enterprise communities.
Level 2	There is evidence of development of entrepreneurial learning: a) teaching materials; b) teacher training which includes entrepreneurship as a key competence; and c) school-enterprise cooperation agreements.
Level 3	At least 5% of lower secondary schools have: a) entrepreneurial learning teaching material; b) staff knowledge and skills for teaching entrepreneurship as a key competence; and c) school-enterprise cooperation agreements.
Level 4	At least 25% of lower secondary schools have: a) entrepreneurial learning teaching material; b) staff knowledge and skills for teaching entrepreneurship as a key competence; and c) school-enterprise cooperation agreements.
Level 5	At least 50% of lower secondary schools have: a) entrepreneurial learning teaching material; b) staff knowledge and skills for teaching entrepreneurship as a key competence; and c) school-enterprise cooperation agreements.

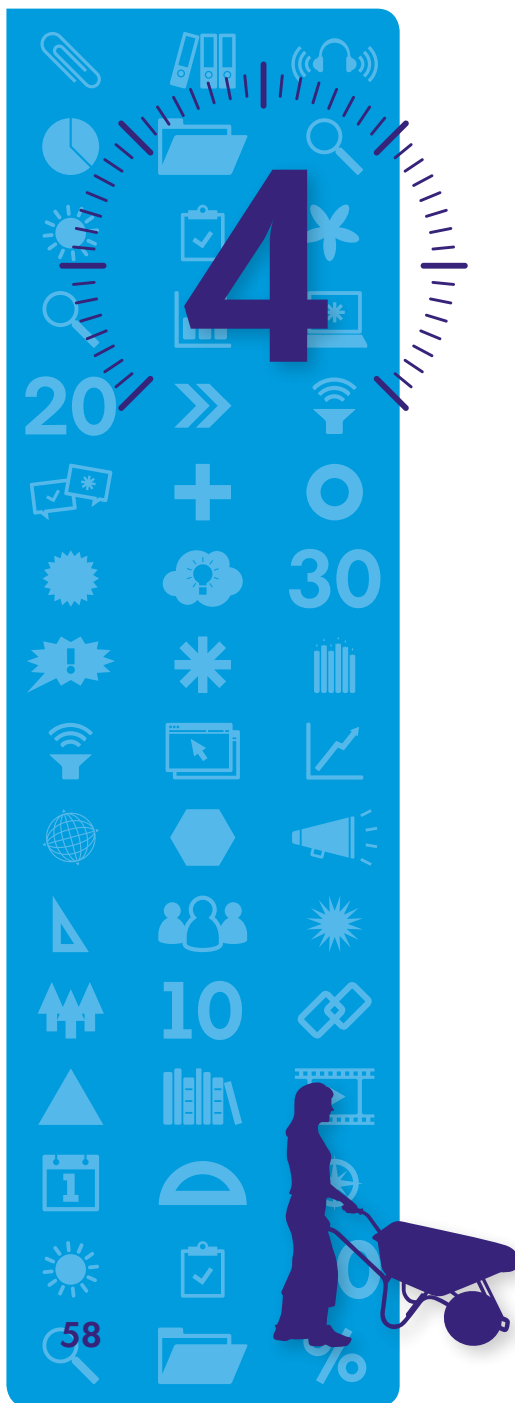


4.0 INTERNATIONAL CLASSIFICATIONS

International classifications are of paramount importance since only data structured according to the same classification schemes can be used in a cross-country analysis. The most widely used classifications in the areas of education and the labour are listed below.

For education, the current International Standard Classification of Education (ISCED 2011) is shown and compared to the earlier ISCED-97. ISCED 2011 will be implemented with effect from 2014.

The other classifications listed below are the Statistical Classification of Economic Activities in the EU, the International Standard Classification of Occupations and the International Classification by Status in Employment.



4.1 ISCED (UNESCO)

A. SCED-2011 General classification and correspondance with ISCED 1997

ISCED 1997	ISCED 2011		
Level	Level	Name	Programmes
–	ISCED 01	Early childhood educational development	
ISCED 0	ISCED 02	Pre-primary	
ISCED 1	ISCED 1	Primary	
ISCED 2	ISCED 2	Lower secondary	24 general 25 vocational
ISCED 3	ISCED 3*	Upper secondary	34 general 35 vocational
ISCED 4	ISCED 4*	Post-secondary non-tertiary	44 general 45 vocational
ISCED 5	ISCED 5	Short-cycle tertiary	54 general 55 vocational
	ISCED 6	Bachelor or equivalent	
	ISCED 7	Master or equivalent	
ISCED 6	ISCED 8	Doctoral or equivalent	

* Content of category slightly changed



B. Education levels

Early childhood education (ISCED 0)

Programmes at ISCED level 0, or 'early childhood education', are typically designed with a holistic approach to support children's early cognitive, physical, social and emotional development and introduce young children to organised instruction outside of the family context. ISCED level 0 refers to those early childhood programmes that have an intentional education component. These programmes aim to develop the socioemotional skills necessary for participation in school and society, to develop some of the skills needed for academic readiness, and to prepare them for entry into primary education.

Primary (ISCED 1)

Programmes at ISCED level 1, or 'primary' education, are typically designed to provide students with fundamental skills in reading, writing and mathematics (i.e. literacy and numeracy), and to establish a sound foundation for learning and understanding of core areas of knowledge and personal and social development in preparation for lower secondary education. It focuses on learning at a basic level of complexity with little if any specialisation.

Lower secondary (ISCED 2)

Programmes at ISCED level 2, or 'lower secondary' education, are typically designed to build upon the learning outcomes from ISCED level 1. Usually, the educational aim is to lay the foundation for lifelong learning and human development on which education systems may systematically expand further educational opportunities. Some education systems may already offer vocational education programmes at ISCED level 2 to provide individuals with skills relevant to employment.

Upper secondary (ISCED LEVEL 3)

Programmes at ISCED level 3, or 'upper secondary' education, are typically designed to complete secondary education in preparation for tertiary education, or to provide skills relevant to employment, or both. Programmes at this level offer students more varied, specialised and in-depth instruction than programmes at ISCED level 2. They are more differentiated, with an increased range of options and streams available. Teachers are often highly qualified in the subjects or fields of specialisation they teach, particularly in the higher grades

Post-secondary non-tertiary (ISCED 4)

Post-secondary, non-tertiary education provides learning experiences building on secondary education and preparing for labour market entry and tertiary education. It aims at on the individual acquisition of knowledge, skills and competencies below the high level of complexity characteristic of tertiary education. Programmes at ISCED level 4 are typically designed to provide individuals who completed ISCED level 3 with the non-tertiary qualifications they require for progression to tertiary education or for employment when their ISCED level 3 qualification does not grant such access.



Short-cycle tertiary education (ISCED 5)

Tertiary education builds on secondary education, providing learning activities in specialised fields of education. It aims at learning at a high level of complexity and specialisation. Tertiary education includes what is commonly understood as academic education, but is broader than that because it also includes advanced vocational or professional education. Programmes at ISCED level 5, or 'short-cycle tertiary' education, are often designed to provide participants with professional knowledge, skills and competencies. Typically, they are practically based, occupationally specific, and prepare students to enter the labour market. However, these programmes may also provide a pathway to other tertiary education programmes. Academic tertiary education programmes below the level of a bachelor programme or equivalent are also classified as ISCED level 5.

Bachelor or equivalent (ISCED 6)

Programmes at ISCED level 6, or 'bachelor or equivalent', are often designed to provide participants with intermediate academic and/or professional knowledge, skills and competencies, leading to a first degree or equivalent qualification. Programmes at this level are typically theoretically based but may include practical components and are informed by state of the art research and/or best professional practice. They are traditionally offered by universities and equivalent tertiary educational institutions.

Master or equivalent (ISCED 7)

Programmes at ISCED level 7, or 'master or equivalent', are often designed to provide participants with advanced academic and/or professional knowledge, skills and competencies, leading to a second degree or equivalent qualification. Programmes at this level may have a substantial research component, but do not yet lead to the award of a doctoral qualification. Typically, programmes at this level are theoretically based but may include practical components and are informed by state of the art research and/or best professional practice. They are traditionally offered by universities and other tertiary educational institutions.

Doctoral or equivalent (ISCED 8)

Programmes at ISCED level 8, or 'doctoral or equivalent', are designed primarily to lead to an advanced research qualification. Programmes at this ISCED level are devoted to advanced study and original research and typically offered only by research-oriented tertiary educational institutions such as universities. Doctoral programmes exist in both academic and professional fields.



C. Educational programmes

General education

Education mainly designed to lead participants to a deeper understanding of a subject or group of subjects, especially, but not necessarily, with a view to preparing participants for further (additional) education at the same or a higher level. Successful completion of these programmes may or may not provide the participants with a labour-market-relevant qualification at this level. These programmes are typically school-based. Programmes with a general orientation that do not focus on a particular specialisation should be classified in this category.

Vocational or technical education

Education mainly designed to lead participants to acquire the practical skills, know-how and understanding necessary for employment in a particular occupation or trade, or class of occupations or trades. Successful completion of such programmes leads to a labour-market-relevant vocational qualification recognised by the competent authorities in the country where it is obtained (e.g. ministry of education, employers' associations, etc).

D. Broad groups and fields of education

00 General Programmes

- 01 Basic programmes
- 08 Literacy and numeracy
- 09 Personal development

01 Education

- 14 Teacher training and education science

02 Humanities and arts

- 21 Arts
- 22 Humanities

03 Social sciences, business and law

- 31 Social and behavioural science
- 32 Journalism and information
- 34 Business and administration
- 38 Law



Further details:
[http://www.uis.unesco.org/
Education/Documents/
UNESCO_GC_36C-19_ISCED
EN.pdf](http://www.uis.unesco.org/Education/Documents/UNESCO_GC_36C-19_ISCED_EN.pdf)

04 Science

- 42 Life sciences
- 44 Physical sciences
- 46 Mathematics and statistics
- 48 Computing

05 Engineering, manufacturing and construction

- 52 Engineering and engineering trades
- 54 Manufacturing and processing

06 Agriculture

- 62 Agriculture, forestry and fishery
- 64 Veterinary

07 Health and welfare

- 72 Health
- 76 Social services

08 Services

- 81 Personal services
- 84 Transport services
- 85 Environmental protection
- 86 Security services

Not known or unspecified



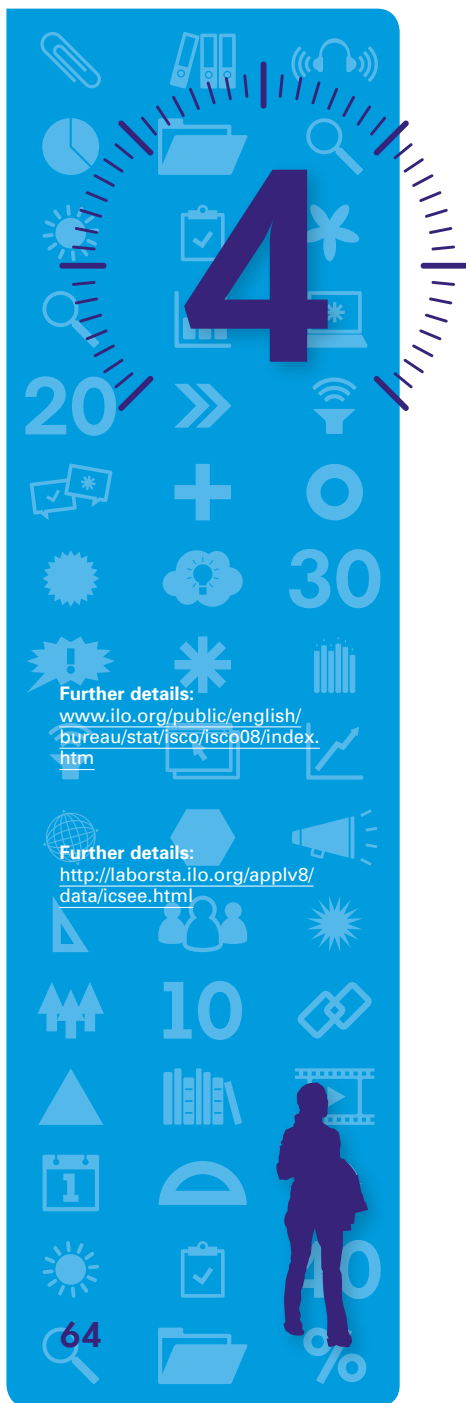
Further details:

<http://circa.europa.eu/irc/dsis/nacecpacon/info/data/en/NACE%20Rev%202%20structure%20+%20explanatory%20notes%20-%20EN.pdf>

4.2 NACE–STATISTICAL CLASSIFICATION OF ECONOMIC ACTIVITIES IN THE EU (EUROSTAT)

Broad groups and main correspondences

	NACE Rev 1.1	NACE Rev 2
Agriculture	Agriculture, hunting, forestry and fishing	Agriculture, forestry and fishing
Industry	Mining and quarrying	Mining and quarrying
	Manufacturing	Manufacturing
	Electricity, gas and water supply	Electricity, gas, steam and air-conditioning supply
		Water supply, sewerage, waste management and remediation
	Construction	Construction
Services	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	Wholesale and retail trade, repair of motor vehicles and motorcycles
	Transport, storage and communication	Transportation and storage
		Information and communication
	Hotels and restaurants	Accommodation and food service activities
	Financial intermediation	Financial and insurance activities
	Real estate, renting and business activities	Real estate activities
		Professional, scientific and technical activities
		Administrative and support service activities
	Public administration and defence; compulsory social security	Public administration and defence, compulsory social security
	Education	Education
	Health and social work	Human health and social work activities
		Arts, entertainment and recreation
	Other community, social, personal service activities	Other services
	Activities of households	Activities of households as employers; undifferentiated goods and services-producing activities of households for own use
Extraterritorial organisations and bodies	Activities of extraterritorial organisations and bodies	



4.3 ISCO–INTERNATIONAL STANDARD CLASSIFICATION OF OCCUPATIONS (ILO)

Main groups

ISCO 08 Code	Title EN
1	Managers
2	Professionals
3	Technicians and associate professionals
4	Clerical support workers
5	Service and sales workers
6	Skilled agricultural, forestry and fishery workers
7	Craft and related trades workers
8	Plant and machine operators, and assemblers
9	Elementary occupations
0	Armed forces occupations

4.4 ICSE–INTERNATIONAL CLASSIFICATION BY STATUS IN EMPLOYMENT (ILO)

ICSE–93 Groups	
1	Employees; among whom countries may need and be able to distinguish 'employees with stable contracts' (including 'regular employees')
2	Employers
3	Own-account workers
4	Members of producers' cooperatives
5	Contributing family workers
6	Workers not classifiable by status.



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WEBLINKS

<http://europa.eu/>
<http://www.etf.europa.eu/web.nsf/pages/home>
<http://www.unevoc.unesco.org/go.php>
<http://www4.unescobkk.org/education/efatraining/>

EQAVET framework for VET quality assurance:
http://ec.europa.eu/education/lifelong-learning-policy/eqavet_en.htm

Indicators

<http://www.transparency.org/>
<http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>
<http://www.heritage.org/index/default>
<http://www.doingbusiness.org/rankings>
<http://www.bti-project.de/>
<http://www.ilo.org/global/lang-en/index.htm#a2>
<http://www.ophi.org.uk/policy/multidimensional-poverty-index/>
<http://www.oecd.org/>
<http://www.oecd.org/pisa/>
<http://timss.bc.edu/>
<http://www.undp.org/content/undp/en/home.html>
<http://www.unesco.org/new/en/>
<http://www.unfpa.org/public/>
<http://www.unicef.org/>

Classifications

http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm
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