

COST AND FINANCING ANALYSIS IN VET: GUIDANCE NOTE



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This guidance note has been prepared by Marie Dorléans, ETF Specialist on Governance and Financing of Vocational Education and Training (VET), and Alain Mingat, external expert, on behalf of the Community of Practice on Governance (COP GOV). It forms part of the broader work of the COP GOV on the financial dimension of VET, which includes a complementary focus on funding schemes and related governance mechanisms.

This note offers a method by which partner countries are able to better factor cost and financing considerations into the vocational education and training (VET) policy-making process. Section 1 raises awareness on the rationale and timeliness of taking this approach, lists conditions for success, sets the bases for a common understanding of the exercise and buy-in of users, while Section 2 presents full details of the steps to be followed, their respective objectives, rationales, and expected results. A Technical Section follows in the second half of this document, intended mainly for use during the implementation phase.

The document addresses both ETF specialists and counterparts in partner countries offering them support for analysis of the VET system or VET policy options from a costing and financing perspective.



BACKGROUND AND INTRODUCTION: WHY AND HOW TO APPROACH VET FROM A COST AND FINANCING PERSPECTIVE

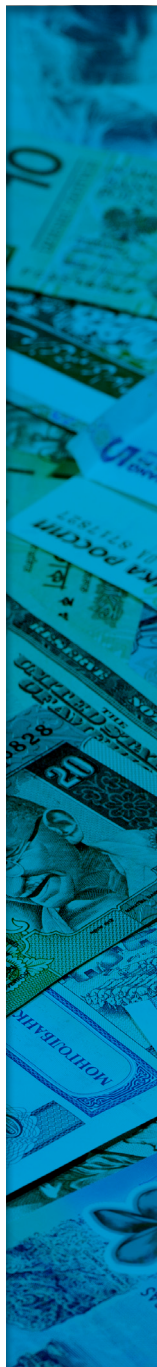
WHY IS THERE AN URGENT NEED TO APPROACH VET FROM A COST AND FINANCING PERSPECTIVE?

Skills development has become a driving element for all countries, with human capital now recognised as a key asset for socio-economic development. Dependent upon the individual country context, the main focus may be on increased work productivity, the fight against unemployment or the accompaniment of economic shift through the development of a highly-skilled workforce able to withstand international competition.

Consequently, vocational education and training (VET) is gaining momentum as the main system able to cater for skills provision, playing a more central role in education, training and employment policies, for those already in employment, the unemployed, and, to a larger extent, for youngsters about to enter the productive stage of adult life. The Torino Process outcomes show most ETF partner countries have defined strategies for VET system development and/or improvement, some more ambitious than others, that now await implementation.

This approach implies extensive public spending in a critical economic context. VET is, by nature, an expensive solution in comparison to other sub-sectors of the education and training system, as up-to-date infrastructure and equipment must be acquired and maintained in order to deliver the content adequately. In addition, the reform implementation phase is always expensive, as this is the time when capital investments and system expansion are required.

Concurrently, the present context of economic crisis has resulted in a tendency **toward reduced public budgets**, especially for the “social sectors”. Education and training falls into this bracket, as the current perspective of many governments does not fully recognise this item as an investment in human capital but rather as a cost to be borne by the State. Ministries are therefore urged to provide arguments to explain the value of all expenses, demonstrating effectiveness (in terms of objectives reached) and efficiency (objectives reached at the least possible cost). This approach requires the availability of more transparent figures; but where effectiveness or efficiency are not obvious, decision making would probably need to move towards more streamlined, thus more robust, policy choices that will make.



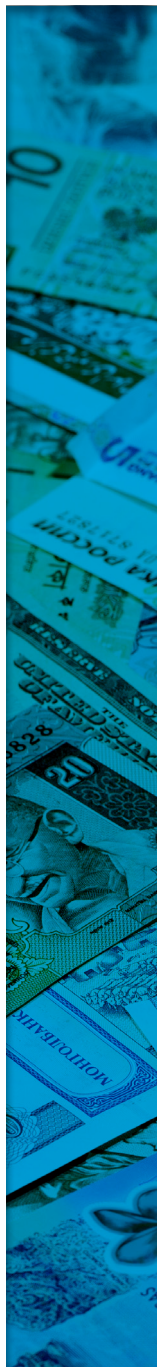
The competition for public funds also pushes VET stakeholders to justify the **role of the State in running the system, and encourages the involvement of other actors with whom the costs could potentially be shared. This principle of shared or “multi-level” VET governance**, involving the State alongside interested individuals, companies or other institutions, provides for broader input and responsibility in the VET system, but requires better documentation of two central aspects: i) evaluation of the costs and who currently meets these; and, ii) the expected benefits for the various parties. Comparative analysis of this information would help identify future options for sources of financing (where the benefits for actors could, in certain circumstances, justify them making a financial contribution).

Against this backdrop of change in scope, size, economic constraints and institutional setting, partner countries should ideally adapt or refine the analytical tools used to guide VET policy-making strategy, factoring in cost and financing considerations as a key parameter within the decision-making process. In other words, the system must cast light ex ante on the monetary implications of the various policy options.

HOW TO APPROACH VET FROM A COST AND FINANCING PERSPECTIVE: FOCUS AND WORKING PRINCIPLES OF THE PROPOSED COSTING METHOD IN A NUTSHELL

The financing of education and training systems and policies involves the consideration of several different dimensions:

- a. COSTING - how the costs of the measures and policies envisaged are estimated in relation (or comparison) to the cost of running the current system as it stands in order to inform policy making
- b. BUDGETING - how the budget is planned to cover the cost of VET policy
- c. FINANCING (including RESOURCING) - how the money is raised in order to fund the VET system (including where it comes from)
- d. FUNDING - how the money is distributed within the VET system (including where it goes to)



These elements have a number of commonalities, as they are dependent upon the identification of similar cross-cutting issues:

- the key stakeholders (governance component)
- the channels or schemes (institutional-organisational component)
- the calculation methods (monetary component)

This guidance note will propose an approach to resolve the key question of costing. It will also, to a lesser extent, touch upon the issue of sources of financing, helping to identify possible areas for rationalisation of the use of public funds. However, the issue of financing is more central to the later stage of policy implementation (in specifying 'how' to move ahead) than to the initial design phase (in setting 'what' needs to be done).

The main thread of the method presented in this guidance note consists of reviewing the VET system from a quantitative point of view, including physical volumes and monetary inputs. Current operations are mapped and analysed in terms of costs and benefits, and the figures produced are used as an evidence-based starting point for the exploration of alternative options to improve efficiency. Each individual option will aim to achieve more efficient operation of a system (or part of this) and the most promising possibilities can then be selected for further detailed analysis, planning and budgeting.

The VET costing method proposed is built on **five main analytical steps** described in detail in the following section:

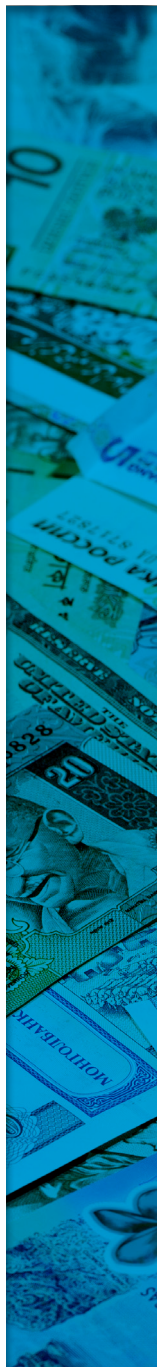
Step 1: Describing the VET system from a quantitative and financial perspective

Step 2: Analysing costs (and current financing)

Step 3: Approaching benefit assessment

Step 4: Exploring policy options through a cost-benefit style analysis

Step 5: Planning and budgeting of preferred scenarios



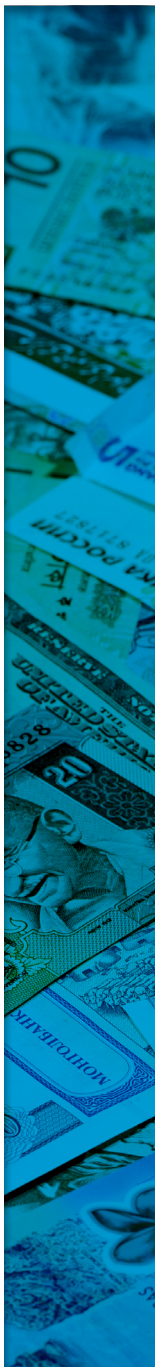
This method also relies on clear operational principles including:

- **a participatory and country-led** approach, where the analysis is produced by a national, multi-stakeholder team with the technical support of ETF experts
- a combination of **retrospective and prospective** perspectives (exploring policy options for the future [steps 4 and 5] based on a quantitative review of the existing VET system [steps 1 to 3])
- perspective over **a medium-term period** (the expected changes are of a structural nature, requiring a time frame of at least 3-5 years).
- flexible application to either the **whole VET system**, as exemplified in the Technical Section, or to specific policy areas within VET, as long as appropriate refinements are made to each step¹.

The terms commonly agreed place this exercise in a position that is half-way between a cost-effectiveness analysis (CEA) and a cost-benefit analysis (CBA). A fully-fledged assessment of benefits is difficult to achieve for reforms with long-term impact but, where data is available, the exercise offers an approach that goes beyond the usual assessment restricted to the effectiveness of measures achieved by measuring the usual indicators of the education and training system².

¹For instance: a government wanting broad, strategic reform of the entire VET system could use the costing method as one input to overall reflection, using this to identify areas of low effectiveness or efficiency in the VET system. Alternatively, a government wishing to reform a specific policy area (management of the trainer system, introduction of a national qualification framework, creation of a new training specialty, etc.) could use this method to estimate any additional costs to pre-decided measures, allowing for refinement or rethinking according to the results found.

²For further definition, see: Daniel Münich and George Psacharopoulos. Mechanisms and methods for cost-benefit / cost-effectiveness analysis of specific education programmes. European Expert Network on economics of Education (EENEE). March 2014, where the authors state that: "CEA compares the unit costs of various policies targeting one particular outcome. It does not require benefits expressed in monetary terms because it deals with outcome only. Therefore, CEA does not require translating benefits into an equivalent in monetary terms. CBA seeks to take into account, as far as possible, all costs and all benefits (expressed in monetary terms) associated to alternative policy decision and outcomes."



DEFINITIONS OF KEY TERMS TO ENSURE COMMON UNDERSTANDING

In brief, this guidance note explores two main areas related to the (mainly) monetary inputs that are made into the VET system:

Costs – covering all the expenditure made to run part or the whole of the system. This area also encompasses some non-monetary costs such as any opportunity costs worthy of consideration.

Financing - referring to the financial resources injected into the system to cover expenditure, mainly analysed in terms of amount and origin.*

*The third key component of financing (made up of fund management mechanisms and governance schemes) is hardly addressed in this document as this generally relates to the implementation phase rather than the policy decision phase under discussion here.

In more detail:

- **Cost of service** refers to the total expenditure, irrespective of origin, made in the operation of a training centre or school or an entire vocational and training system. This expenditure can then be separated out into recurrent spending and a capital component.

Recurrent expenditure is identified as that spent on a regular basis (usually yearly), including direct spending items such as i) salaries for teachers and trainers, administrators and support staff, at local and system level; and, ii) consumables, goods and services used in the training process.

Capital expenditure corresponds to the use of long-term assets that can be considered investments as they will remain to serve the VET system for a longer period (buildings, machinery, curricula, other reform-oriented expenditure, etc.). Capital expenditure may sometimes be annualised (or identified for the duration of a given training course) according to an agreed accounting depreciation rule (or estimate of capital cost).

This approach allows recurrent and capital expenditure to be consolidated into a global estimate. Finally, costs may be estimated from a global or aggregated perspective (either at a training centre level or at system/sub-system level), or on an individual perspective as per student or per trainee estimates.



- **Financing** refers to the specific pattern by which the costs, described above, are distributed across the various contributors, agents or entities involved. Financing contributors may include:

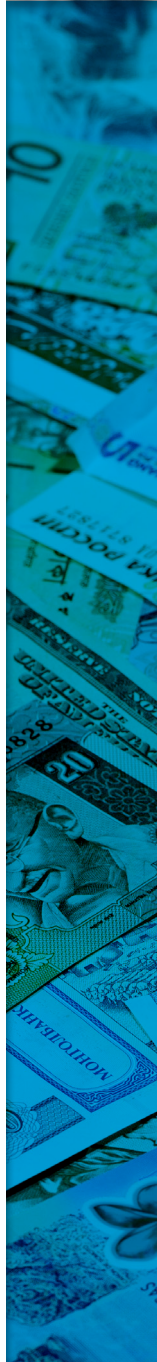
- the State - at national or regional level
- professional organisations - representing firms operating in a given economic sector
- firms - those expecting to employ trained workers (who may or may not have already been employed in the firm) and who therefore contribute to training costs or
- individuals – those in receipt of the training services provided (the users)

A wide range of combinations are possible in the mix of contributions, and there may even be some conditionality between them (for example, matching of funds across various contributors).

Cost and financing are indeed important issues to consider in education in general, as the latter is, or should be considered to be, an investment in human capital (with costs incurred in the initial period and benefits thereafter in the application of the knowledge and skills acquired). This concept is all the more important when it comes to vocational education and training as the level of costs is currently quite high in comparison to other subsectors of education. Furthermore, experience shows that wide variations exist in two key elements used in the VET sector: i) in the specific formulas used to implement the VET concept; and, ii) from one trade to another. Finally, observations have shown that the delivery of similar training content may be organised in different ways with variations in the numerical values of the set of functional parameters that characterises it.

- **Efficiency of resource use** is an element that goes beyond these practical and operational aspects, where cost and financing arrangements may have significant impacts. The efficiency aspect must always be taken into consideration given the generic context of resource scarcity, entering the picture in two complementary ways:

- **Internal efficiency** refers largely to service production, generally viewed via a three-level perspective of:
 - i) mode of service organisation - considering the appropriateness of parameters; ii) student flow within the VET structures - considering the proportion of the intake achieving graduation; and iii) the match between expectations and the skills and competences actually acquired by students and trainees.



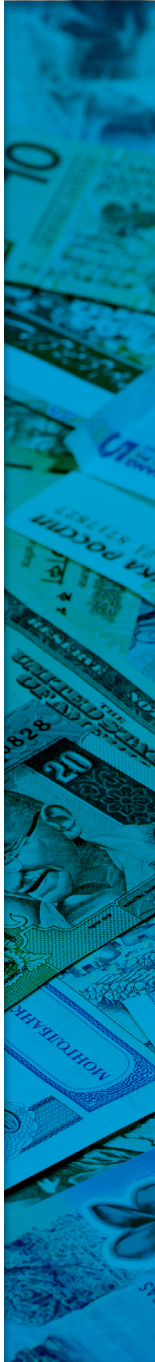
In this context, internal efficiency is always measured in terms of degree, using a reference case where a given VET formula (or the VET system as a whole) has been organised to give maximum outcome levels for a given unit cost in both quantitative and qualitative dimensions; or where a given level of outcomes is obtained at lowest cost.

- **External efficiency** refers primarily to the benefits accrued by individuals (and society as a whole) as a consequence of VET service input during a social and productive lifetime in terms of “**VET added value**”. These benefits may be expressed in terms of job access, to securing a job related to VET content, and/or in terms of earnings and labour productivity. The justification of VET services is largely viewed in terms of these benefits. However, the cost dimension will undoubtedly play a significant role given the scarcity of resources and the focus on investment in human capital of present VET services. A method must be sought whereby the associated benefits of VET can be shown in a positive light against the costs incurred to produce these. In this context, cost benefit analysis or rates of return can be positively mobilised, allowing for choices to be made among alternative VET options that take external efficiency considerations into account.

The two efficiency dimensions are obviously complementary in nature: there would be no point in producing graduates who would then be unable to reap the benefits, even if this were done in an internally efficient manner, nor would it be satisfactory to incur excessive spending in order to produce certain types of graduates, even though they may be in strong demand on the labour market.

• Variables and parameters

- **Variable** refers to an element for which the value can change but upon which our action may be dependent. When the variable is “exogenous” (dependent upon an external cause or origin) this will not normally be the case (e.g. labour market demand is an important variable in the world of VET, we have no influence over this from an education and training point of view).
- **Parameter** refers to an element that characterises system operation for which we can set the value. Parameters are used to define specific policy aspects implicit in an ex-post assessment or those considered in future policy design (for example the proportion of students enrolled in a given type of study, or the number of hours per week for practical activities in a given type of training centre).



- **Cost function and simulation model**

- **Cost function** is used to translate the way a particular service is organised (based on parameters defining the current or potential future service) and its unit cost (in terms of the student, teacher, or any other unit deemed relevant for exploring policy options). Variations in the relevant parameters imply variations in unit cost, meaning that the cost function therefore helps to gauge the impact of various parameters upon the cost of service.
- **Simulation model** is used to assemble the variables and parameters characterising a given scenario, using the numbers associated with the scenario (such as the number of trainees in the type of structure, or the number of trainers to be recruited) and the resources that need be mobilised over a given time period (5 or 10 years). A simulation model does not provide any indications of what to do or how to do this, it simply provides a summary of the implications if the considered scenario were to be effectively implemented.

- **Policy options and scenarios**

- **Policy options** concern the weighting that can be given to different objectives in terms of elements such as: i) providing resources to Active Labour Market Policy or continuing education, ii) backing general education and professional training in a given streaming point of the education and training system, or iii) concentrating on indicators of quantity (coverage, numbers) or quality (characterised by the set of parameters that characterises the provision of services).
- **Scenarios** are characterised by a particular set of proposed policy options used to identify the system.

A FIVE-STEP PROCESS TOWARDS ASSESSING (CURRENT AND FUTURE) COSTS IN VET

Engaging in a costing exercise is not an easy task as the process generally refers to a quantitative and evidence-based review of the existing situation, which does not seem to be easily achievable in many partner countries. Hence, establishing a clear process around which to organise the work can be of great assistance, as this saves time for the key actors involved, allowing them to concentrate their efforts on the discussion of content while working through a methodology and working modality that is provided for them.

FIVE STEPS

Five basic steps have been identified as a useful underlying structure for this process, starting with analysis of the existing VET system (ex-post perspective, Steps 1 to 3) before moving on to the identification of elements for a future VET policy (ex-ante perspective, Steps 4 and 5):

Step 1: Describing the VET system from a quantitative and financial perspective

Step 2: Analysing costs (and current financing)

Step 3: Approaching benefit assessment

Step 4: Exploring policy options through a cost-benefit style analysis

Step 5: Planning and budgeting of preferred scenarios

These five steps are described in more detail below and supporting technical hints are provided in the Technical Section in the second half of the document.





STEP



STEP 1 DESCRIBING THE VET SYSTEM FROM A QUANTITATIVE AND FINANCIAL PERSPECTIVE

Step 1 provides the baseline for further analysis and reasoning through a quantitative mapping the different VET formulas, relating them to the target policy objectives.

OBJECTIVE

The main objectives of the first step are:

I. content:

to build a **shared diagnostic assessment of the existing VET system** as a basis for the whole costing exercise and to identify its **key functional parameters**

II. process:

to establish a national team capable of designing new policy options. This group must therefore be convinced of the need for such a process, with trust being built through this concrete exercise.

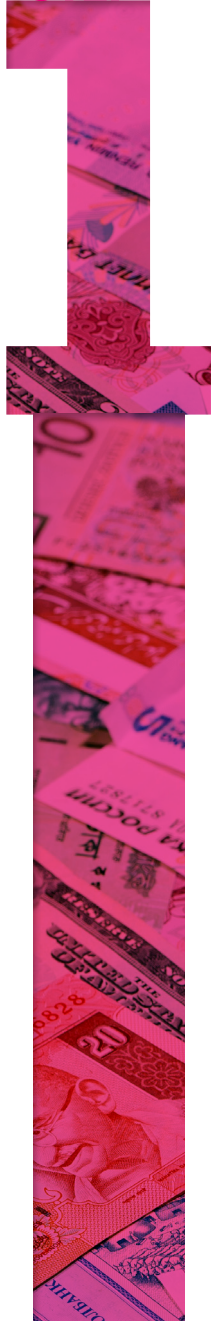
CONTENT

This initial diagnostic assessment will include:

- Identification of the economic and/or social, short-, mid- or long-term **objectives** assigned to VET. These objectives will form the “references” against which to assess the *effectiveness* of the VET policy.
- A detailed **qualitative and quantitative mapping of the existing VET formula**, including initial secondary VET, continuing VET and possible active labour market policies.

This mapping should take into account the place of VET in the overall education and training system in terms of the articulation between general education and VET, and between VET and higher education, including the ratio of students going into VET from general education (see Technical Section Step1/Focus 1 for further details).

STEP



The main VET formulas should be clustered according to an explicit logic³ to ensure the simplicity and “usability” of the mapping process. This could be achieved by classing courses into the type of training scheme (initial, continuing, employment-oriented) or according to the main economic sector, where the system is structured appropriately. The most important aspect at this point would be to reach a firm agreement on the rationale for the clustering arrangement that will not be questioned at a later stage.

The main data for each formula will be retrieved (or estimated) in terms of student numbers and percentages, number of trainers, number of teaching and learning hours, equipment, etc.

The completed mapping of the main VET formula of the VET system, can then be used as a basis for discussions among team members in order to identify the key functional parameters. These parameters also operate as potential levers for change, meaning that they can serve as areas for specific policy options later in the exercise (see Technical Section Step 1/Focus 2 for further details).

IMPLEMENTATION MODALITY

It should be possible to complete this task reasonably within a two-day collective workshop, where the team has been created in advance. Group discussions will be guided by a facilitator who translates elements of system description into both a visual display (for qualitative elements of understanding) and an Excel file (to consolidate figures on the system).

³It is understood that the VET activities present in each country operate with some degree of fragmentation and that various types of VET services may coexist at any given point in time. In these cases, the different VET types may aim to contribute to different objectives.

Despite the fragmentation of VET systems, however, the differentiated perspective cannot be applied the system as a whole. It is neither feasible nor appropriate to consider the usually large number of specific courses individually, and some preliminary categorisation will help in the definition of a relatively limited number of cases (possibly 4 to 6) or VET “formulas”. This will involve documentation of the various parameters for each formula (number of teaching hours for general, technical and practical subjects, size of student groups in these different subjects, characteristics, level of remuneration and duties of teachers and trainers providing the services, availability of consumables and materials, etc.) used in service delivery. Records will also be kept on numbers of students, graduates and, where available, of graduates securing an ‘adequate’ job on graduation.



STEP



STEP 2 ANALYSING COSTS (AND CURRENT FINANCING)

Step 2 uses the mapping completed in Step 1 to retrieve and analyse the costs (monetary inputs) required by this form of system organisation and the current financing sources .

OBJECTIVE

This step will allow for:

- I. Understanding of the **main elements associated with spending**
- II. Derivation of a **cost function** for use in: (i) estimating unit costs; and, (ii) the process of identifying different policy options
- III. Assessment of **cost structure relevance** (articulation of the various formulas), and relating this to **resources** in order to become aware who currently covers these costs.

These two information types are essential in the preparation of the cost-effectiveness analysis (comparing costs with the expected objectives identified in Step 1) and the cost-benefit analysis (comparing financing sources with “destinations of benefits”). Following such analysis, the financial burden could possibly be shared between the beneficiaries to some extent.

CONTENT

- **Cost estimates** will combine a macro approach to calculate global spending with a micro approach based on functional parameters, leading to unit costs.

In the macro approach, the perspective amounts to estimation of the spending and costs (aggregates and/or per trainee) associated with on-going activities. The basic concept relies on using budget documents to achieve an overview in the form of average measures of global spending and the functional distribution of this. Measures of unit costs (spending per trainee) can then be derived from the global figures where budgets have adequately distinguished between reasonably homogeneous training categories (see Technical Section Step 2/Focus 1 for further details).



The micro approach can be implemented either once the assessment of macro spending is completed, or in parallel to this. The information gathered will be complementary and will provide estimates of unit costs, recurrent spending and total costs, based on the functional parameters of service delivery identified at the end of Step 1 (see Technical Section Step 2/Focus 2 for further details).

Estimates of aggregate recurrent spending can be calculated by blending unit cost figures with the number of students enrolled during the school year. These figures can be produced for the various types of education and training under consideration, providing a form of robustness test.

- **Financing estimates** will consist of identifying all monetary inputs into the system through close analysis of budget allocations alongside inventories of funding patterns and schemes. Attempts will then be made to relate the monetary inputs registered to the various VET formulas or key VET system operation models. In a number of instances, the total cost is shared by various contributors. The principle distinction here is between public and private financing, with secondary separations within the private financing block between students enrolled in the schools and centres⁴ and firms. The business concerns give support in a number of ways including: direct financing, the provision of trainers/training facilities, or training tax contributions. Interesting insights can be gained by consolidating the resource distribution to financing from the various contributors before disaggregating total unit cost into appropriate components.

IMPLEMENTATION MODALITY

Small group work in parallel is recommended (possibly groups divided by type of VET service) in order to maximise the use of time.

⁴Once again, analysis of targets for user financing can be of interest here, particularly in terms of the extent of financing aimed at education and/or social services.



STEP 3 APPROACHING BENEFIT ASSESSMENT

Step 3 explores the *measurable* benefits expected from the VET organisation model described.

OBJECTIVE

To approach the various positive consequences of VET system operation as a second key parameter to consider in the policy-making process.

A word of caution is required here as all of the consequences identified must be “measurable” and in reality many VET reforms take place over a long time span meaning that their benefits mostly refer to long-term impacts on the labour market and social benefits, leaving little opportunity for the measurement of short-term results. However, certain short term impacts can provide important feedback, especially in terms of elements including: how many graduates get a job, what type of job they get, what level of pay is received, how their pay compares with that of their untrained peers, etc.

CONTENT

Each VET formula will be successively screened against the various dimensions of economic and social impact, a process that will also permit the identification of possible respective added values and comparisons (always considering the potential limitations of the respective objectives identified in Step 1).



STEP 4 EXPLORING POLICY OPTIONS ON THE BASIS OF A COST-BENEFIT ANALYSIS

Step 4 consolidates the results of Step 2 and 3 through a cost-benefit analysis that fosters the exploration of other policy options. The adoption of such a forward-looking perspective is made possible through use of the key functional parameters identified in Step 1, thereby converting these into levers for change.

OBJECTIVE

To move from the retrospective perspective of assessing existing VET to a prospective perspective exploring alternative policies or measures to improve the relevance of training offered and to have a positive impact upon the cost-benefit ratio.

CONTENT

Gradual analysis will be undertaken in this section:

- I. Cost-effectiveness style analysis - to screen VET formulas and relate strengths and weaknesses to respective costs
- II. Cost-benefit analysis - adding the factor of positive impacts in the social and productive life of individuals after graduation
- III. Formulation and assessment of policy options inspired by the cost-benefit analysis results

The cost-benefit analysis is a comparison of costs and benefits, which gains added meaning when related to either VET formula effectiveness or sources of financing (where those receiving more benefits are, under certain circumstances, those likely to incur relatively higher costs). Consequently, the first task is to check the strengths and weaknesses of the various VET formulas against their respective costs (see Technical Section Step 4/Focus1 for further details).

STEP



Three leading priority guidance questions can be applied to help formulate the elements of policy options derived from this multi-criteria assessment:

- To what extent is it relevant to extend coverage of VET services and for what types of population?
- What formulas should be given a higher or lower priority in the future (with the possibility that some formulas be discontinued, while some others may be added)?
- What adjustments should be considered appropriate to this or that formula to make service delivery more efficient?

The various policy options conceived will be adapted to produce a range of possible policy mixes, which will constitute different scenarios. Consolidated assessment of the various formulas and potential combinations will provide the materials for building new VET system organisation scenarios, prompting the team of analysts to identify the main levers for reform.

These options, their related rationales and implications will be described in a policy note to support policy decision.

IMPLEMENTATION MODALITY

As the exercise may be considered comparatively technical and complex, the cost-benefit analysis should be completed by a small team of national and international experts over a number of working days. The results of this exercise will then feed a broadened discussion on the policy options with the larger team, working through the three questions listed above.

The outputs of the discussions will be formulated into a concise policy note, including financial estimates for the various scenarios, that will be submitted to policy makers for policy dialogue and decision making purposes.



STEP 5 PLANNING AND BUDGETING OF PREFERRED SCENARIOS

Step 5 works on the detail of a restricted number of preferred scenarios for future expansion/improvement of the VET system, focusing on planning and budgeting within a mid- to long-term perspective

OBJECTIVE

The objective is to transfer the policy decision (or options) into a planning and budget phase in order to realistically prepare for implementation.

CONTENT

These scenarios can be modelled and planned for through a simulation instrument providing projections. This will be designed to anticipate any evolution in the VET system concerned from the baseline year to the horizon for VET reform on a year by year basis. If any substantial changes are expected, a medium-term horizon (for example 10 years) would generally be a preferable reference term in order to provide a more realistic overview of the rate of change. But the next few years to come are also documented and put into a longer perspective.

The process will be approached via the levers for change (or key functional parameters). The two elements of physical absorption capacity and opportunities for diversifying or rearranging financing sources must be borne in mind at all times in order to ensure realistic planning.

The modelling will generally:

- Make visible the different levers of VET policy,
- Generate relevant figures showing the evolution of numbers of students and trainees, teachers and trainers, and
- Provide figures on recurrent and capital spending, and details of how the financing of this is distributed between the various contributors

(Note: The information provided on financial estimates for the various scenarios is obviously of critical importance as the chosen scenario must be compatible with the level of resources likely to be made available by the country from public and private, internal and external sources).



STEP

IMPLEMENTATION MODALITY

The final stage of work will follow on from Step 4 within the same enlarged group, once a small group of technicians has prepared and run a simulation model.

For transparency and participation purposes, the final outputs of Step 5 should be given as much public coverage as possible, through a press conference or other communication with the media.

RESOURCES AND METHOD

DATA AND EVIDENCE

The availability of reasonably good quality data is a necessary precondition for implementing the proposed exercise. Sources of data can be varied and ideally need to be combined:

- Administrative data sources, including vocational education and training data from school statistics combined with finance law and other budget figures
- Regular and ad hoc statistical surveys
- Studies and reports, including impact evaluations where these exist
- Documented assumptions and opinions from experts, clearly tracked
- Other data sources suggested and brought in by the participants throughout the course of the exercise.

RESOURCES NEEDED

The beauty of the costing exercise lies in the fact that it is led by a **national team**, providing opportunities for the development of human resource capacity in analysis and capacity building (two of the four core functions of the ETF). This approach implies the **official appointment of professionals** to represent the institutions and services, in order to ensure the consistency, continuity and consequent effectiveness of the exercise. Ideally, the following structures should be represented or at least promptly mobilised (dependent upon the individual institutional configuration):



- Ministry responsible for VET (Labour, Employment or Education) - services in charge of learning programmes, training of trainers, human resource management, equipment and financial affairs
- Ministry of Finance - services in charge of finance law, sector budget allocations
- Institute of Statistics
- Key institutions expected to participate in the policy-making process, as the costing exercise is expected to inform this sector (professional entities, etc.) - not participating in all of the technical processes but to be empowered by the overall process and regularly updated.

In terms of technical resources, the exercise has the minimal requirements of:

- access to a computer with Excel software installed
- systematic inventory and collection of evidence and reports to support analysis

IMPLEMENTATION MODALITIES

Once the country manager has verified strong government interest in the exercise, the exercise could be rolled out over a minimum period **of six to nine months⁵, in three distinct phases:**

- I. **Awareness raising** - buy-in period and data location
- II. **Policy analysis** - assessing the VET system from a financial perspective (cost-benefit analysis)
- III. **Policy dialogue** - deciding, planning and budgeting for the future, plus capacity building to ensure sustainability and replicability.

The box below offers a suggested organisational framework for the three phases combining the work of a national team, desk work and mission support. This illustration would need to be refined and adapted to specific country contexts.

⁵A shorter initial period of as little as three months may also be acceptable in certain circumstances to generate dynamic momentum. This will be dependent on the context and readiness of each individual country.



ILLUSTRATION OF IMPLEMENTATION OF THE COSTING EXERCISE IN A GIVEN COUNTRY

> Phase 1: Awareness-raising - buy-in and data-finding

- Discussion between the ETF and the national governmental team to check interest, on the basis of the present note, explaining the five steps and the resources to be mobilised
- Official letter proposing support from the ETF with the methodological guidance note attached for approval and joint planning of the exercise
- Terms of reference and recruitment of a national expert as facilitator/coordinator if needed (for data collection and support for the process)
- Terms of reference and recruitment of an international expert if ETF internal resources are not available
- List of documents and data to be collected prior to the first mission
- First mission:
 - Briefing of policy makers
 - Setting up of national team
 - Two-day workshop for national team (and/or bilateral meetings) to complete Step 1 (quantitative description of the VET system)

> Phase 2: Policy analysis - assessing the VET system from the financial perspective

- Preparation of the cost and benefit analyses (desk work)
- Second mission - four to six weeks later:
 - Three-day technical workshop: Step 2 (Cost calculation and analysis), Step 3 (Benefit analysis) and Step 4 (Cost-benefit analysis and identifying the first policy options)
 - Half-day broadened discussion with policy makers to update them on progress and to shape the first policy options (Step 4)

STEP 5

> Phase 3: Restitution and consolidation: Policy dialogue for the future and capacity building

- Desk work on the policy note (analysis of the current VET system) and narrative of policy options – elaboration of scenarios and planning – construction and initial run of the simulation model
- Third mission - four to six weeks later:
 - One-day technical workshop on Step 5 (planning and budgeting of scenarios)
 - One-day collective review and finalisation of the note
 - 1.5-day training workshop for the national team - revisiting the meta process and wrapping up the key methodological points to record for this type of costing exercise, plus preparation of the consolidation workshop (to be led by members of the national team)
 - 0.5 to 1-day seminar - consolidation workshop including restitution of results to policy makers for policy dialogue and future decision making.



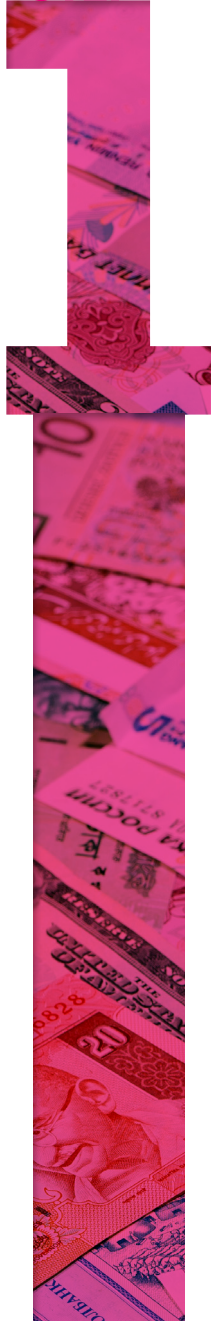
TECHNICAL SECTION: **CALCULATION FORMULAS, HINTS AND TIPS**

This Technical Section introduces the reader to the practical application of the five steps, presenting the technical calculation formulas and focused hints and tips for implementing the costing exercise described above. The approach is applied to a specific example involving the whole VET system, but the same steps can be applied to a more limited section (such as any specific VET policy area).

A single, comprehensive case study is presented to exemplify all of the key technical points of the methodology. The example represents a VET system in a fictitious country with the quantitative mapping shown in various tables (extracted from an excel working file), which are explained in this section.



STEP



STEP 1/ FOCUS 1: MAPPING DIFFERENT VET FORMULAS

The case study shown in Table 1 illustrates the various alternative VET formulas offered to youngsters at the point in the system where diversification of schooling careers occurs, with streaming between general studies, technical education and four formulas of vocational training. The first consideration is the distribution of individuals across the various possible routes, including students who will leave school for “direct” access to the labour market.

In terms of “**flow**”, 1.585 million individuals arrive at the streaming point, 400,000 are admitted into the general stream (25 percent of the total), 130,000 into technical education (8 percent of the total) and 555,000 into vocational training (aggregate number for the 4 VET formulas, representing 35% of total). The remaining 500,000 individuals (32 percent of total) opt for direct access to the labour market with no specific preparation.

However, the numbers in terms of the “**stock**” of individuals enrolled in education and training structures is substantially different, as the duration of studies in the various cycles may be longer than one year, differing across the various streams (3 years in general and technical education, 2 years for types 1 and 2 VET and 1 year for types 3 and 4 VET). Row 7 in table 1 provides the distribution of individuals across the various streams in terms of stock, whereas rows 8 and 9 provide the distribution of enrolments in the various streams according to the type of service provider.

STEP

TABLE 1:
OPERATION AND OUTCOMES OF VET SERVICES - ESTIMATE OF UNIT COSTS AND EFFICIENCY INDICES

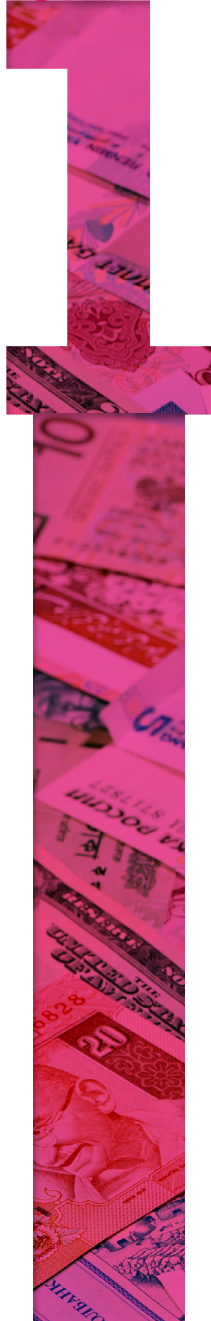
FOCUS/ STEP	FORMULAS	GENERAL	TECHNICAL	VOC 1	VOC 2	VOC 3	VOC 4	DIRECT LM	TOTAL
Step 1 Focus 1	4 Numbers in Flow	400,000	130,000	85,000	145,000	125,000	200,000	500,000	1,585,000
	5 % Flow	25.2%	8.2%	5.4%	9.1%	7.9%	12.6%	31.5%	100%
	6 Duration of study (yrs)	3	3	2	2	1	1		
	7 Numbers in stock	1,000,000	300,000	150,000	225,000	125,000	200,000		2,000,000
	8 • Public	700,000	140,000	90,000	75,000	65,000	150,000		
	9 • Private	300,000	160,000	60,000	150,000	60,000	50,000		
	Service delivery parameters								
	14 Number of hours								
	15 • General subjects	30	18	13	16	6	8		
	16 • Technical subjects	0	8	8	6	8	6		
	17 • Practical subjects	0	6	9	8	18	14		
	18 Size of group								
	19 • General subjects	45	35	20	30	25	40		
	20 • Technical subjects		35	20	30	12	20		
	21 • Practical subjects		15	6	15	8	20	Hours of service/ week	
	22 Teachers/trainers Remuneration (LCU/ month) • General subjects	80,000	80,000	80,000	80,000	80,000	80,000	18	
	24 • Technical subjects		80,000	80,000	80,000	80,000	80,000	18	
	25 • Practical subjects		60,000	60,000	60,000	45,000	60,000	21	

STEP



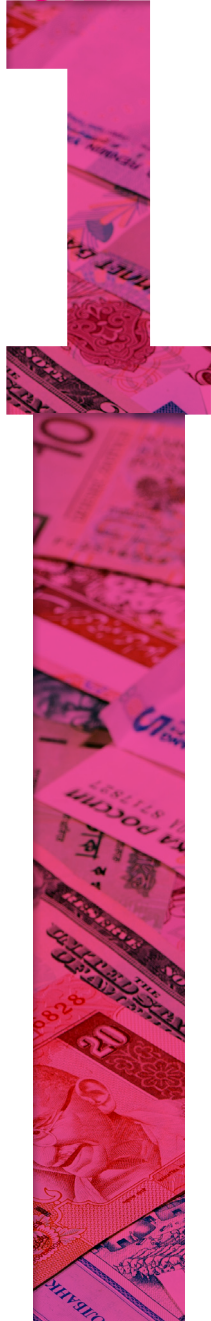
FOCUS/ STEP	FORMULAS	GENERAL	TECHNICAL	VOC 1	VOC 2	VOC 3	VOC 4	DIRECT LM	TOTAL
Step 1 Focus 2	26 Amount of goods and services per trainee (LCU)	8,000	11,000	42,000	26,000	7,000	4,000		
	27 Amount of consumables for training purpose (LCU)	3,000	4,000	12,000	4,000	7,000	4,000		
	28 Amount of goods & services for social purpose (LCU)	5,000	7,000	30,000	22,000	0	0		
	29 Spending for non-teaching staff as % of total salary bill	30%	30%	48%	31%	20%	10%		
	30 % Administration and operation support	25%	25%	30%	21%	20%	10%		
	31 % Social services (boarding, ...)	5%	5%	18%	10%	0%	0%		
	32 Unit cost (total) estimate (LCU)	58,794	87,190	248,593	109,184	139,766	60,296		
	33 Training/education	45,328	67,492	141,121	60,350	139,766	60,296		
	34 Social	13,466	19,698	107,473	48,833	0	0	PCGDP (LCU)	
	35 Unit cost in per capita GDP Unit	0.24	0.36	1.03	0.45	0.58	0.25	242,000	

STEP



FOCUS/ STEP	FORMULAS	GENERAL	TECHNICAL	VOC 1	VOC 2	VOC 3	VOC 4	DIRECT LM	TOTAL
Step 3 Focus 1	36 Internal outcomes								
	37 % Entrants who complete	85%	80%	75%	55%	65%	55%		
	38 % Completers who are certified	70%	65%	70%	80%	70%	60%		
	39 % of entrants that get certified	60%	52%	60%	56%	49%	49%		
Step 2 Focus 2	40 Unit cost per graduate (LCU)	98,813	167,674	473,511	248,145	307,178	182,716		
	41 Cost per graduate over the cycle (LCU)	296,439	503,022	947,023	496,290	307,178	182,716		
Step 2 Focus 1	42 Global Spending on education								
	43 Global recurrent public spending (million LCU)	41,156	12,207	22,373	8,189	9,085	9,044		102,054
Step 3 Focus 1	44 External outcomes								
	45 % employment of graduates after 12 months (differential)		30%	35%	58%	40%	60%	20%	
	46 Net impact of education and training on employment rate		10%	15 %)	38%	20%	40%		
	47 Spending over the cycle per employed individual (LCU)		1,676,740	2,705,779	855,672	767,944	304,527		
	48 External Benefit Cost Index 1		199	158	766	651	2,189		

STEP



FOCUS/ STEP	FORMULAS	GENERAL	TECHNICAL	VOC 1	VOC 2	VOC 3	VOC 4	DIRECT LM	TOTAL
Step 3 Focus 1	49 Average remuneration of those who are employed (LCU/ month)		60,000	60,000	50,000	50,000	40,000	40,000	
	50 Average remuneration of graduates (LCU/ month)		18,000	21,000	29,000	20,000	24,000	8,000	
	51 External Benefit Cost Index 2		239	165	508	469	1,051		
	52 Financing Users Fees per annum and per trainee (LCU)	3,000	4,500	15,000	9,000	0	0		
	53 Amount of fees (Million LCU)	2,100	630	1,350	675	0	0		
	54 % Financing by users	5.9%	4.4%	7%	8.1%	0%	0%		
	Productive sector								
	55 Amount contributed by firms (in kind/ money)	0	0	1,200	800	400	300		
	56 Total private financing; amount (million LCU)	2,100	630	2,550	1,475	400	300		
	57 % of total	5.1%	5.2%	11.4%	18%	4.4%	3.3%		



STEP



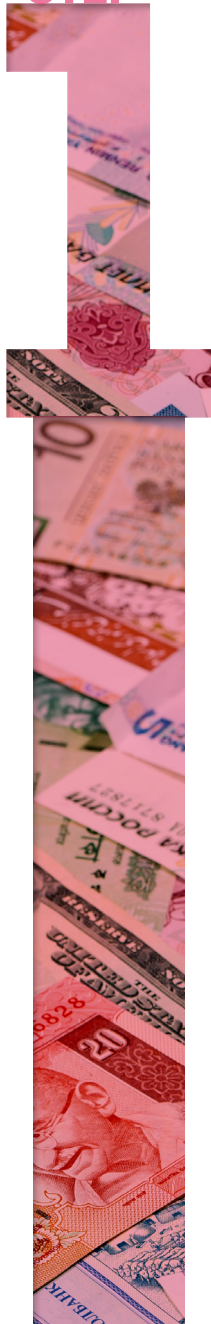
STEP 1/ FOCUS 2: IDENTIFYING KEY FUNCTIONAL PARAMETERS OF SERVICE DELIVERY

Several dimensions and parameters may be taken as the basis for descriptors when organising services within the various types of public structures:

- **Time** is probably the first of these dimensions. The duration of the course in years can be used to calculate the stock on the basis of the flow as described above, but, more importantly, the duration of the course also has an impact on assessment, where time is considered a limited input that affects the process. In this context, assessment will consider how effectively the amount of time devoted to the VET formula is fitted with the course objectives⁶. The time dimension must also be considered in terms of the distribution of that time between the various types de subjects taught during the course (rows 14 to 17 in Table 1). It is relatively common to find a non-optimal balance between the subjects with a tendency for general subjects to dominate the majority of global instruction time, while practical subjects suffer from a degree of neglect.
- **Student grouping** forms the second appropriate dimension. In general education, group size is the same for most subjects but the numbers are far more variable in VET depending on the type of subject taught. There is a clear distinction between general, technical and practical subjects (rows 18 to 21 in Table 1). It is understandable for average group size to be larger in general classes than in practical sessions, but the real figures also show wide variations in group size within the categories of general and practical subjects (across trades, type of VET, schools/training centres and countries). It is perhaps understandable for group size in practical subjects to vary according to the trade taught and it can probably be generally surmised that for better quality training services will be delivered in smaller groups; however beyond a certain point, very small groups signal inefficiency in service delivery rather than a high quality service.

⁶For example, where a two-year course is not needed to produce a certain type of welder, the training can be completed in six months.

STEP



- The features of **teachers and trainers** constitute the third dimension, as they are entrusted with the task of providing students with the knowledge and skills targeted in the course. In this context, the qualifications of the individuals delivering the specific vocational skills and the level of remuneration offered are often a sensitive and crucial aspect (rows 22 to 25 in Table 1). General observation shows that such professionals are scarce on the market and suggests that they should therefore be remunerated at market price, but in reality the remuneration offered is frequently based on administrative scales and tends to be too low to attract individuals with the qualifications needed to effectively complete the job.
- The fourth dimension links to the **physical resources** mobilised to train students. In vocational subjects these resources will include equipment and machinery that will need to be reasonably relevant and functional (well maintained) with sufficient machines available for the number of trainees.

A complementary question asks about the **resources available for consumables and working materials** for students and trainees (row 27 in Table 1). If they are to progressively build their professional skills, adequate quantities of supplies must be made available throughout the duration of the course.

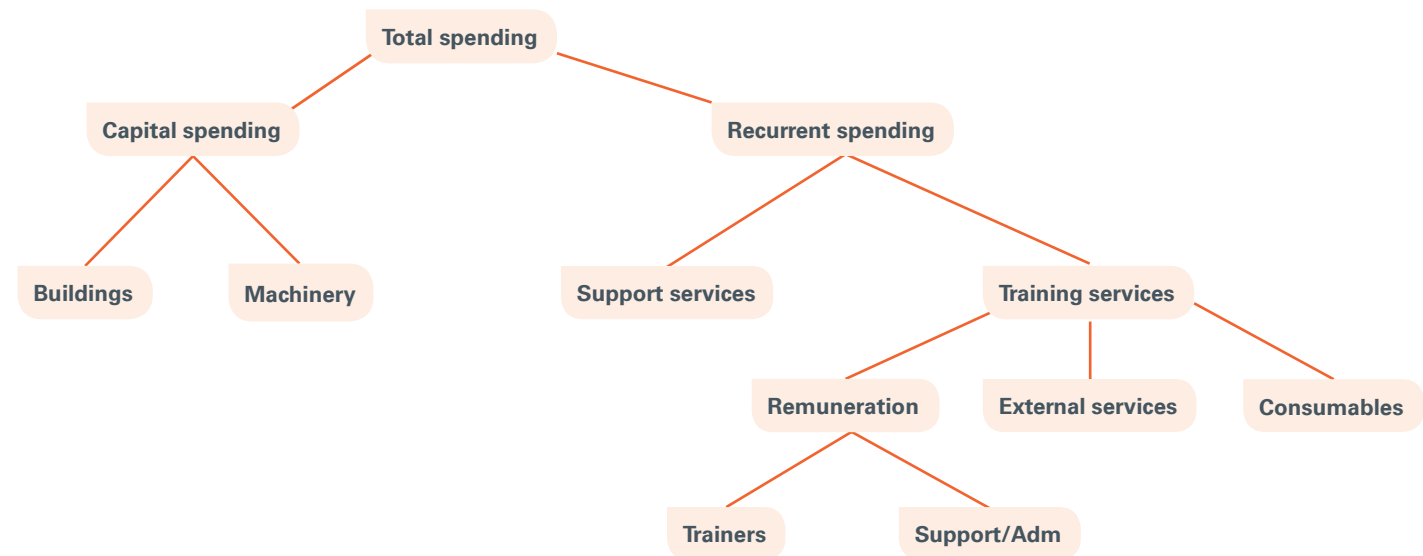
- The fifth dimension concerns the **contribution of non-teaching personnel** in the operation of schools and training centres. This includes staff involved in “social services” and those who support the learning process from both the administrative and pedagogical standpoints. Indeed, support staffs are of particular importance in providing practical activities for students/trainees in areas such as industry and agriculture. Row 29 in the Excel file proposes an estimate weighting for support staff expressed as spending on support personnel as a proportion of total wages costs. The figure given here reflects current circumstances, but the amount could be increased or reduced where considered appropriate.
- Apart from education and training, schools or training centres may offer social services to their students, in particular by providing meals and/or boarding facilities. These services usually incur two items of spending: goods and services (row 28 in Table 1) and personnel (row 29 in Table 1).

STEP



STEP 2/ FOCUS 1: THE MACRO APPROACH TO CALCULATING COSTS

Estimating costs through a systematic approach



In the aggregate perspective, stylised in the figure above, **recurrent spending (or expenditure)** , separates out what is spent for the system as a whole (administration, supervision, certification, technical support, etc.) and what is spent specifically at the level of structures delivering training services. The delivery structures may be considered in an aggregated manner or may be distinguished under different formulas and types of training. At the local level, it is generally recommended that salaries be separated out from consumables and external services. Salaries themselves may be split between one group directly associated with training activities and another for administrative and support staff. A variety of sources can be used to document recurrent spending, in particular, budget documents, payrolls, school censuses administered generally on a yearly basis by education/training ministry statistical services, data from the human resources department, etc.

STEP



The case is quite different for **capital spending**, which is usually a significant item in VET, and this must be distinguished from capital cost. **Capital spending is defined as the amount spent on capital items in any particular year** and this information can be obtained from budget documents or public investment frameworks (taking care to distinguish execution from voted budget, as the rate of realisation is usually some way short of 100 percent). Capital cost, in comparison, covers all of the capital items used during the year. In reality, capital spending is rarely of much use as it generally varies widely from year to year. It may be more useful to view capital cost as the cost of using the capital items over a year; an approach that would mean annualisation of the cost of capital items over the period of utilisation. This can be achieved through the use of amortisation techniques or, preferably, an annualisation formula expressing the yearly cost of capital (YCC), based on the cost of the capital item (C0), its anticipated duration of use (n years) and the opportunity cost of capital (τ):

$$YCC = C0 * \tau * \{(1 + \tau)^n / [(1 + \tau)^n - 1]\}$$

Most training processes make use of various capital items, such as buildings and machinery, that may have different initial costs and a range of expected periods of use. In such circumstances, the calculations are conducted separately for the various items and consolidated thereafter on a yearly basis.



STEP



STEP 2/ FOCUS 2: THE MICRO APPROACH TO ESTIMATING UNIT COSTS AND AGGREGATE RECURRENT SPENDING

Each of the various education and training service delivery parameters identified in Step 1 carries an **influence on costs**. Altogether they contribute to estimates for unit costs and aggregate spending. A **unit cost function**, of the type suggested below, can be used to demonstrate how the various components can be assembled:

UC= [12*MRTG*HISG/HITG/SGG+12*MRTT*HIST/HITT/SGT+12*MRTP*HISP/HITP/SGP]]
*** [1/(1-TSNTS)] + [ETGS +SAGS] , in which:**

Monthly Remuneration of Teachers in General subjects	MRTG
Monthly Remuneration of Teachers in Technical subjects	MRTT
Monthly Remuneration of Teachers in Practical subjects	MRTP
Hours of Instruction of Students in General subjects	HISG
Hours of Instruction of Students in Technical subjects	HIST
Hours of Instruction of Students in Practical subjects	HISP
Hours of Service of Teachers in General subjects	HITG
Hours of Service of Teachers in Technical subjects	HITT
Hours of Service of Teachers in Practical subjects	HITP
Size of Group (students) in General subjects	SGG
Size of Group (students) in Technical subjects	SGT
Size of Group (students) in Practical subjects	SGP
Spending on Goods/Services for Education/Training activities	ETGS
Spending on Goods and Services for Social Activities	SAGS
Spending for Non-Teaching Staff as % of total salary bill	PSNTST
Spending for Non-Teaching Staff in education activities as % of total salary bill	PSNTSTET
Spending for Non-Teaching Staff in social activities as % of total salary bill	PSNTSSA

STEP



In Table 1, this cost function has been used to estimate the cost of enrolling a student/trainee over a school year in the various types of education and vocational training under consideration (row 32). The resulting figure varies substantially from around 60,000 LCU (Local Currency Unit) in general education or vocational training formula 4 (VET Voc 4), to about 250,000 LCU in vocational training formula 1 (VET Voc 1), showing great differences in unit cost between general education and vocational training, and among the various formulas for vocational training. Beyond these global figures, unit cost can conveniently be disaggregated between: i) **costs attached to education and training** per se (row 33); and, ii) **costs attached to social services** (meals, boarding, etc.) (row 34) offered to the students within education and training facilities.

Combining unit cost figures with the number of students/trainees enrolled during the school year in the various types of education and training provides estimates of aggregate recurrent spending for that year. The amounts given in row 47 of the working file cite costs of 41,156 million LCU for general education and 102,054 million LCU for the whole group of education and training services considered.



STEP 3/ FOCUS 1: ANALYSING BENEFITS, EFFICIENCY AND IMPACT

• Internal efficiency: taking into account schooling and training outcomes

Generally speaking, the education and training process is considered more internally effective when it succeeds in imparting a larger proportion of the defined curriculum content to a larger proportion of students/trainees. The competences acquired may be measured directly through specific testing, but where “independent” tests do not readily exist, researchers must rely on the formal certification processed that generally place at the end of the course. When this approach is adopted, the reference is the proportion of the intake who either graduate or achieve certification. To get to this point, the student must: i) remain enrolled until the end of the course; and, ii) pass the test proposed by the system in order to get their diploma or certificate.

When these criteria are applied, it becomes clear that not all types of education and training considered in Table 1 are equivalent. Firstly, the proportion of entrants that do complete the course (row 37) ranges from 85 percent in general education to only 55 percent in the VET formula. Secondly, the proportion of completers achieving certification (row 38) also ranges from 80 percent in the VET Voc 2 formula to 60 percent in the VET Voc 4 formula. Compound rates for the two segments give a total proportion of graduates (row 39). These figures are generally low, ranging across the various types of education and training, from a mere 33 percent in VET Voc 4 to a more healthy 60 percent in general education. The overall low figures should ring alarm bells, prompting reflection on the underlying reasons for the poor performance and on potential actions to achieve improvements.

The **unit cost** concept can then take the pattern of student flow within the various courses into account through estimated: i) unit cost per graduate (row 44); and, ii) per graduate spending over the cycle of study (row 45 in the Excel file). Variations in the proportion of entrants graduating and the duration of studies mean that per graduate spending over the cycle varies widely across the various types of courses under consideration. There is clearly variance from one type of education to another - 300,000 LCU in general studies and 500,000 in technical education - but Table 1 shows a far greater range between the various VET formulas - from 182,000 LCU in VET Voc 4 to 947,000 in VET Voc 1. Obviously, this can partly be attributed to the different requirements dependent on the type of trade taught and the duration of studies, but so wide a gap inevitably warrants further interest, documentation and discussion.



- **Taking into account the labour market impacts of education and training**

Labour market outcomes cannot be ignored in an assessment of VET. These courses mark the end of each schooling career and are therefore normally geared toward: i) facilitating access to employment; and, ii) contributing to labour productivity and economic growth. Obviously, something has gone wrong if graduates are not getting the expected jobs. While labour market regulations and macroeconomic policies may indeed play a role, the first place to look is within education and training, as this sector simply must be organised to meet the demands of the economic sector as far as possible.

The “Human Capital” framework provides a strong reference for analysis of external efficiency issues relating to educational and training. These activities can be classed as investments, as they involve present costs when individuals are being educated or trained, which accrue potential future benefits for when the individuals apply the knowledge and skills acquired at school in their social and productive lives. In this context, external efficiency considerations examine the extent to which the benefits obtained offset the costs incurred, possibly using **rate of return** statistics to assess the profitability of human capital investments.

These **costs** are generally made up of two components: i) **direct costs** to individuals and society associated with the operation of schools and training centres (recurrent and capital components); and, ii) **opportunity costs** arising from the fact that education and training takes time, and that this time could have been used by the individuals or the society to accrue earnings. Meanwhile, the **benefits** can be measured in various complementary ways including both social and economic dimensions.

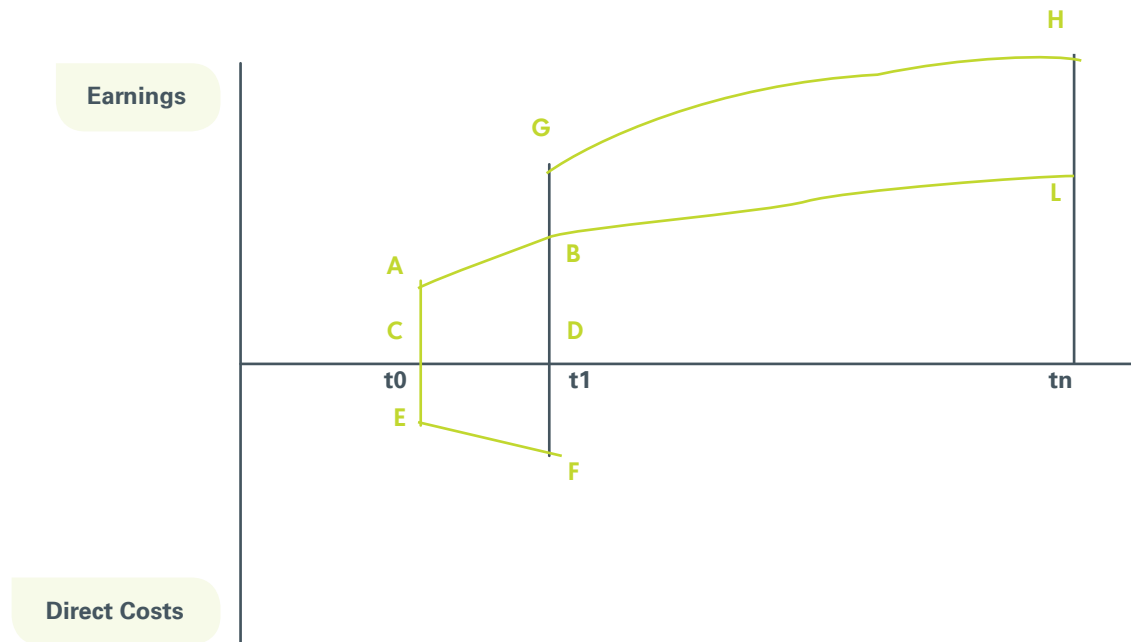
In the social sphere, education and training may be viewed as instrumental in the integration of individuals, having a strong impact in shaping important behaviours in areas ranging from citizenship to consumption, population issues to health.

STEP



In the economic area, the standard human capital framework estimates the benefits in terms of both earnings **over the working life** of the individual and from a “**value added**” perspective. The value added aspect is a particularly important consideration in assessing the specific impact of a particular segment of the global education and training system. In the present context, attempts are made to assess elements such as the extent to which a given type of training **increases** the performance of an individual on the labour market in a way that attributes an economic value to their previous schooling. Figure 1 provides a basic illustration of a suggested framework for calculation of the rate of return to human capital.

Figure 1.



The figure considers a training formula that last for x years (between t_0 and t_1). The curves ABC and GH are the average age-earning profiles to retirement for those with no training (E_0) and for those with training (E_1) respectively. The costs of training are represented by the area AEFB which is made up of two components, namely: the direct costs of training (CEFD) and the opportunity costs of training (ACDB). The associated benefits of the training under consideration are identified by the differentials between the two earning profiles (GBLH). But as the costs incurred and the benefits obtained do not materialise within the same periods of time, it is not relevant to make a direct comparison of the two identified areas.

STEP



The practice therefore consists of estimating the net present value (NPA) costs and benefits flow, using a given discount rate (τ).

$$NPA = - \sum_{t=0}^{t_1} (DC+E0) / (1+\tau)^t + \sum_{t=1, t_n} (E1-E0) / (1+\tau)^t$$

NPA is a negative function of τ , generally with positive numerical values when τ is small and negative values when τ is high. Hence, there is one particular value of τ for which $NPA=0$; this is the rate of return (ρ) associated with the pattern of costs and benefits.

An alternative way of estimating the rate of return is to use a Mincerian earning function (E) in which the generic specification consists of relating the earning logarithm to the number of year of schooling (NED): $\ln(E) = a_0 + a_1 * NED$. This approach, based on econometric procedures, helps produce an estimated value of a_1 which is interpreted as the average rate of return to education (in reference to one year of education and training) in the country.

However, NED is a highly generic measure and it is generally preferable to use a quadratic term to account for the possibility of a pattern of diminishing returns and to distinguish various components of human capital formation. In fact, it may be relevant to separate returns to general education from returns to VET and to distinguish different formulas within the VET category (VET1 and VET2). A better specification may then be:

$$\ln(E) = b_0 + b_1 * NEDG + b_2 * NEDG^2 + b_3 * NVET1 + b_4 * NVET2$$

Through the estimation of coefficients b_3 and b_4 , this specification provides values for the rates of return associated to one year of professional training for the separate VET1 and VET2 formulas; a type of result that is obviously of significant value in the assessment of VET. It should be noted, however, that the specification suggested above implicitly assumes returns to a given formula of training are independent of the level of general education of entrants, even though this assumption may not be empirically valid. Adjustments can be made to the specification to take this aspect into account.

In fact, identifying the appropriate level of general education upon which the training activities can be offered is a significant issue in the design of a VET formula. When viewed from a pedagogical point of view, it is generally preferable to have better educated trainees for two reasons: i) because less time will need to be spent on general subjects, concentrating efforts on the acquisition of technical knowledge and practical competences; and, ii) because individuals with better general education are more "trainable".



In reality, this is generally the perspective that prevails, but the economic perspective cannot be ignored. Under the economic outlook, what matters is the value-added attached to the training received rather than the ease of training or the absolute value of the graduates⁷. There is always a degree of tension between not enough and too much preparatory education. This important aspect can be assessed by using the interaction terms (between duration of training and general education) in the equation above, making measures of returns to training dependent upon the level of general education of trainees when they enter the VET course.

- **External efficiency: more specific and practical considerations**

The approach outlined above includes many important issues that are often overlooked in such analyses despite their importance, but it also presents clear limitations. The first of these is the requirement for data that may not be readily available and the second is that the estimated parameters are essentially structural elements that demonstrate little responsiveness to short term changes in context.

It may therefore be useful to consider the inclusion of specific instruments based on short-term labour market outcomes and the post-graduation circumstances of recent graduates. The first element can be measured in the form of an estimated proportion of graduates succeeding in getting a job within a set period (six months, one year) after graduation⁸, and the second by registering the type of job and the average level of remuneration of those who find employment.

The process can be illustrated using the data from Table 1, starting with the most basic aspect of labour market outcomes shown in basic terms as access to a job within a set period (row 45). In this section relatively wide variations are again seen across the VET formulas, ranging from 35 percent in the Voc 1 formula to 60 percent for Voc 4 graduates. However, as they stand, these figures are simply **raw** estimates of the training impact, whereas we are more interested in the **net** impacts of training, i.e. the differential between the employment rate of those who did get training against that of those who did not. All of the employment rates observed for the VET formulas must be reduced by 20 percent (the employment rate of untrained individuals) in order to arrive at an estimate of the net benefit of training in terms of employment⁹.

⁷To take an extreme example, it may be easier to impart competences in welding to individuals holding a university degree in mechanics than to individuals who are illiterate, but the value-added of the training course may nevertheless be higher for the latter than for the former.

⁸This figure may be obtained from existing tracer studies. Where such data are not available, rough estimates may be substituted, but in these cases a range is preferable to a specific figure.

⁹This approach may under-estimate the “true” impact of training if those trained get better jobs than their untrained peers; but it may also over-estimate the reality if those who entered the labour market with no training have been negatively selected.

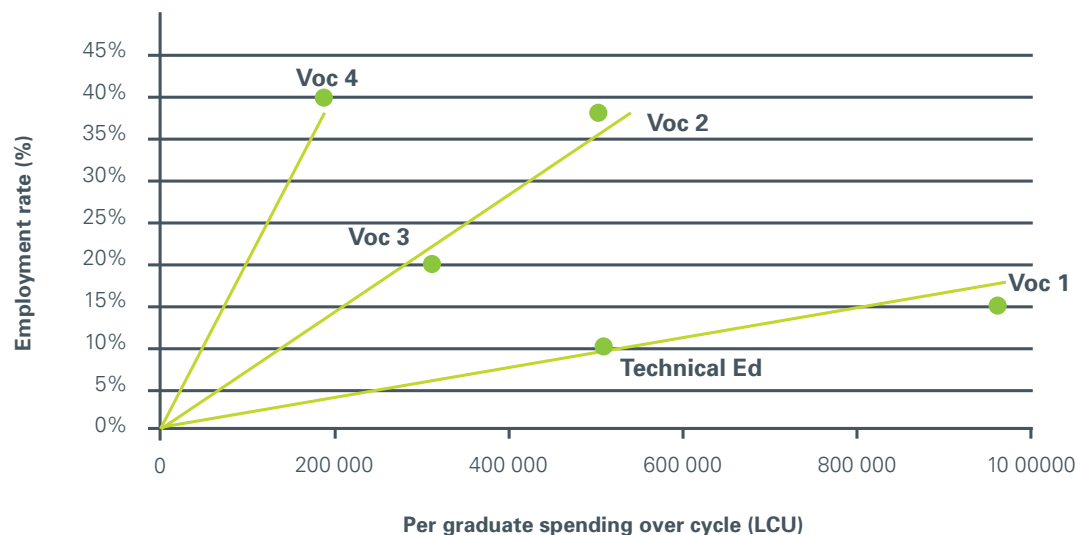
STEP



With this calculation, the net impact of VET on the employment rate therefore ranges from a low of 15 percent for VET Voc 1 to 40 percent for VET Voc 4.

To assess external efficiency, the net impact of VET formulas must be contrasted with the statistics on per-student spending over the cycle¹⁰ (row 52) as shown in Graph 1. A numerical alternative consists in using the slope of the line between the origin of the axis and the point characterising the VET formulas (here multiplied by 10^9), as an External Benefit Cost Index (EBCI 1).

Graph 1: Showing employment rate after graduation by per graduate spending



Regardless of which method is used to account for the employment efficiency of the various VET formulas, the VET Voc 4 formula provides the most attractive performance, giving the highest net impact on the employment rate for the lowest per graduate spending over the cycle (and therefore the highest external efficiency indicator, at 2.189). By contrast, VET Voc 1, with far lower net impact upon the employment rate and high costs (external efficiency indicator of only 158), is obviously much less satisfactory. The VET formulas for Voc 2 and Voc 3 stand on almost the same efficiency line in Graph 1, presenting a degree of efficiency between that of Voc 1 and Voc 4.

¹⁰Numerical value of per-student spending over the cycle ranges from LCU 300,000 to 2.7 million (9 times the amount)



This initial approach uses only the employment rate a few months after graduation to measure the labour market impact of training and does not take the level of income into account. This approach presents the outcomes as though the income is the same irrespective of type of training, but the addition of data on average income by type and formula of education and training (row 49) can release this constraint. Calculations along similar lines to those given above can be used to obtain a new estimate of the External Benefit Cost Index 2, the numerical value of which is provided in row 51. The case considered here gives a large degree of consistency in the conclusions that can be drawn (a general pattern that tends to be followed in most cases), regardless of whether these are based on version 1 or 2 of the External Benefit Cost Index.

The type of instruments proposed above present great advantages in: i) mobilising the factual data that form an essential part of the assessment; and, ii) organising this in a well-structured analytical framework. It must be stated, however, that the hypothetical case used gives very clear-cut results that are probably more distinct than those usually found in the field although it is relatively common for highly significant differences to be identified between education and training formulas. The results obtained should ideally be used to motivate discussion with the entities in charge of the system and careful examination of the conclusions drawn is recommended before any drastic or rapid judgments or actions are taken. Preferred solutions would involve approaches such as discussions on how to increase efficiency in the provision of formula VET Voc 1 by: i) improving curriculum content, ii) forming better links with the productive sector¹³; and,, iii) changing the service delivery parameters to increase graduation rates, reduce unit costs and better respond to market demands.

Where difficulties are encountered with the labour market, the problem may be rooted in: i) the quantity of graduates produced (possibly too many graduates given the current absorptive capacity of the labour market); and/or, ii) their quality in terms of the competences acquired during the course (possibly irrelevant or too specific). Analysis at this point is very useful in identifying the problem and indicating a need for either a qualitative assessment or further documentation.

¹¹The net gain in employment per LCU spent in VET is about 24 times smaller with Voc 1 than with Voc 4.

¹²Multiplying the employment rate by the average income of those in a job gives the average income of graduates (employed or not employed). The value-added by education/training is then obtained by subtracting the average income of the untrained. Finally, that the value-added is divided by the unit cost of graduates over the cycle in the different various types of education and training, providing the External Benefit Cost Index 2.

¹³It may also be of interest to question the effectiveness of productive sector partnerships in course design and operation.

STEP



STEP 4/ FOCUS 1: SCREENING OF THE STRENGTHS AND WEAKNESSES OF THE VARIOUS VET FORMULAS IN RELATION TO THEIR RESPECTIVE COSTS

Once the initial description of service organisation and financial implications on recurrent costs is completed, Step 4 is used to produce assessment of: i) the overall system - in terms of global coverage and distribution across the various types of education and training available to youngsters in the country; and, ii) the delivery of services in the different formulas offered. For ease of analysis, these two dimensions are considered separately here before being considered together in Step 5 when the policy options will be identified.

Step 4 will concentrate on identifying dimensions worthy of consideration in the assessment, using the hypothetical case given in Table 1 (and the VETFIN Excel file) as an illustration one possible approach.

The first element to consider is **system coverage**, particularly the distribution between those entering some kind of education and training and those taking direct access to labour market without any kind of training. In Table 1 (rows 4 and 5), 500,000 of the 1,585,000 youngsters are in the second position, representing 31.5 percent of the total population considered in terms of flow. This will raise questions such whether this proportion as acceptable in terms of social and economic concerns, and, where it is judged too high, whether efforts should be made to reduce this in future.

STEP



Next comes **distribution between the various types of education and training** for those who do continue their studies at this streaming point. Again, relevant questions would be: whether the proportion of youngsters accessing general (25 percent) and technical (8 percent) education is appropriate (bearing in mind that most students in general education will go on to university). Similar concerns apply to the choices between the different VET formulas, with 14.5 percent in a two year formula and 20.5 percent in a one year training formula.

Also, any initial opinions on the relevance of these proportions should be tested by revisiting the issue with more specific assessment of the various VET formulas to identify their respective merits. Careful consideration should be further repeated when the time comes to define policy options and possible scenarios.

When assessing each of the different types of education and training, the two particular dimensions to concentrate on are: i) outcomes and efficiency in terms of competence production and graduate access to jobs, and, ii) the parameters describing service delivery (some of which will be a matter of interrogation). These two dimensions are examined with this sequence to allow questioning service delivery if the outcomes are judged insufficient.



STEP 4/ FOCUS 2: CONSOLIDATED ASSESSMENT BASED ON A COST-BENEFIT/COST-EFFICIENCY ANALYSIS

• Global perspective

Table 2 is presented in the form of a checklist that can be used as an organisational tool for a consolidated system assessment. The table covers the main domains of interest, providing a simple coding (+, +, +, -, -) to identify the recommended direction for each of these (the strength of the direction to be taken is indicated in the number of + or - used). Note that if the assessment remains a judgment, it is most of the time based on the factual documentation (and possibly some benchmarking references) collected previously in the course of the exercise. And this judgment is to be produced in a collaborative manner, with principal contributions of the actors in charge of the system in the country.

Table 2: Check-list for operational assessment of the various types of education/training*

DOMAINS TO BE CONSIDERED	GENERAL	TECHNICAL	VOC 1	VOC 2	VOC 3	VOC 4	NO TRAINING
Basic statements		30%	35%	58%	40%	60%	20%
% of graduates employed after x months							
Net impact of course upon employment rate of graduates after x months		10%	15%	38%	20%	40%	
Assessment of impact on employment [Acceptable (0), Too low (-)]		-	--	0	-	0	
Per graduate spending over the cycle	296 439	503 022	947 023	496 290	307 178	182 716	
External Benefit Cost Index 1		199	158	766	651	2 189	
External Benefit Cost Index 2		239	165	508	469	1051	
What degree of priority for development of the training path?	+	-	--	+	+	++	--
Internal efficiency							
Intensity of the demand for VET? [(Normal (0), Low (-), High (+)]	+	-	-	0	0	0	
Retention rate over the cycle [More or less adequate (0), Too low (-)]	0	0	0	--	-	--	
Graduation rate and quality of services [More or less adequate (0), Too low (-)]	-	--	-	0	-	--	

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Reasons for the level of external efficiency							
* No. graduates/downstream demands [Adequate (0), Too many (-), Too few (+)]	+	-	-	0	0	+	-
* Quality of services to be improved [Not really a problem (0), Need be improved (-)]	-	-	-	0	0	0	
Content of course [Appropriate (0), Too general (1), Too specific (2)]	0	1	1	0	0	0	
Total number of hours [Appropriate (0), Need to be increased (1), Can be reduced (2)]	0	0	0	2	0	0	
Use of time of instruction [Good balance (0), More general (-), More practice (+)]	-	0	+	+	0	0	
Recruitment of professionals at existing remuneration [No difficulty (0), Difficult (-)]	-	-	-	-	-	-	
Role of productive sector in course design and operation [Adequate (0), Insufficient (-)]	-	0	-	-	-	-	
Quantity of consumables/materials for practical activities [Adequate (0), Insufficient (-)]	-	-	-	-	-	-	
Degree of relevance of machinery [More or less OK (0), Need be upgraded (-)]	-	-	-	-	-	0	
* Per graduate spending [More or less OK (0), Need be reduced (-), Can be increased (+)]	+	0	-	-	-	0	
Size of groups of students/trainees							
General/technical subjects [More or less OK (0), Can be increased (1), Can be reduced (2)]	2	0	1	0	1	0	
Practical activities [More or less OK (0), Can be increased (1), Can be reduced (2)]	-	0	1 1	0	1	0	
Remuneration of teachers/trainers							
General/technical subjects [More or less OK (0), can be increased (1), can be reduced (2)]	0	0	0	0	0	0	
Practical activities [More/less OK (0), Can be increased (1), Can be reduced (2)]	-	1 1	1 1	1	1 1	1	
% Admin./peda. support staff [More/less OK (0), Can be increased (1), Can be reduced (2)]	0	0	2	0	0	1	
Spending for social purposes [More/less OK (0), Need to be increased (-), Can be reduced (+)]	0	0	+	0	-	-	

* This table has been completed for illustrative purposes only



STEP 4

- **A perspective that considers the multiplicity of schools and training centres**

It is essential to stress that assessment of a system should not necessarily be confined to average global figures for the various types of education and training as **any system is fundamentally made up of a number of individual schools, centres and providers**. Obviously, disparities will exist and the operations and management performance of these local entities must be considered as an important dimension in the total system assessment.

The main focus in this dimension should be directed towards the two elements of:

- i) patterns of resource allocation to the different schools and centres; and,
- ii) the capacity of the various schools and centres to deliver expected outcomes.

For **the resource distribution** element, documentary evidence is needed to establish a set of characteristics for each school and training centre, covering:

- i) operational data - personnel by type or function (teaching, support), consumables, quality of buildings, degree of relevance of existing machinery;
- ii) student information - enrolments by major trades, proportion of boarders; and,
- iii) performance records - outcome indicators such as the proportion of entrants who complete the course, the proportion of completers who pass the certification test, and, where available, the proportion of graduates in a job at a given number of months from graduation.

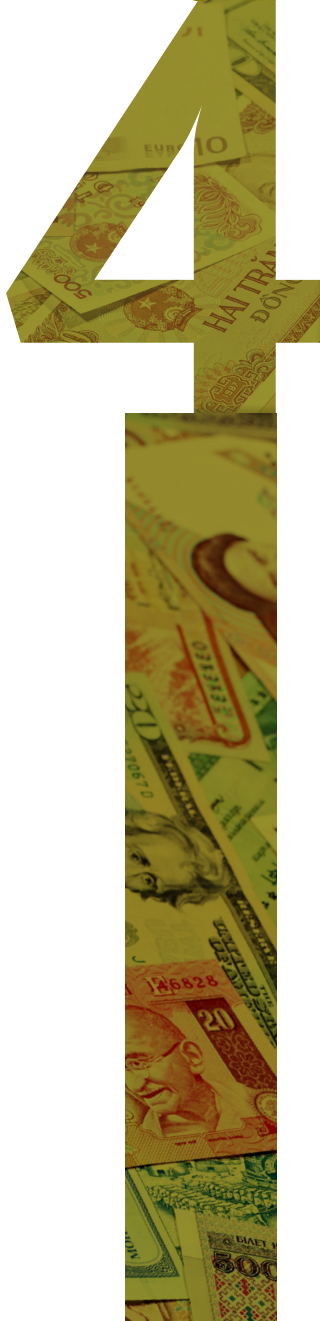
For some elements, such as the degree of relevance of existing machinery, the comparison and identification of inter-school disparities is relatively straightforward. Details on personnel or enrolments, however, are not amenable to direct comparisons across schools, as there is generally some form of relationship between the number of personnel in a school/training centre and the number of students/trainees enrolled. Table 3 provides illustrative data from a hypothetical country with 23 VET centres. Enrolment is distributed between Trade A (industrial) and Trade B (tertiary). As experience shows the ratio between students and teachers differs greatly between the two trades. The table also shows the proportion of student boarders, and the personnel employed in the school are divided between teaching and support staff.

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Table 3: Students and personnel in individual schools

	ENROLMENT		% BOARDERS	NUMBER OF PERSONNEL		NUMBER OF TEACHERS	
	Trade A	Trade B		Teaching	Support	Estimated	Differential
1	350	212	30 Schools %	48	58	53.6	-5.6
2	250	0	60 %	24	29	25.8	-1.8
3	810	302	20 %	64	70	77.0	-13.0
4	180	730	25 %	102	84	111.3	-9.3
5	576	342	28 %	58	88	75.5	-17.5
6	242	123	60 %	42	46	40.4	1.6
7	0	1200	0 %	174	109	162.5	11.5
8	423	208	40 %	55	47	55.3	-0.3
9	164	642	43 %	107	135	100.5	6.5
10	1430	0	12 %	69	53	57.5	11.5
11	421	125	20 %	42	48	44.9	-2.9
12	684	131	10 %	56	39	52.7	3.3
13	231	412	30 %	69	75	74.5	-5.5
14	565	213	0.7	79	74	60.3	18.7
15	542	0	0	34	29	32.9	1.1
16	634	218	20 %	73	58	62.0	11.0
17	832	224	21 %	58	79	68.2	-10.2
18	0	423	80 %	67	83	70.3	-3.3
19	864	549	60 %	103	135	108.9	-5.9
20	126	175	30 %	39	38	43.0	-4.0
21	325	215	40 %	57	43	53.5	3.5
22	240	210	20 %	62	47	50.2	11.8
23	764	0	0 %	38	38	39.0	-1.0
Together	10653	6654	31%	1520	1505	1520	0

STEP



In order **to assess the degree of consistency in teacher allocation across schools**, we need to compare the actual number of teachers with what would be expected if teachers were allocated to schools in a consistent manner across the system, strictly in accordance with the number of students enrolled respectively in Trades A and B (while also allowing trades A and B to differ in terms of average student/teacher ratio).

The benchmark is estimated from a regression of the number of teachers (NT), against: i) enrolment in Trade A (ETA), ii) enrolment in Trade B (ETB) and, iii) the proportion of boarders (PB). The estimated equation is:

$$\text{NT} = 19.7 + 0.028 \cdot \text{ETA} + 0.120 \cdot \text{ETB} + 1.656 \cdot \text{PB} \quad ; R^2 = 0.91$$

(t=3.8)

(t=14.6)

(t=0.2)

The coefficients of the two enrolment variables (respectively 0.028 for ETA and 0.12 for ETB) underscore the fact that training students in industrial trades is a far more labour intensive activity (and therefore much more costly) than training students in tertiary trades. It is consequently no surprise that the R^2 of the regression is high (0.91), but it is nevertheless far enough away from 1 to anticipate a certain amount of disparity in levels of teacher allocation across individual schools. The regression illustrates the average pattern in teacher allocation over the system, and its results can therefore be used to estimate the ideal number of teachers to be allocated to an individual school on the basis of enrolment figures for the two trades under a “perfectly consistent” pattern of teacher allocation.

The last two columns in Table 3 provide the figures for estimated ideal numbers and the difference between the actual number and the reference number of teachers in each VET centre. The two figures are reasonably close for about two-thirds of centres, but three particular centres (numbers 3, 5 and 17) are identified as significantly under-staffed, while five other VET centres (numbers 7, 10, 14, 16 and 22) appear significantly over-staffed in terms of teachers.

There will often be reasons for the existence of these disparities, but some degree of mismanagement may also be involved and this should not be ruled out too hastily. A similar analytical format can be used for non-teaching staff.

The relation between resources and enrolment numbers in school may also be approached from an alternative and complementary perspective, as the format used so far makes two assumptions: i) that the cost per student/trainee is independent of individual school enrolment numbers and, ii) that the infrastructure is generally subject to a similar (admittedly high) rate of use. In some countries, this implicit assumption may

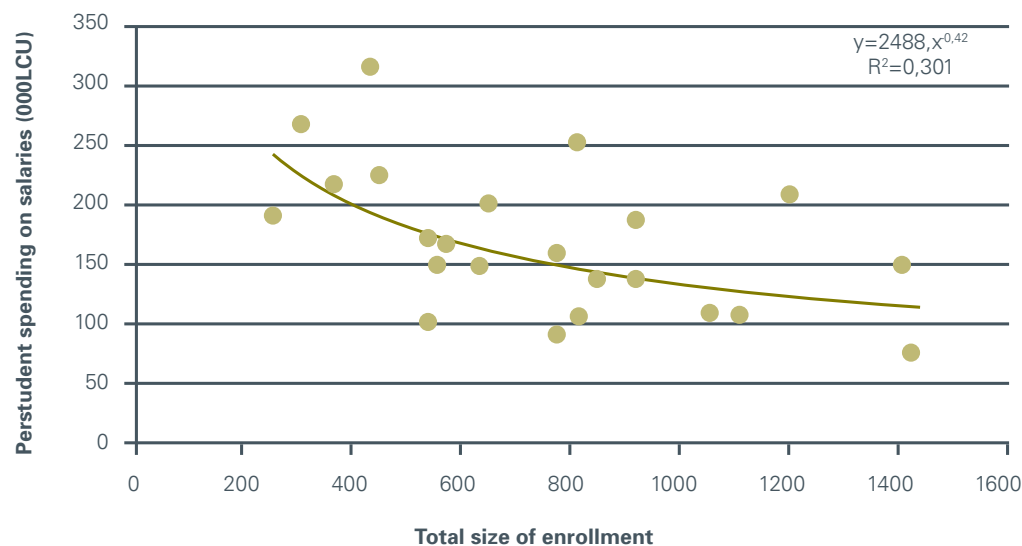
STEP

not be totally valid. In such circumstances, a likely **pattern of returns to scale** can be applied according to the number of trainees at school/centre level; an input that may make a significant contribution to the final system assessment.

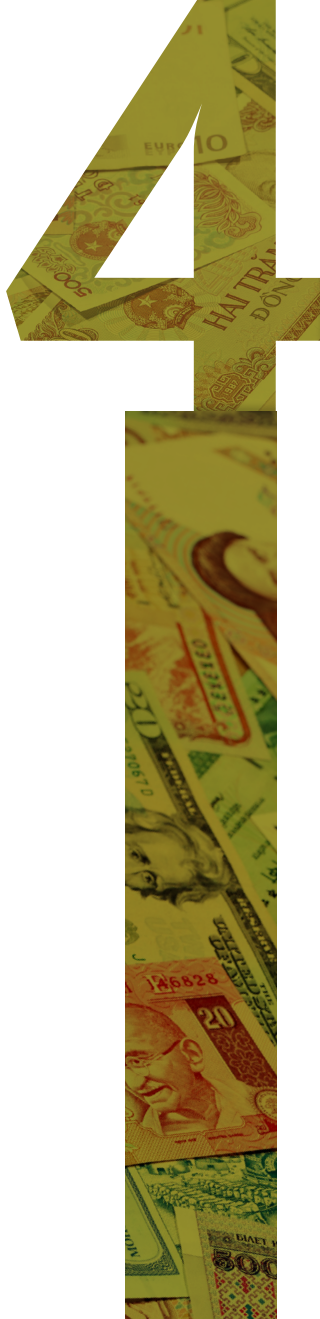
Economies of scale exist in the production of goods or services when the average cost of production declines as the quantity produced increases, i.e. when the marginal cost is lower than the average cost. In the context of the cost function, normal practice is to distinguish fixed and variable costs. Generally speaking, fixed costs correspond to the structure necessary to ensure production of the “first” unit, while variable costs correspond to the amount to produce additional units when the structure already exists. Returns to scale tend to be all the more present where the fixed component of costs is more substantial. In such circumstances, the average cost per unit of goods or services is high when the number of units produced is small, declining progressively up to the point where infrastructures are used to their full potential.

This type of pattern applies to most training activities as the structure of cost is generally characterised by fixed costs (buildings, machinery and a proportion of staffing) that are often anything but anecdotal. Graph 2 illustrates this point, using the school data given above for teacher allocation.

Graph 2: Pattern of economies of scale in VET



STEP



The points representing the various schools and centres are scattered across the graph dependent a number of causes including:

- total enrolments at school level being made up of different mixes of students in industrial and tertiary trades that are not equally labour intensive;
- schools having a differing proportion of boarders; and,
- some degree of inconsistency in the allocation of personnel.

Despite the variance, however, the average relationship between the two variables is clearly visible, showing a noticeable pattern of return to scale in the production of training. Per student/trainee spending declines significantly as the size of school level enrolment increases¹⁴. For example, unit spending is on average about 210 LCU in a school enrolling 400 students, while it is only 130 LCU in an institution with enrolment of 1,200.

Disparities across schools and centres may also be reflected in **the outcomes sphere** as schools may not perform equally, regardless of the variable resource levels across individual schools and centres. Performance levels may be gauged in both terms of: i) the operation of services offered (course completion and certification levels) and ii) access of level and to identify the graduates to employment. It is generally useful to document these aspects at school level and to identify the magnitude of inter-school/centre disparities within the system. Detection of a significant level of disparity may suggest: i) that remedial activities should be undertaken, and also that; ii) system management may be inadequate in terms of regular monitoring and evaluation, and that this therefore needs to be strengthened.

The analyses and assessments conducted above contribute to the identification of desirable policy directions for each area under consideration. Table 2 can be useful in this process, as wherever a code does not read 0, suggestions for future action are identified. However, the degree of the move will be decided upon by those in charge of the system depending on their local context. For example, where the plan is to reduce the number of individuals who enter the labour market with no training (32 percent), the target envisaged for the year 2020 may be set at 25 percent or 15 percent. Similarly, if the amount budgeted for consumables in VET Voc1 (industrial trades) is currently estimated at LCU 12,000, and that this amount is to be increased, it could be raised to LCU 15,000 but also to 18,000 (or any other level considered appropriate).

¹⁴Note that the data used here concern only the salary element and consideration of the annualised cost of capital would probably have strengthened the pattern. It should also be noted that more specific work on return to scale may be warranted to identify separate patterns for industrial and tertiary trades (returns to scale are generally stronger in industry) and/or to take into account the rate of equipment use. The latter may, in itself, be a domain of interest in assessment.



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This variability allows for a number of alternative scenarios for future system development to be created, where the priority given to the different parameters can be adjusted. The scenarios can be deliberately engineered to fall within the intersection of quantity and quality objectives. A two-step approach has been found to work best. In the first step, the decision maker is presented with a limited number of scenarios (possibly 4 to 6) providing an idea of the range of possibilities (in terms of quantity and quality targets for services and the related costs). The second step involves refinement of the model found to be most reasonable, with a view to identification of the final proposals from which the decision will be made, providing an overall vision for the system at the horizon of the programme.

The following section gives an illustration of how these activities can be concretely undertaken, building on the hypothetical case used above. Table 4 identifies scenarios that refer to two options for the quantity dimension and two options for quality of service.

Quantity options. One has to start by making options, in cells N5 (10 % in the illustrative case) for Quant1 and in O5 (25 percent) for Quant2, for the proportion that are to have direct access to labour market (with no training) at the horizon of the programme. Then the remaining proportion (respectively 90 percent and 75 percent) must be distributed among the different education and training possibilities in line with the results of the assessment previously conducted). The numbers (in flows) are derived from these proportions with the help of an estimate of the total number of individuals (1.7 million) concerned at the horizon of the programme. Given the duration of the different cycles (kept as they currently are), the numbers (in stocks) are automatically calculated. When it comes to distribute these numbers between public and private structures, the idea is not to keep the existing pattern; since there is no reason that private enrolments increase in the same proportion as total anticipated enrolments in consequence of the choices made the lines above. More realistically, one can anticipate that private enrolments could (naturally) increase by some percentage over the period of the programme (here the figure of 20 percent has been used, the numbers being given in row 8). It follows that public schools or centres would have to be organised so as to enrol (in a given type de education or VET formula) all those who have to get the service but who would not be admitted in private institutions given its own dynamics (row 7).

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Table 4: Identifying the parameters for the quantity and quality options

TYPES AND FORMULAS OF EDUCATION/ TRAINING	GENERAL EDUCATION		TECHNICAL EDUCATION		VOC 1 (INDUSTRIAL)		VOC 2 (TERTIARY)		VOC 3 (INDUSTRIAL)		VOC 4 (TERTIARY)		DIRECT ACCESS TO LABOUR MARKET	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2
Quantity index														
1 Numbers in Flow (000); total 1.7 million	561	442	204	136	85	68	136	204	136	221	408	289	170	340
2 % Flow (total 100% for each Quantity index)	33,0%	26,0%	12,0%	8,0%	5,0%	4,0%	8,0%	12,0%	8,0%	13,0%	24,0%	17,0%	10,0%	20,0%
3 Duration of study (years)	3	3	3	3	2	2	2	2	1	1	1	1		
4 Numbers in stock (000)	1 683	1 326	612	408	170	136	272	408	136	221	408	289		
5 Public	1 323	966	420	216	98	64	92	228	64	149	348	229		
6 Private	360	360	192	192	72	72	180	180	72	72	60	60		
Quality index														
7 Number of hours per week (total)	32	28	32	29	30	28	30	28	30	26	30	26		
8 General subjects	32	28	14	13	10	12	10	12	8	10	8	10		
9 Technical subjects	0	0	10	9	8	8	8	8	8	6	8	6		
10 Practical subjects	0	0	8	7	12	8	12	8	14	10	14	10		
11 Size of group														
12 General subjects	35	45	35	40	25	30	25	30	25	30	30	35		
13 Technical subjects			35	40	25	30	25	30	25	30	30	35		
14 Practical subjects			15	20	12	15	15	20	12	15	20	25	Hours /week	
15 Teachers/trainers Remun. (000 LCU/ month)														
16 General subjects	80	80	80	80	80	80	80	80	80	80	80	80	18	
17 Technical subjects			80	80	80	80	80	80	80	80	80	80	18	
18 Practical subjects			110	90	110	90	110	90	110	90	110	90	21	

STEP

19	Goods and services per trainee (000 LCU)	(8)	(59)	(12)	(8)	(48)	(41)	(32)	(27)	(10)	(7)	(10)	(7)		
20	For training purpose	8	5	12	8	18	15	10	7	10	7	10	7		
21	For social purpose	0	0	0	0	30	26	22	20	0	0	0	0		
22	Spending on support staff as % total salary bill	(30%)	(24%)	(30%)	(24%)	(48%)	(41%)	(36%)	(26%)	(20%)	(15%)	(15%)	(10%)		
23	% Administration and operation support	30%	24%	30%	24%	30%	25%	21%	16%	20%	15%	15%	10%		
24	% Social services (boarding)	0%	0%	0%	0%	18%	16%	15%	10%	0%	0%	0%	0%		
25	Unit cost estimate (000 LCU)	77.7	48.7	112.1	70.3	242.7	147.8	170.6	102.8	144.3	80.8	95.2	56.9		
26	Training/education	77.7	48.7	112.1	70.3	139.7	80.1	90.8	53.7	144.3	80.8	95.2	56.9		
27	Social	0	0	0	0	103	67.7	79.7	49.2	0	0	0	0		
28	Unit cost in per capita GDP Unit	0.32	0.2	0.46	0.29	1	0.61	0.7	0.42	0.6	0.33	0.39	0.24		

As for the **Quality options**, two levels are taken into account: Quality 1 (Qual1) corresponds to what could be seen as more favourable conditions of education or training, while Qual2 would correspond to acceptable or less lavish levels of service. Obviously, the figures in the demonstration table are there for illustrative purposes and to help the Excel structure work, whereas a real situation could be different in many ways.

Whatever the case may be, Quality 1 and Quality 2 will result from a number of choices made about the various parameters characterising service delivery. These parameters have already been examined for the current operation of the system and their current values, as well as the assessment made, providing a basis upon which to anticipate desirable ways forward for each of them (hours of instruction and group size for the various different subjects, level of remuneration according to type of instructor, availability of support staff, consumables and materials, resources for social activities, etc.). Just as for Table 1 on existing services, the cost function is configured to estimate anticipated unit costs at the end of the programme for the two quality options in each of the types and formulas of education and training under consideration. The outcomes are given in rows 32 to 35 of the Excel file and it is plain to see that the levels of unit costs associated to Qual1 are higher than those associated to Qual2 in direct relation to the choices made on the parameters.



STEP

STEP 5/FOCUS 1: SIMULATION MODEL FOR PLANNING AND BUDGETING PREFERRED SCENARIOS

An excel sheet, such as “Fin estim Scen” can be used to make estimates of the corresponding recurrent costs at the horizon of the programme¹⁵ in the different scenarios considered. The results, in terms of total recurrent spending for the system are compiled in Table 5 below.

Table 5: Recurrent aggregate spending at overall system level (million LCU)

Options on Quantity	Base Year	Quant 1		Quant 2	
Options on Quality		Qual 1	Qual 2	Qual 1	Qual 2
Total spending	102,054	231,698	142,832	196,979	120,176
Spending on education services	76,535	214,266	131,677	172,205	104,635
Spending on social services	25,519	17,432	11,154	24,774	15,541

The figures for total recurrent spending give amounts that range from 120 billion LCU for the mix [Quant2xQual2] to 231.7 billion LCU for the mix [Quant1xQual1] in line with the numerical values chosen for the quantity and quality parameters. It may be possible that the prospects for a strong improvement in quality dimensions will have to be downplayed in view of current levels of spending (and without prejudice to the financial possibilities of the country or the degree of financial constraints it faces). In any event, the decision maker is able to evaluate four possible scenarios that will help redefine the criteria for the generation of further scenarios that will help in convergence toward a “final choice”.

¹⁵The procedures used to arrive at the estimates lead to financial amounts expressed in monetary values of the base year.