International
Labour
Office
Geneva

Employment Sector
Employment Working Paper No. 27

2009

Labour market information and analysis for skills development

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Employment
Trends Unit

Economic and
Labour Market
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ILO Cataloguing in Publication Data

Sparreboom, Theo; Powell, Marcus

Labour market information and analysis for skills development / Theo Sparreboom and Marcus Powell ; International Labour Office, Employment Trends Unit, Economic and Labour Market Analysis Department. - Geneva: ILO, 2009
65 p. (Employment working paper ; no.27)

ISBN: 9789221221517;9789221221524 (web pdf)

International Labour Office; Economic and Labour Market Analysis Dept

labour market information system / labour market analysis / skill / skill requirements / Ireland / Hong Kong,China / Pakistan / South Africa R

13.01.2

ILO Cataloguing in Publication Data

Printed in Switzerland

Preface

The primary goal of the ILO is to contribute, with member States, to achieve full and productive employment and decent work for all, including women and young people, a goal embedded in the ILO Declaration 2008 on *Social Justice for a Fair Globalization*, [1] and which has now been widely adopted by the international community.

In order to support member States and the social partners to reach the goal, the ILO pursues a Decent Work Agenda which comprises four interrelated areas: Respect for fundamental worker's rights and international labour standards, employment promotion, social protection and social dialogue. Explanations of this integrated approach and related challenges are contained in a number of key documents: in those explaining and elaborating the concept of decent work,[2] in the Employment Policy Convention, 1964 (No. 122), and in the Global Employment Agenda.

The Global Employment Agenda was developed by the ILO through tripartite consensus of its Governing Body's Employment and Social Policy Committee. Since its adoption in 2003 it has been further articulated and made more operational and today it constitutes the basic framework through which the ILO pursues the objective of placing employment at the centre of economic and social policies.[3]

The Employment Sector is fully engaged in the implementation of the Global Employment Agenda, and is doing so through a large range of technical support and capacity building activities, advisory services and policy research. As part of its research and publications programme, the Employment Sector promotes knowledge-generation around key policy issues and topics conforming to the core elements of the Global Employment Agenda and the Decent Work Agenda. The Sector's publications consist of books, monographs, working papers, employment reports and policy briefs.[4]

The *Employment Working Papers* series is designed to disseminate the main findings of research initiatives undertaken by the various departments and programmes of the Sector. The working papers are intended to encourage exchange of ideas and to stimulate debate. The views expressed are the responsibility of the author(s) and do not necessarily represent those of the ILO.

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[1] See http://www.ilo.org/public/english/bureau/dgo/download/dg_announce_en.pdf.

[2] See the successive Reports of the Director-General to the International Labour Conference: *Decent work* (1999); *Reducing the decent work deficit: A global challenge* (2001); *Working out of poverty* (2003).

[3] See http://www.ilo.org/gea. And in particular: *Implementing the Global Employment Agenda: Employment strategies in support of decent work, "Vision" document*, ILO, 2006.

[4] See http://www.ilo.org/employment.

Foreword

Determining skill needs in labour markets is one of the central tasks facing manpower planners and labour market analysts, and the development of skills policies that meet these needs are a key instrument in the promotion of the Decent Work Agenda. This paper examines the role that labour market information and analysis can play to inform skills policies, both in terms of methods, and in terms of institutional arrangements that are established to translate information into policy action.

The paper demonstrates that the early identification of skill needs becomes more complex if economies develop and better integrate in the global economy, and will increasingly rely on various methods based on both quantitative and qualitative information. The benefits and limitations of widely used methods and instruments for the early identification of skill needs in market economies are discussed, ranging from labour market signalling using a set of key labour market indicators to econometric models. Several approaches to the use of these methods for policy-making are discussed, which are linked to the level and type of institutional development in economies as well as the penetration of market reform.

Country case studies are used to illustrate strategic approaches that help planners and policy-makers understand the future demand for skills in Pakistan, South Africa, Ireland and Hong Kong, China. These case studies illustrate many analytical methods to inform skills policies, and show the extent to which labour market information and analysis functions have been institutionalized in skills policy planning and are used to assess performance in achieving policy objectives. Pakistan is in the early stages of this process, while South Africa has made significant progress, in part due to the strong political drive to use skills policies to redress the underutilization of labour and inequity of the apartheid era. Ireland and Hong Kong, China, are examples of countries in which various methods in labour market information and analysis are used to plan skills development in a well-developed institutional structure.

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Acknowledgements

Research assistance on South Africa has been provided by Pinar Hosafci and Yves Perardel. Comments from Iyanatul Islam and Irmgard Nübler are gratefully acknowledged. All remaining errors are the responsibility of the authors only.

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1. Introduction

Determining and predicting skill needs in labour markets has been one of the central tasks facing manpower planners and labour market analysts over the past four to five decades. In the 1960s and 1970s policy-makers attempted to identify the precise nature of their human resource requirements using complex, econometric manpower planning models which were initially developed by the OECD and subsequently used, at least to a certain extent, in many developing economies.[5] This approach was in accordance with a development paradigm which allowed for strong involvement of the government in the economy, and a focus on the "formal" part of the labour market. It was an exponent of the belief that economic growth and development could be planned, and that development would soon result in benefits for the population as a whole.

A number of factors have contributed to the gradual demise of detailed manpower plans. In methodological terms, the most significant limitation of the original manpower requirements approach is the assumption that a fixed relationship exists between labour and the quantity of goods and services produced, as well as between labour productivity and education or skills.[6] However, after decades of experience it is recognized that labour markets are more complex and labour market actors are more unpredictable than these econometric models assume. In reality the relationship between economic output, as measured by gross domestic product (GDP), and employment levels is more dynamic, affected by changes in technology, new forms of work organization, migration and, in many developing countries, widespread diseases such as malaria and HIV/AIDS.[7] Perhaps just as important as methodological shortcomings, economic planning had become increasingly controversial during the 1980s in political as well as policy terms. Economic policies became focused on the role of markets and the management of crises, leaving less scope for detailed interventions such as those suggested by manpower requirements forecasting.

The demise of traditional manpower planning, nor the blessings of the market, have fully resolved labour and manpower issues in developing economies, and the question has remained how to ensure that education and training policies are in accordance with economic development and labour market needs. Successive waves of economic as well as education and training reforms during the 1980s and 1990s have left many developing economies struggling with the issue of how to inform market-based or demand-driven skills development, and how to forge effective links between skill formation and economic development.

Skill formation has become more important in the context of the emergence of the knowledge economy. Ironically, some of the factors that make labour markets and skill needs difficult to predict, such as rapid technological change, innovation, and changes in work organization, have also contributed to a dramatic increase in the value of knowledge

[5] See Parnes, 1962.

[6] See, for example, M. Blaug, "Approaches to educational planning", *Economic Journal*, 1967, pp. 262-287; C. Colclough, "How can the manpower debate be resolved", in R. Amjad, et al. *Quantitative techniques in employment planning* (Geneva, ILO, 1990), and G. Psacharopoulos, "Linking vocational education and training research, policy and practice: a personal view", *European Journal: Vocational Training*, No. 36, 2005, pp. 69-73.

[7] See Powell, 2004.

for economic success. In meeting the needs of the knowledge economy, industrialized as well as developing countries have widely adopted the framework of lifelong learning to shape education and training strategies. Such strategies require skills development policies that allow people to take charge of their own knowledge and skills development in a complex and rapidly changing economic and social environment. Development of these strategies has not reduced the need for information on future skill needs, but does have implications for the type of data and analysis that is involved.

In accordance with a recent ILO report on skills, this paper starts from the premise that skills policies can be important drivers of development, and it is therefore important that information is produced on future skills requirements.[8] Labour market information and analysis (LMIA) is increasingly becoming important in identifying and quantifying current and future skills issues and to provide the information needed by employers, workers, providers of education and training and governments to make choices in education and training investment.

The following arguments will be developed in this paper.

1. Basic labour market information and analysis is a necessary precondition for the early identification of skill needs.
2. The early identification of skill needs becomes more complex if economies develop and better integrate in the global economy, and will increasingly rely on various methods based on both quantitative and qualitative information.
3. Apart from the production of information on the early identification of skill needs, it is important that institutional arrangements are in place to translate information into policy action, which should be aligned to broader economic policies, including trade, investment and technology policies.

The conceptual framework for the role of LMIA with regard to skills development is set out in section 2. This section highlights approaches and instruments for the early identification of skill needs in market economies, and in particular the potential and limitations of labour market information and analysis to inform skill development policies. It also discusses organizations and institutional arrangements involved in ensuring that the information on skill needs can be used for decision-making purposes.

In subsequent sections country examples will be used in more detail to illustrate how planners identify and act on the demand and supply of skills in Pakistan, South Africa, Ireland and Hong Kong, China. These case studies cover an array of possibilities of how planners identify the demand and supply of skills, and the institutional arrangements that are used to translate analysis into action. Pakistan is an interesting case study as skill needs have increasingly been recognized as a bottleneck in the structural development of this country. A skills strategy including a labour market information and analysis component have recently been initiated, aiming to make the training system more demand driven, and to base training decisions on adequate information and analysis (section 3). In South Africa, a new training system has been developed following the democratic transition in the early 1990s. Labour market information and analysis functions have been institutionalized in the new system, and are routinely used to assess progress and performance. Both Ireland and Hong Kong, China, are examples of countries in which institutions involved in skills development effectively use various sources and methods in labour market information and analysis to plan skills development (sections 5 and 6). Section 7 concludes.

[8] See ILO, 2008.

2. LMIA and skills: purpose and methods

Much of the early neoclassical economic theory is based on the assumption that information is free of cost and readily available. Reality, however, is different in that information on current market trends has to be created, analysed and made available to relevant actors, and these activities carry substantial costs. Labour market information and analysis contributes to a reduction of the transaction costs in labour markets, and can inform the design, implementation, monitoring and evaluation of employment and labour policies.

In box 1, a number of purposes that relate to skills development are illustrated for various actors and stakeholders. These include informing the allocation of resources in the formal education system, supporting workplace-based and technical/vocational education and training development, and guiding vocational decisions. LMIA is also central to integrating skills policies into development strategies.

Box 1:
Demand for information and analysis

Labour market information and analysis (LMIA) provides accurate and up-to-date information which can help labour markets operate more efficiently and improve labour market outcomes, and help identify decent work deficits. Demand for LMIA to inform skills policies will come from a number of different actors and each will benefit from improved information in the following ways:

- Policy-makers and planners will be able to identify areas where skills are in high demand, and have tools available to help them target resources at these areas. In addition, LMIA will enable planners to monitor progress towards defined objectives, including feedback on when difficulties are being experienced during implementation and what action needs to be taken in order to rectify the situation.
- Managers of education and training institutions will find LMIA useful, as they will have an improved understanding of the nature and extent of the demand for skills. This will help institutions determine which programmes of study should be expanded in the near future and which ones should be cut back.
- Employers will want to have timely and accurate information about the labour market for planning of ongoing operations (including replacement of staff) as well as for investment purposes. For example, the availability of skills in a specific geographical environment, combined with an enabling business environment, is an important factor influencing inward investment. In many countries good market intelligence is used as a means of attracting such investment.
- Unions would find LMIA information useful for bargaining purposes. For instance, they would want to know average wage levels and productivity for specific occupations in different industrial sectors. Similarly, unions would also want to have information about the number of work permits issued, and the type of skills covered by these work permits. All of this information would be used to improve the working conditions of their members.
- Community groups would also want to obtain information about local skill requirements and opportunities, particularly for vulnerable groups and those who have difficulty accessing the labour market, in order to assist their constituencies in improving their situation.
- Students and young people would want to have improved information about career prospects. Young people are also interested in knowing what type of careers they could follow if they enrolled for a particular programme of study. It is not always possible to provide an exact correlation between subject studied and type of employment, but it is possible to signal which types of programmes of study are likely to lead to successful careers and which are not.

Source: Based on M. Powell, "Tools that can be used to undertake labour market analysis", *Occasional Paper* (Cambridge, Cambridge Education, 2008).

What do we mean by labour market information and analysis? Broadly speaking, labour market analysis means an examination of the best information available regarding the state of the labour market, including the state of skills, often involving indicators that have been produced using standardized methods and definitions. Through an analysis of indicators over time it is possible to understand labour market changes and to make interpretations about the supply and demand for different types of skills. In other words, labour market analysis can be used to identify signals about labour market and skills trends based on real data or observations. Analysis of the full set of labour market indicators

provides a fairly comprehensive picture of labour market trends, which, in conjunction with information on labour market institutions, which is often qualitative in nature, can be used to inform policy development. Furthermore, using data and indicators, there are many analytical approaches and methods that can be used to complement and deepen the picture, in particular in relation to skills development and the early identification of skill needs.

In order to make the resulting information and analysis available to labour market actors, institutional arrangements are needed with clearly defined roles and responsibilities. Unless results based on information and analysis are translated into decisions and policy action, there is little point in efforts to produce information. There are many ways to develop a set of institutional arrangements that allows for the effective linking of information and analysis on the one hand, and policy action on the other. The design and effectiveness of such arrangements, as well as the type or scope of labour market information that can be generated and used, is determined by a number of factors, including the role of the government in the economy, what type of policies are envisaged, the state of the education and training system and the level of economic development.

This section first reviews methods that can be used to analyse labour market trends and skills requirements, and thereafter discusses some approaches regarding the link between information and analysis on the one hand and decisions on skills development on the other.

Methods in labour market analysis to inform skills development

The basis for the reading of signals about trends in the labour market is a set of indicators that describes the labour market. The following areas are of direct relevance to skills development:

- Employment trends (by occupation, sector, status in employment and geographical area); unemployment trends
- Trends and levels of educational attainment/skills development[9] in the labour force
- Wage trends
- Productivity trends
- Contribution to GDP by different economic sectors/geographical areas

Employment indicators provide information on the type of work people are doing, including occupational and sectoral information, which can be used as a starting point to assess skill needs. Employment indicators can be constructed using data from labour force surveys (or other household surveys with labour market data), establishment surveys, or a combination of both such as informal sector surveys. These sources can also serve to produce information on educational attainment and skills development. Taken together with the contribution to GDP (value added) by different sectors or geographical areas, employment and education indicators can be used to make a first assessment of the extent to which education trends are in accordance with the development of the economy over time (see box 2 for an example). Information on productivity trends is important in this

[9] The terms “skills development” in this paper is used in broad terms to mean basic education, initial training and lifelong learning, in accordance with the *Conclusions concerning human resources training and development*, adopted by the ILC at its 88th Session, Geneva, June 2000. See also ILO, 1998, pp. 58-59 for an explanation of the term “skills”.

context, because an important part of productivity is explained by levels and trends in skills development.

Box 2:
Labour markets, skills and information in Asia

Enrolment levels in secondary and tertiary education are rising in South and South-East Asia, which is much needed if development, growth and labour market objectives are to be achieved. The relation between education, skills development and the labour market is, however, complex, and it cannot be taken for granted that education in itself will result in better jobs.

The Asian Development Bank (ADB), in the *Asian development outlook 2007,* cautiously warns against "mechanically raising education targets in the hope of generating growth".(1) The warning is based on an in-depth study of the distribution of employment, wages and education in India, Indonesia, the Philippines and Thailand.

The study showed that these four countries are raising educational attainment levels too fast if historical employment trends are taken as benchmarks. This may be justified if educational levels were too low historically, or technological changes necessitate higher education levels, but the study demonstrates that this is certainly not always the case. Male drivers, for example, have become significantly more educated, without changes in technology or other reasons that would justify higher levels of education. The ADB argues that "it seems likely that drivers are a residual category into which workers of any education category may fall, rather than facing unemployment".

The ADB study focuses on the role of education in raising productivity of workers in existing economic activities. As pointed out in the study, education can also serve as a catalyst or driver of development, by empowering people to develop or adopt new technologies and to diversify production structures. This second role is also highlighted in the chapter on "Skills policies as drivers of development" in a recent ILO report on skills development for the 2008 International Labour Conference.(2)

Labour market information is necessary to facilitate both roles of education. With regard to the first role, the ADB stresses that expectations of the contribution of education to structural change should be based on an empirical understanding of what workers are likely to do with their education. In other words, analysis of trends in employment, including the sectoral distribution and wage development, should inform education and training policies. Information requirements are likely to increase when an economy grows, transforms and better integrates in global markets, and skills development systems become more complex. If skills development policies are used as a driver of development, it becomes more important that information is produced on future skills requirements (early identification of skills), and skills policies are synchronized with other policies through appropriate institutional structures and arrangements.

(1) *Asian development outlook 2007* (Manila, Asian Development Bank, 2007), p. 338.

(2) *Skills for improved productivity, employment growth and development,* Background report of the International Labour Conference, 97th Session (Geneva, ILO, 2008).

Employment, education and productivity indicators provide a basis to make an assessment of the state of skills in the labour force, and identify the extent to which economic development may be constrained by a shortage of skills in the economy or in particular sectors. More specific information can be produced if wage trends are considered, as rising wages for workers with particular skills may signal a shortage of these skills.

The picture of labour market trends based on a set of indicators can be complemented and deepened using the analytical approaches or methods listed in table 1 below. Among these approaches econometric modeling is the most comprehensive, and the only method capable of providing economy-wide, detailed, quantitative and consistent information about future skill needs. Furthermore, some of the methodological shortcomings of the earlier manpower planning models have been overcome in more sophisticated forecasting models that have been developed in countries such as the United States, the United Kingdom and the Netherlands.[10] In the Netherlands, for example, the Research Centre for Education and the Labour Market (ROA) maintains a forecasting model that predicts mismatches between

[10] See Strietska-Ilina and Tessaring, 2007.

labour supply and demand at the national level and, to some extent, at the regional (sub-national) level. This model explicitly allows for substitution processes in forecasts of labour-market situations for various types of education, and forecasts are limited to a period of five years.[11] Similar to the situation in the United Kingdom and the United States, the ROA model is not used as a blueprint for economic planning, but rather provides information for all stakeholders, which can be taken into account alongside other information. Based on the model, information is made available through the National Careers Guidance Information Centre to students, for example, ranking prospects for certain educational categories on a scale from "good" to "poor".[12]

Table 1. Summary of different approaches or methods for undertaking labour market analysis to inform skills development

Approach	Resources required	Benefits	Limitations
Signalling	Basic statistical knowledge and access to time series data	Simple and relatively easy to undertake as well as to update the information and analysis	The analysis depends heavily on the quality of existing time series data; signals may be difficult to interpret
Econometric modeling	Expertise in econometric forecasting techniques	Able to provide a consistent overview of future demand for specific occupational areas and skills	Time consuming and costly, in part due to methodological issues; numerous problems are also likely to occur due to the validity and accuracy of data
Special studies, such as rate-of-return analysis, tracer studies	Expertise in specialized methods	Provide information related to particular skills	Tracer studies are costly and linked to a specific education/training institution
Enterprise training survey	Expertise in development and analysis of surveys	Relatively flexible and efficient means of predicting changes in the demand for skills	Relies on the perceptions and expectations of respondents (employers), which may be different from other actors; dependent on the rate of response and willingness to share information
Job opportunity Index	Collection, collation and analysis of job vacancies from local newspapers	Provides a comprehensive index of how demand for different skills are changing	Advertised vacancies may be difficult to match with skills; resource intensive, with limited coverage of demand from smaller companies
Use of administrative data	Collection, collation and analysis of data available in administrative systems, e.g. education/training enrolment data, data on trade testing, etc.	Much of the data for this analysis is readily available and can be analysed in a cost effective manner to produce findings	Coverage limited to administrative purposes, and it can be very difficult to obtain access to data
Sector studies	Expertise in quantitative and qualitative analysis of skills issues	Comprehensive approach for understanding how different factors influence the demand for skills	May prove costly in view of scarcity in sector-specific analytical skills; partial view
Stakeholder driven forums	Bringing together stakeholders on a regular basis to discuss changes to the labour market	Provides one of the most effective and efficient means of obtaining information about the labour market	Certain individuals might dominate this process and provide a distorted view of the labour market

[11] F. Cörvers and M. Hensen, "Forecasting regional labour market developments by occupation and education", in O. Strietska-Ilina and M. Tessaring (eds), ibid.

[12] F. Cörvers and M. Hensen, ibid.

Despite progress in terms of methodology, econometric models have remained costly to develop and maintain, and heavily dependent on the availability of high-quality data for many years. There are however alternative approaches that could be used to provide information on future skill needs. A precursor to the building of a fully-fledged econometric model is the construction of an industry-occupation matrix, and to use this matrix to make projections based on expected economic growth rates (by industry). This approach has the advantage that it is relatively simple to carry out, and will provide some insights in the development of occupations/skills in the near future. The feasibility of this approach has recently been tested by the ILO for selected countries, and a tool that has wider applicability is being developed (see box 3). It should be emphasized, however, that this tool is not intended to be a substitute for an econometric model, and should only be used in conjunction with other methods. The main purpose is to provide a framework that can be used to support further analysis/development of employment and skills policies, and not to provide a blueprint for the future.

Other methods include the calculation of rates of return on education or training and tracer studies. Rate-of-return analysis, which is grounded in the human capital theory and has cost benefit analysis at its core, can be applied to broad levels of education (primary, secondary, etc.), but also to particular labour market groups (employed in agriculture, industry, etc.). Comparisons of rates of return at different levels of education allow for a prioritization in the allocation of resources. Tracer studies are an accepted method to provide information on the prospects for graduates from particular institutions (in the formal or the informal economy, including special training programmes). This method has the benefit of providing highly relevant information regarding specific skills.

Information on specific current and future skill needs can in principle also be obtained through enterprise training surveys, if an adequate response rate can be achieved and employers are willing to share information. Because such surveys can be tailor-made to serve specific purposes and target a specific group of enterprises, there is much scope to collect useful qualitative information. An example is the survey of businesses undertaken by the Economist Intelligence Unit in Asia.[13] This is not a nationally representative survey, but a survey of members of a corporate network, with the aim of building a picture of perceptions among selected businesses. The survey conducted in 2007 highlighted skill shortages as an important business concern in the region.

While labour market signaling based on labour force surveys can be used to assess excess supply of labour, as captured in unemployment, enterprise surveys can be undertaken to measure demand that is not yet met by supply, i.e. job openings or vacancies. Enterprise surveys to measure job vacancies, and sometimes recruitment problems, have gained popularity in recent years in the industrialized world, including in several European countries and the United States.[14] An assessment of job vacancies and the skills requirements of these vacancies can also be made using published vacancies ("help wanted" advertisements). Like enterprise-based surveys of job openings the latter method can be used in both developed and developing countries, but the limitations of a so-called job opportunity index in terms of coverage of the labour market, in particular the bias towards larger companies and corporations, will be more important in the context of a developing economy. Australia and Canada are examples of countries that have used both

[13] See Economist Intelligence Unit, 2008.

[14] See Clark and Phillips.

enterprise-based surveys and a survey of "help wanted" advertisements to gain insight into labour demand. See box 4 for an application of this approach by the Government of Nepal to assess the demand for Nepali workers overseas.

Box 3:
A tool to project occupational employment

Econometric models are able to produce a consistent and detailed picture of the future demand for skills. Models that are used by OECD countries usually consist of four independent modules. The first module (1) is a multi-sectoral macroeconomic model, generating total employment projections by sector, and the second module (2) is an occupational model capturing changes in the employment share of occupations within each sector. The sectoral macroeconomic models used in module (1) are complex, and are used for a wide variety of purposes. For the second module, modeling techniques may be used that are less sophisticated and occupational forecasts are generally derived by extrapolating historical occupational trends by industry. In other words, the determinants of occupational change are not modeled explicitly.

Ideally, these two modules are complemented by a replacement demand module (3) and a qualifications module (4). Total replacement demand from module (3) should be added to "expansion demand", estimated in modules 1 and 2, in order to calculate the expected net requirements for each occupation. Occupations are linked to qualifications in module (4).

The principle of the tool developed by the ILO is to use an alternative module (1), namely a two-steps approach consisting of: (1a) an econometric model predicting value added (VA) by sector, based on projections of GDP and VA by broad sectors (agriculture, industry, services) and other major macroeconomic variables available from international and national forecasting institutions; and (1b) a model that links total employment and VA by sector, by examining elasticities over time and across sectors, in order to derive total employment estimates by sector. For module (2), the idea is to test an occupational model capturing changes in employment share of occupations within each sector, using extrapolating techniques such as growth curves. Module 3 and module 4 are not considered due to the lack of available data for most developing countries.

The combination of estimates from modules 1 and 2 allows for the generation of occupational projections in the medium term (up to 5 years). The projections take the form of confidence intervals, with the width of the intervals proportional to the cumulated forecasting risk.

This approach has been tested with data from four countries (Indonesia, South Africa, Pakistan, and Philippines). In terms of final output (cumulated forecasting risk and forecast intervals), the results can be summarized as follows:

- With few exceptions, the law of large numbers prevails independent from the country, the sector and the econometric model that was tested. When the number of persons in a given occupation by sector is important in quantitative terms, it is much more predictable (both in absolute and relative terms) than minor occupations. This implies that this approach can capture the significant occupations by sector but not the many minor occupations by sector.
- Related to the predominance of the law of large numbers, the approach does not give sufficiently good results at the 2-digit level of ISIC. Only around 20-40 per cent of occupations by sector present a limited projection risk.
- At the 1-digit level of ISIC, the picture changes significantly, with around 60 per cent of the occupations in terms of total employment presenting a limited cumulated forecasting risk.

Based on these findings the calculation of occupational projections at the 1-digit level of the ISIC is clearly feasible for the sectors that present a limited projection risk. The projections should take the form of intervals, and it is pointless to produce projections if the projection risk is too high.

Source: Based on J.-M. Pasteels, "Analysis and Projections of employment by sectors", draft report (Geneva, ILO, October 2008); R. Wilson, I. Woolard and D. Lee, "Developing a National Skills Forecasting Tool for South Africa", Report prepared jointly by the Institute for Employment Research, University of Warwick and the Human Sciences Research Council, Pretoria (2004).

Administrative data can be used to complement data from surveys or other dedicated data collection exercises. Enrolment data, for example, can be used to produce information on the current supply of skills, and the extent to which this supply is in accordance with the current structure of the labour market. Administrative data may also prove useful to signal trends in skill needs, for example in the case of trade testing, as the number of people who have been trade tested can provide an indication of which skills have an economic demand. Such data should however be interpreted with care, as trends in administrative data may reflect political as opposed to economic factors.

Administrative data is also produced as a by-product of the implementation of certain skills policies. In this case the data may be used to monitor these policies, and to some extent to evaluate their effectiveness. For example, if workplace skills plans feature as an element of the national skills development system, an analysis of these plans and their

implementation can be used to monitor policies, but also as a source of signals regarding the current and future training needs of the labour force.

Box 4:
A Job Opportunity Index in Nepal

The construction of a Job Opportunity Index (JOI) helped the Government of Nepal understand what type of skills are in demand overseas and in which countries the demand for Nepali workers is concentrated. Essentially, the JOI collated information about jobs being advertised over a 12-month period according to Standard Occupational Classification (SOC) codes used in this country. This approach allowed for an analysis of changes in the demand for different occupations over time, including whether demand is increasing or decreasing.

The information for the JOI was collected from the Kantipur Daily Newspaper. This newspaper was chosen due to the fact that it is the most popular newspaper for the advertisement of overseas jobs. During the initial pilot, from April to September 2007, a total of 38,251 advertisements for overseas job openings were collated and analysed. The starting point for the analysis was to determine the location of the proposed job. According to the data, the majority of the advertised posts were found in Qatar, followed by Saudi Arabia and the United Arab Emirates. Only recently have countries such as Israel started to recruit Nepali workers. Out of the total job openings, 52 per cent were for unskilled positions, 48 per cent for semi-skilled positions and less than 0.2 per cent for skilled positions. This breakdown was interesting since it confirms that Nepal is not just an exporter of unskilled labour, and semi-skilled Nepali workers are also in demand overseas. Unsurprisingly, the analysis of the data revealed that the highest number of job openings can be found for elementary occupations. However, it also reveals an upward trend in the demand for craft and related workers, as well as a possible longer term decline in the demand for elementary workers. These findings have important implications for what type of skills will be produced in the future.

Another important issue revealed by the Job Opportunity Index is the type of recruitment strategy operated by different countries, particularly in relation to whether certain countries have a preference to hire unskilled, as opposed to semi-skilled workers. The evidence from the JOI suggested that all countries tend to recruit equal proportions of unskilled and semi-skilled workers. However, there are exceptions, namely that Oman prefers to recruit semi-skilled workers and Malaysia has a preference for unskilled workers. This type of information can be used to influence future relationships with overseas governments, including building of the most favourable partnerships, as well as memorandums of understanding between countries about the export of unskilled and semi-skilled workers from Nepal.

Source: Based on M. Powell, *Labour Market Component Analysis of the demand for skills in Nepal* (Asian Development Bank Nepal Skills for Employment Project, 2007).

Undertaking sector studies is an example of a comprehensive approach at the level of an individual sector, usually consisting of a compilation and analysis of information based on existing sources, which can subsequently be reviewed by a stakeholder forum. The combination of an analysis of available information and review by stakeholders is a very efficient means to provide insights in current and expected skill needs, especially if the forum is well-balanced.

Approaches and institutions to inform skills development

Apart from developing methods to analyse labour market trends and skills requirements, it is equally important to develop institutional arrangements that enable labour market actors to use information and analysis. There are many ways to develop such arrangements, and the effectiveness needs to be assessed in the context of a particular country or economy. Nevertheless, several approaches can be distinguished that relate to factors such as the country's level of development and the penetration of market reform. A

well-known distinction is between supply-driven skills development and demand-driven skills development.

The stylized scenarios distinguished by Ziderman show the move from supply-driven to demand-driven technical and vocational education and training (TVET) in many African countries during the 1980s and 1990s.[15] The first scenario is characterized by traditional training finance flows in training markets which are dominated by the public sector. The government provides and finances most training, which is predominantly pre-employment training. Workers pay for training through lump-sum fees or in the form of reduced wages. On the other hand, training in the public sector is subsidized, student fees are set at purely nominal levels and fees do not remain with training institutions. Enterprises and private training institutions provide some training to entrepreneurs and employees under competitive conditions, but this is at their own initiative and expense and without any contribution from government. The bulk of training in this scenario tends to be supply-driven, and not linked to labour market needs.

The second scenario is characterized by increased financial diversification and earmarked training levies or taxes charged on enterprises. The purpose of obligatory payment of levies is the generation of revenue for the support of training provision by public and private training institutions, and the encouragement of training in enterprises. Normally, the levy income is deposited in a fund, which is managed by a government department, or even by a tripartite structure, that uses it to make grants to training institutions according to specific rules. While the idea of the levy-grant system is to make the skills development system more demand-driven, reality may be different if no linkages with labour market needs are developed.

Finally, the third scenario is characterized by integrated financing systems, with a diversity of mechanisms meant to ensure competitive, demand-driven training markets. These include the funding of public training institutions on the basis of certain formula, contract training targeted at disadvantaged groups, the charging of fees at public training institutions, and the use of vouchers for potential trainees to purchase training in the open market. The mechanisms tend to be managed by autonomous bodies run by boards representing the training system's main stakeholders. According to Ziderman, such training authorities are generally better placed than government departments to operate payment mechanisms for training institutions in ways that promote efficiency and competitiveness in training markets.

It is clear that Ziderman's scenarios are "stylized", as fundamental changes in TVET systems are complex and take many years to complete. Firstly, because an extensive "technical" agenda usually including the introduction of standards-based training, training of trainers, upgrading of facilities and so on, can only be implemented gradually. Secondly, the pace of change will be determined by political support for the process, and especially institutional changes may be slow to materialize in the face of reluctance of the public sector to yield power. In the complex process of TVET reforms the role of LMIA can easily be overlooked, and shortcomings may only become apparent during implementation.

Training systems in many African countries at the time of independence resembled the first scenario, which matches the traditional manpower requirements forecasting approach in which education and training needs are determined centrally, governments fund training from budgetary allocations and provide training in public sector institutions. Even after the manpower requirements approach had been abandoned, administrative and finance

[15] See Ziderman, 2003.

mechanisms in line with the first scenario often remained intact and reforms during the 1990s and sometimes later were intended to move away from this scenario.

In the first scenario, the scope of skills development policies is limited to activities that can be controlled by governments, and policies to influence skills development in the private sector are mostly lacking. In the extreme case that traditional manpower planning is applied to the public sector only, and training occurs in public sector institutions only, many indicators could be produced drawing on administrative records of public institutions. This would mean that reporting systems and information flows can be developed along bureaucratic, hierarchical lines. If the training system becomes more demand-driven in accordance with the other two scenarios, and the importance of workplace-based is increasingly taken into account, alternative sources of data and information become more important as well, including household surveys, establishment surveys and many of the methods listed in table 1. For example, if training institutions are operating largely autonomously, and graduates do not have guaranteed employment following their studies, there is a clear need for tracer studies. Similarly, if economic policies target certain sectors, sector studies are an appropriate instrument to help balance skill needs and supply.

The approach developed by Ziderman is helpful since it points to the importance of the evolution of TVET systems and attempts to explain this process in terms of the match between the TVET system, the level of institutional development and the movement towards market orientated development. This approach assumes that the type of labour market information generated and correspondingly utilized, will depend upon the country's level of institutional development and the penetration of market reform. Adopting such an approach can help us understand what type of labour market information should be introduced into a particular context, based on the institutional structures and the nature of the market reforms.

An alternative way of looking at this issue is to focus on the type of development that has occurred in a country, as opposed to the level of development. Adopting such an approach can help us understand the way in which institutions develop and to identify information that meets the needs of the end user. Furthermore, the failure to adopt a culturally sensitive approach could result in the production of information that is not readily used in the policy-making process.

The first policy model can be termed the *education approach* or model. Under this approach LMIA is used to guide decision-making within the Ministry of Education (see figure 1). The mechanism for translating this information into supply is the formalized school system as well as tertiary education colleges. Thus, within this model, pre-employment education and training tend to be used as the vehicles for responding to changes in the demand for skills. Within this model only limited attention is given to supporting skills development in the workplace. Therefore, under this approach it is important to understand the changing nature of demand in the labour market, and it is equally important to focus upon the degree to which skills produced by the education system are responding to this need.

The advantage of this approach is that there are close links between the identification of labour market needs and the implementation of strategies to change supply. This approach tends to focus on two areas of reform for influencing supply. The first of these centres on the curriculum and involves attempts to match the curriculum at the tertiary level with the demands of employers. A second strategy focuses on influencing the number of graduates in particular subject areas. This is normally achieved through providing incentives for students to enroll on programmes of study where there is a skills shortage. There are also other advantages to this approach in that it is relatively easy to influence support for a particular subject, and generally there is no need to engage in extensive dialogue with different government departments or stakeholders. And as a consequence, this approach can also be a quick response to skills that are in short supply.

However, on the downside, the education approach tends to neglect the role played by the workplace in supporting skills development. Similarly, it fails to consider how pre-employment skills relate to the whole process of lifelong learning outside of the formal education system. The education approach was used with varying degrees of success in Hong Kong, China, and to a limited extent in the United Kingdom and Jamaica.

The second approach can be termed the *employment approach* (see figure 2). This contrasts with the education approach in that emphasis is given to supporting changes in skill levels and the occupational structure of the workforce. Under this model or approach, a Ministry of Labour normally monitors the changing nature of the labour market in an attempt to identify skills gaps within companies and situations where demand outstrips supply for certain types of occupations. In addition, this approach also uses information from the labour exchange (employment services) in order to obtain information about what vacancies exist and the skills of those looking for work. The assumption underpinning this approach is that the response to these skill shortages or gaps can be met through a variety of strategies. The first focuses on strategies for supporting skills development in the workplace. Normally, the incentive for encouraging such skills is through the introduction of a skills levy. This can be used to encourage skills development amongst young people who have entered work and also among existing employees who need their skills upgrading. However, it is important to note that strategies should also tackle social issues, particularly relating to disadvantaged groups and the unemployed who cannot obtain employment due to their lack of skills

Figure 1. The education approach

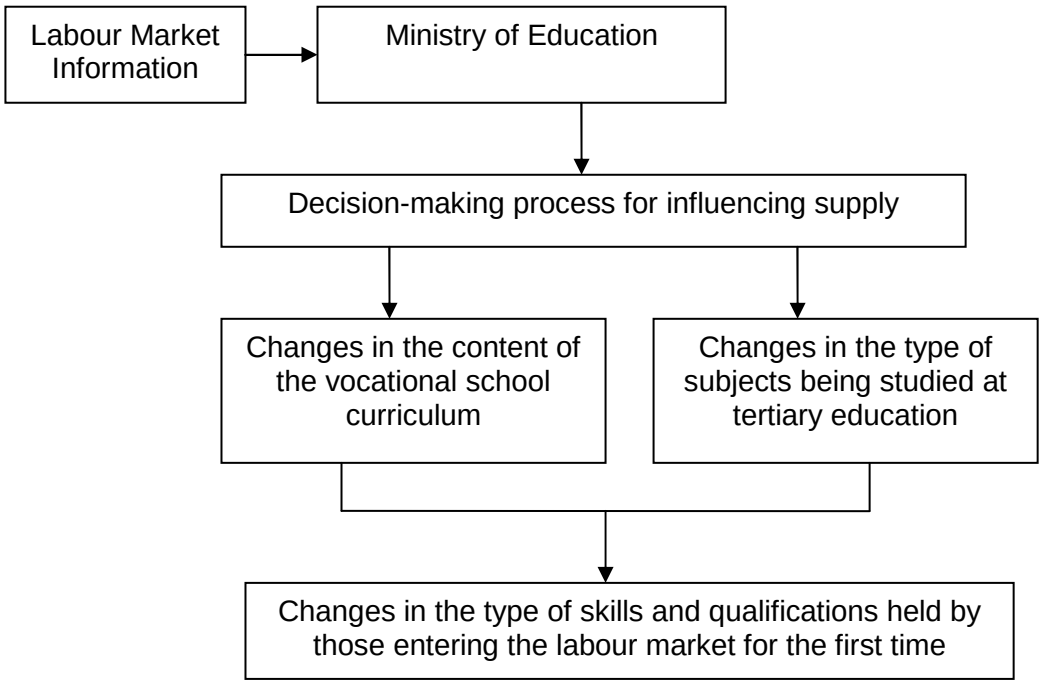
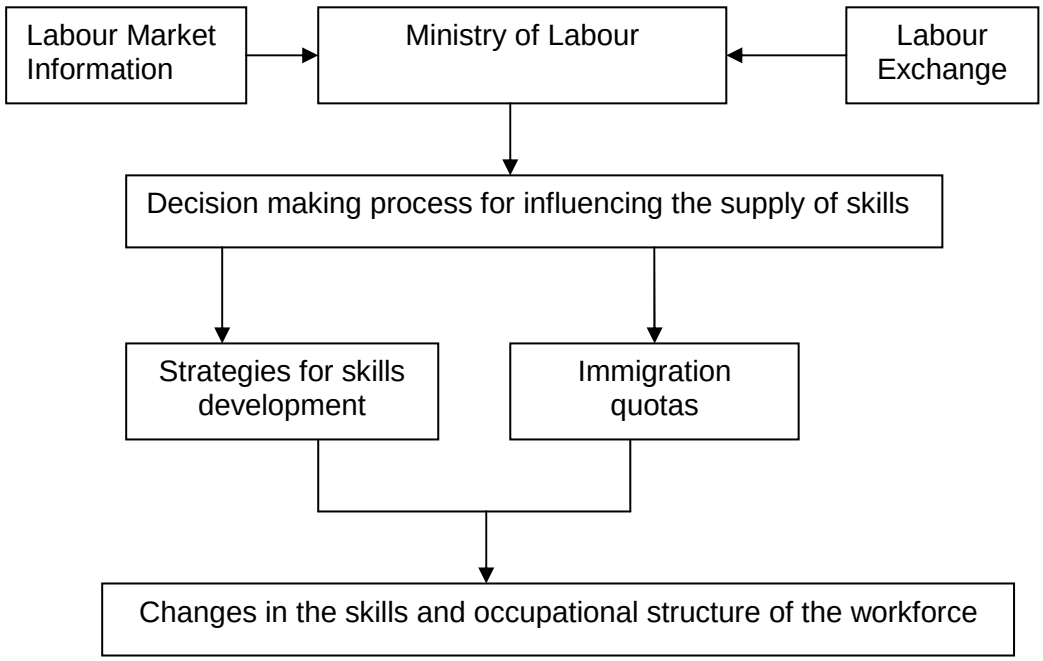


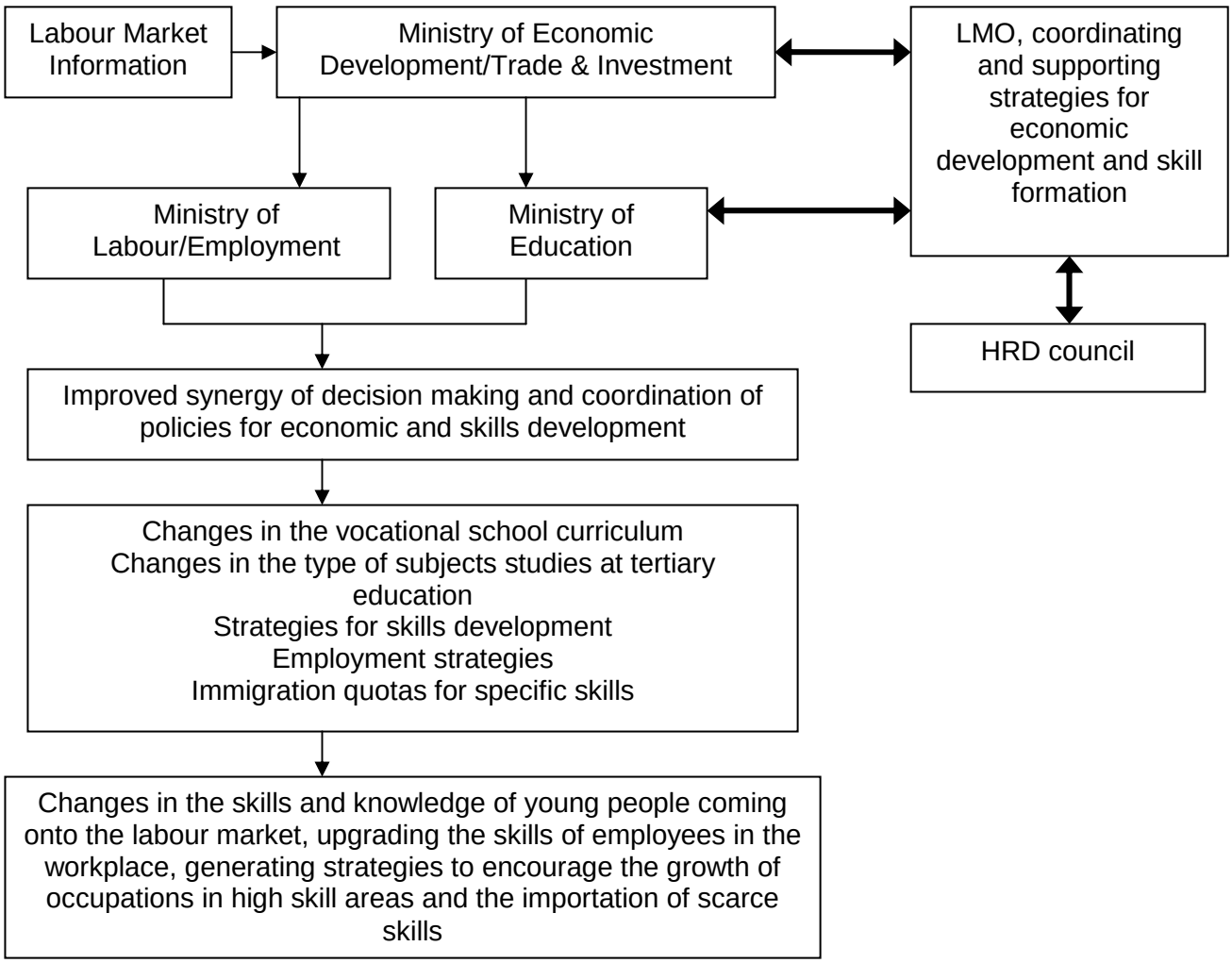
Figure 2. The employment approach



The government also has a second strategy if they are unable to respond to skill needs, namely introducing immigration quotas for certain types of skills. This is a mechanism that can be used to respond quickly to a skills shortage. The employment approach is probably close to the strategies used by the governments in the Republic of Ireland and in South Africa. There are also elements of this approach in the strategies used by the governments of the United Kingdom and Jamaica. This approach is accompanied by the provision of extensive information about the labour market, enabling employers, providers and learners to make decisions about how they invest their resources in skills development.

The third approach can be termed the *integration or economic development approach*. This approach differs from the other two in that it involves more joined-up policies in order to identify and respond to skill shortages (see figure 3). Under this approach the priority for determining skill requirements is normally the direction of the country's economy. This is influenced by the Ministry for Economic Development or the Ministry for Trade and Investment. Subsequently, they provide information to the Ministries of Education and Labour about what skills are in demand and correspondingly what skills they should produce. So here an integrated approach is used to respond to these shortages, which involves pre-employment education, training within the workplace and support for those unable to enter the labour market due to lack of skills. In addition, this approach can also use employment strategies to support skills development, particularly in high-skilled occupations. The use of immigration quotas can also help a government to respond immediately to skill shortages. This integrated approach aims to ensure that the skill needs of all sections of society are taken into account and that appropriate responses are made through a number of interconnected actions. Singapore is an example of a country near to this approach.

Figure 3. The integrated or economic development approach



3. Pakistan: LMIA and skills to accelerate growth

A wide ranging programme of reforms was introduced by the Government of Pakistan in 2000, including fiscal adjustment, privatization of the energy, telecommunications, and banking sectors and trade reforms. Together with official and private transfers, including additional support provided by the United States after 2001 and a domestic consumption boom which was stimulated by a stable exchange rate, the new policies have resulted in higher economic growth rates. The economy has grown at an average rate of 6.6 per cent per annum for the last six years, compared to an average of 4.6 per cent during the 1990s.[16] Higher economic growth has contributed to poverty reduction and freed up resources for social spending. According to the Ministry of Finance, the poverty headcount decreased

[16] See Ministry of Finance, Government of Pakistan, 2008.

from 34.5 per cent in 2000-01 to 23.9 per cent in 2004-05, after registering increases during the 1990s.

The recent economic performance notwithstanding, Pakistan faces a number of challenges, not the least of which is the need to restore political stability and address security concerns, as well as the need to maintain a stable macroeconomic environment in the face of renewed inflationary pressures, a current account deficit and a fiscal deficit. An important structural economic challenge is to overcome the dependence on the cotton economy, and the need to diversify the economy towards more advanced products with higher valued added. Manufacturing has traditionally been concentrated in low value-added products, with an important role of textile exports that are dependent on cotton crops as the main input. Despite efforts to diversify the economy in recent years, some analysts deem the current economy to be more dependent on textile exports than it was in 1999-2000.[17]

Diversification of the economy away from its dependence on low-skills, low-technology manufactured exports is hampered by a number of constraints. An important constraint is the very low level of human resource development in Pakistan.[18] In 1999-2000, more than half of the labour force had at most one year of schooling, and by 2005-2006 this proportion was still high, at 46.2 per cent.[19] Skills development in the workplace has traditionally been very limited in Pakistan as well. In his paper on the low-level skills trap, Amjad notes that "… unfortunately investing in skills development and developing a well- trained labour force has always been of low priority for factory owners and managers in the cotton industry."[20]

The increasing recognition of the economic constraints posed by the low level of skills is reflected in recent policy documents. The *Medium Term Development Framework 2005-10* (MTDF) contains a series of policies and measures which aim to steer Pakistan towards the knowledge economy, and position the country better in the face of global challenges.[21] One of the key strategies is investment in education to raise the level of skills of the future labour force. Similarly, *Vision 2030*, which was released in 2007, identifies the improvement of the quality and expansion of the delivery of education as a major challenge, and places employment and employability at the centre of economic and social policies.[22] Partly with a view to the demographic transition that is unfolding and partly with a view to the low education and skill levels of the current workforce, technical and vocational education and training has been made the central pillar of human resource development policies in Pakistan.

[17] See Economist Intelligence Unit, 2007.

[18] See Amjad, 2005, pp. 387-409.

[19] See Ministry of Labour, Manpower and Overseas Pakistanis, Government of Pakistan, 2007, Table 7, p. 16.

[20] See Amjad, ibid., pp. 389-390.

[21] See Planning Commission, Government of Pakistan, 2005.

[22] See also S. Ghayur, *Pakistan: Decent Employment Generation and Skills Development*, Papers, Synthesis and Recommendations of the National Tripartite Forum on *Employment* and Skills, jointly organized by the Ministry of Labour, Manpower and Overseas Pakistanis, and ILO, 25-26 April 2006, Islamabad.

New skills policies: NAVTEC and *Skilling Pakistan*

In line with the new policies, the Prime Ministers' office established the National Vocational and Technical Education commission (NAVTEC) in 2006 with a view to strengthen, standardize and streamline vocational and technical education. NAVTEC is primarily a regulatory and coordinating body for skills development and establishment of national skill standards, certification and accreditation procedures.

In 2008 the institution released a new skills policy document, entitled *Skilling Pakistan: A Vision for the National Skills Strategy, 2008 – 2012* (Islamabad, NAVTEC). This document starts by highlighting the shortcomings of the current system of education and training provision vis-à-vis policy aims. Present enrolment in TVET institutions amounts to 315,000 students, up from 200,000 in 2004.[23] This may be compared with a total youth labour force (aged 15-24) of around 14 million in 2006-07, and a target in the MDTF of 0.95 million skilled workers annually (of which 0.7 million are to be trained in public sector institutions and the remaining part in the private sector). However, more important than the current shortfall in capacity in quantitative terms are the constraints in terms of quality of education and training. *Skilling Pakistan* notes that the current TVET system lacks linkages between the supply of skills and market demand. Public institutions tend to continue offering what they have traditionally taught, regardless of the usefulness of these skills in the workplace.

Similar to TVET reform strategies in many countries, *Skilling Pakistan* therefore formulates three main objectives:

- Providing Relevant Skills for Industrial and Economic Development
- Improving Access, Equity and Employability
- Assuring Quality for Skills Development

Apart from widening access to training and raising the number of students, the elements outlined under each objective suggest a move from a supply-driven TVET system, mostly in line with Ziderman's first scenario (set out in the previous section), towards a system that better meets market demand and will be better integrated with economic development objectives. This is in accordance with the reasoning underlying the establishment of NAVTEC, which aims to achieve this through, inter alia, more involvement of the private sector in the development of the TVET system. A central element is therefore the establishment of Sector Skills Councils (SSCs), which will be modelled on similar institutions aiming to involve industry in training provision elsewhere.

The skills policy document highlights the need for information and analysis to inform skills development policies and provision, an issue that was also part of the justification for the establishment of NAVTEC. To this end, a series of methods are mentioned, including several of those listed in table 1 (section 2), such as labour market signalling, the use of tracer studies, the construction of a job opportunity index and sector studies. The Government is expected to develop capacity to do this work, but also to commission research, as well as to facilitate the production of LMIA by other organizations. LMIA should not only cover the supply and demand for skills, but also the impact of current and future provision on employability, and the linkages between skills development and broader economic objectives. SSCs are expected to have a pivotal role in providing "industry intelligence" about current and future skill needs.

[23] See Kemal, 2005, pp. 349-357, Table 1.

The role of LMIA is thus well-accepted, and *Skilling Pakistan* contains a vision of the direction such information and analysis should take. However, it does not contain an action plan, in which resources, responsibilities and activities are clearly spelled out. The development of an effective system of LMIA to inform skills policies requires the coordination of activities between a wide range of actors, and takes time to develop. Below we will discuss recent efforts to improve LMIA in Pakistan, as well as the information that will be produced for *Skilling Pakistan.*

Developing labour market information and analysis

Over the years, Pakistan has made important efforts to monitor labour markets and human resource development, often with international support through various projects which covered not only data collection, but also labour market analysis and capacity development. At present, the most important source for labour market information is the labour force survey (LFS), which has been conducted for many years by the Federal Bureau of Statistics (FBS). The survey has been regularly reviewed and refined and provides a source of quality information on labour markets in Pakistan at the national and provincial level, although the survey is not representative at lower (district) levels and at times suffers from difficulties in terms of data collection in certain geographical areas.

Nevertheless, a number of challenges has persisted, in particular concerning the analysis of labour market information and vis-à-vis policy development in general and skills development policies in particular. These include:

- Lack of timely and focused analysis and interpretation of basic labour market and related indicators.
- Limited integration of labour market analysis on the one hand, for example conducted by academic and research institutions, and policy development on the other, mostly due to capacity constraints in the public sector.
- Low awareness of basic international concepts, classifications and definitions among policy-makers, social partners and other stakeholders including the media.
- Lack of data pertaining to topics that are high on the policy agenda such as skills development and local economic development.

These challenges gained importance in view of the far stronger emphasis that has been placed on employment and human resource development policies in more recent years, which has been highlighted before. In this context the Ministry of Labour and Manpower (MOLM) in collaboration with the ILO and the United Nations Development Programme (UNDP) started the development of labour market information and analysis. A new unit was established in the MOLM, the Labour Market Information and Analysis Unit, which became operational in the second half of 2006 (see box 5).

Since the start of the LMIA Unit, four reports have been produced. The first report focused on an initial set of key labour market indicators to assess the attainment of decent work in Pakistan. Subsequent reports had a more topical focus, on skills development and youth employment, respectively. The most recent report focused on the achievement of the new Millennium Development Goal (MDG) target 1B – Full and productive employment and decent work for all including women and young people. This report, released in

December 2008, examines in detail the four indicators that have been adopted to monitor MDG target 1B.[24]

Box 5:
A LMIA system development in Pakistan

The aim of the newly established labour market information and analysis system is to provide up-to-date and timely information and analysis, which can be used for policy formulation and monitoring of decent work and other policies. The LMIA system consists of three components:

(1) Labour Market Information and Analysis Unit

(2) Institutional arrangements

(3) Labour market information and analysis tools

  (a) Analytical tools

  (b) Reporting tools

(1) The LMIA Unit has been staffed with a team of junior professionals working on information system development and policy analysis in the employment and labour field. The staff is being trained both through on-the-job and off-the-job training on topics such as labour market analysis and the use of general and specific software for statistical analysis and data management.

(2) Institutional arrangements enable the LMIA Unit to effectively bridge the gap between data collection and labour market analysis on the one hand and decent employment and other policy formulation on the other. These arrangements start from the formal and informal linkages of the LMIA Unit as it is located in the institutional set up of the MOLM. In addition, an Advisory Panel has been established which brings together labour market stakeholders and social partners. The Advisory Panel reviews and plans the activities and outputs of the Unit on a regular basis and fosters linkages between data collection, analysis and policy development at the national and provincial level. In this way the Panel ensures continued policy relevance, ownership and sustainability of the Unit.

(3) The LMIA system uses two sets of tools, namely analytical and reporting tools. The approach that has been adopted regarding the analytical tools is to start with the development of a national LMIA database containing a limited number of key labour market indicators. These indicators have been identified, produced and stored in accordance with international standards and reflect best practice in LMIA development. Over time, this set of indicators will be expanded in response to the demand for information and the capacity of the LMIA Unit to maintain and update the database. Regarding the dissemination and reporting tools, the LMIA Unit produces labour market reports on a regular basis. Since the start of the project, four reports have been produced.

The national database that has been established by the LMIA Unit will be used as a model for the development of provincial and local databases. In terms of content, the latter are not limited to the information stored at national level but will follow the structure and methodologies underlying the national database.

Developing LMIA for *Skilling Pakistan*

The efforts to improve LMIA in Pakistan have focused on the development of a basic infrastructure to analyse existing data and the production of regular reports. In the context of *Skilling Pakistan*, a project has been developed by the ILO with funding from the European Commission aiming on the one hand to support the new skills strategy and on the other to develop the necessary information and analysis to inform the strategy.

The main objective of the LMIA component of the project is to improve the operational capacity of the LMIA Unit at the federal and provincial levels to collect and

[24] See Ministry of Labour and Manpower, Government of Pakistan, 2008.

analyse information on skill needs and labour trends, and to strengthen linkages between LMIA, the business community and training providers, all in the context of *Skilling Pakistan*. The outputs are as follows:

(1) Regular production of LMIA reports

The production and distribution of regular briefs and reports is the main source of information provided to stakeholders in order to inform decisions. The federal LMIA Unit, and the provincial units supported by the project, will produce regular briefs and reports based on an analysis of labour market data using the labour force survey as well as other sources of information. These publications will have an emphasis on skills, and are based on international standards (e.g. analysis of educational attainment, shifts in sectoral and occupational distributions, changes in wages and earnings). Supplementary information will come from specific surveys and studies carried out at all levels, including tracer studies to be carried out by the TVET authorities, for which technical support will be provided.

Key activities will include:

- To prepare regular LMIA reports based on an analysis of labour market data from the labour force surveys and other sources of information.
- To conduct sectoral studies and research.
- To support TVET authorities in conducting surveys and studies.
- To develop a feedback mechanism between the private and public sectors in accordance with *Skilling Pakistan.*

(2) LMIA units in provinces established and capacity of federal and provincial units enhanced

The analysis of national labour market information is currently undertaken by the LMIA unit in the MOLM. The project will continue to support the federal LMIA unit and it will provide technical and financial support to the provincial Departments of Labour in order to establish effective provincial units.

The national LMIA database, modeled around the ILO's Key Indicators of the Labour Market database, will be further improved and appropriate data will be shared with the provinces, which will establish and maintain their own databases.

Key activities to enhance LMIA capacity include:

- Recruitment and regular training of LMIA staff at federal and provincial levels.
- Provision of equipment, software and technical support to all LMIA Units.
- To develop training modules and organize study tours.
- To improve and share LMIA databases.
- To develop a website to share data between LMIA Units at the federal and provincial levels, and to link NAVTEC, TEVTAs and other stakeholders.
- To establish a Technical Advisory Panel for each LMIA Unit.

(3) Capacity of statistical agencies (federal and provincial) enhanced

For the success of the project, the quantity and quality of the data collected will be crucial. Therefore, the capacity of the statistical agencies in the country needs to be enhanced. The project will extend support to the FBS in conducting the labour force survey with a view to producing data that will better inform skills development and youth employment programmes. Efforts will be made to expand the LFS to produce

representative data at the district level (initially in selected districts), and to better capture information that is relevant to skills. The project will also provide support towards a new national occupational employment and earnings survey.

In addition, the project will support the improvement of labour market information for skills development through the establishment of data collection mechanisms at the sector level in selected districts. These mechanisms, such as establishment enquiries aiming to produce qualitative information on skills issues, will be implemented by the provincial bureaux of statistics (BOSs). Nationally, there is a low response rate to enterprise-based surveys so there will be a targeted marketing approach with employers to improve response rates. However, before any representative establishment enquiry is conducted, a sample frame needs to be developed.

Key activities to support statistical agencies include:

- Provision of technical and financial support to FBS and BOSs.
- To train staff at a regular basis.
- To support expansion of LFS to selected districts.
- To support pilot establishment enquiries.
- To support a pilot national occupational employment and earnings survey.

(4) Capacity of LMIA users enhanced

Capacity of stakeholders and key users of LMIA needs to be developed in order to better understand concepts and information, enable the use of analysis and to foster the integration of labour market analysis with policy development. For this purpose, workshops will be carried out to provide an avenue for capacity building and information sharing.

Key activities to enhance capacity of users of LMIA include:

- Identification of target audiences.
- To organize workshops at the federal and provincial level to train the staff of NAVTEC, TEVTAs, training providers, employers' and workers' organizations and other stakeholders for the analysis and use of LMIA.
- Disseminate LMIA through electronic and print media.

Evolution of LMIA

The LMIA Project started in 2006 by producing basic LMIA, focusing on trends in key labour market indicators to inform employment and labour policies. The project that is being prepared in early 2009 aims to raise the level of analysis, and steer it closer to the requirements of skills policies. This involves new data collection methods, such as the use of establishment surveys alongside the labour force survey, more disaggregation, and deepening of the analysis. With respect to the latter, many of the quantitative as well as qualitative methods to inform skills policies that were discussed in previous sections (in particular table 1) will be utilized.

In this way, the evolution of LMIA can support the move from a supply-led TVET system to a system that is better able to cope with current economic challenges, including the need to diversify the economy. In terms of the institutional approaches set out before, the Advisory Panel in its current form supports an employment approach. The effectiveness of the Panel in the future will depend to an important extent on the role of NAVTEC and the institutional linkages that will be developed in the context of *Skilling Pakistan*.

4. South Africa: LMIA and skills for transformation

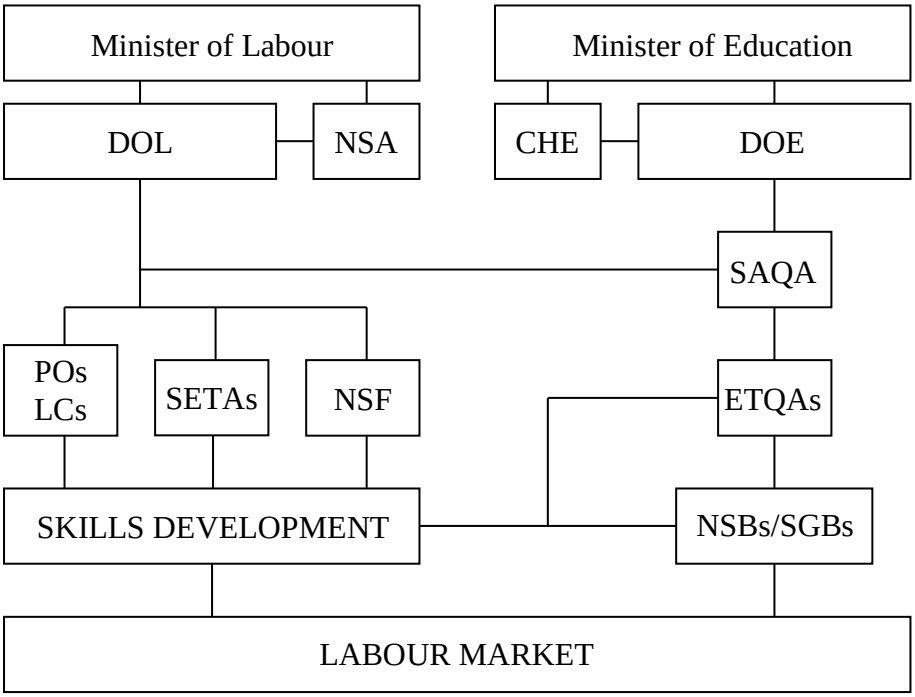
Both the range of methods that can be used to identify skill needs, and the interplay with the institutional structure for the translation of these needs into policy action, can be illustrated with the development of the training system in South Africa following the democratic transition. South Africa presents a unique case study of a country in which, after many years of ignoring the productive potential of the majority of the population during apartheid, the transition in the beginning of the 1990s provided an opportunity to make a new start. Accordingly, a national skills strategy was developed which was launched in 2001, focusing on the upgrading of the skills of the labour force as well as the early identification of future skill needs. More recently, a follow-up strategy was introduced, while the centrality of education and skills in South Africa's policies has been reinforced by the *Accelerated and Shared Growth Initiative – South Africa* (ASGISA, Pretoria, Government of South Africa, 2006). ASGISA reflects current thinking on the knowledge economy and the impact of globalization, and is linked to the national skills strategy as well as the Joint Initiative for Priority Skills Acquisition (JIPSA). JIPSA identifies the shortage of skills as the single greatest impediment for both public and private investment programmes, and aims to address urgent skill needs. The development and implementation of national skills development strategies have been accompanied by efforts to build adequate skills development information systems, which will be detailed below following a summary of the institutional set up of the TVET system itself.

The first National Skills Development Strategy (NSDS I, 2001-2005) aimed to ensure a more appropriate and sustained investment in the people of South Africa.[25] NSDS I was built on a series of laws and regulations that were promulgated in the second half of the 1990s, providing for new institutions, programmes and funding policies. Legislation includes the 1995 South African Qualifications Authority (SAQA) Act, the 1998 Employment Equity (EE) Act, the 1998 Skills Development (SD) Act and the 1999 Skills Development Levies Act.

The SAQA Act established the South African Qualifications Authority, a body appointed jointly by the Minister of Education and the Minister of Labour representing stakeholders in education and training (see figure 4). SAQA oversees the construction of the National Qualifications Framework (NQF, an integrated framework for learning achievements), registers qualifications and maintains a database of learners' achievements. Qualifications and standards for registration on the NQF are recommended to SAQA by national standards bodies (NSBs), in turn fed by standards generating bodies (SGBs). SAQA also accredits education and training quality assurance bodies (ETQAs), which check and monitor providers and provision of formal training, certify learners and recommend modifications to existing standards and qualifications or new standards and qualifications.

[25] See Department of Labour, Pretoria, 2001.

Figure 4. Institutions involved in the NSDS



The SD Act provided for a National Skills Authority (NSA), which was established to advise the Minister of Labour on the formulation and implementation of a national skills development strategy and policy. The members of the NSA represent organized labour, organized business, the community, government, education and training providers, experts on employment services, and SAQA. The SD Act also established Sector Education and Training Authorities, which are responsible for skills development in their respective sector, including the development and implementation of sector skills plans (SSPs). SSPs provide a description of a particular economic sector, starting from a sector profile covering current employment patterns, skill needs, education and training supply, and factors influencing future changes in skill needs in the sector. The plan must include a vision of where the sector hopes to be in the next few years, how it will get there, and how it will measure success. It must also include a budget, and methods for monitoring and evaluation.

At the enterprise level, the SD Act stipulated that workers and employers should together draw up a workplace skills plan (WSP), with special provisions for smaller companies and the development sector (e.g. micro- and small enterprises in the informal economy). Similar to a SSP, but at a more detailed level, a WSP describes which skills are needed, who needs the skills, how those identified will get the skills, and how much it will cost.

An important new incentive for skills development policies was provided by the skills development levy payable by employers at a rate of 1 per cent of the total remuneration of employees. From the funds collected in this way, the Department of Labour (DOL) authorizes the disbursement of up to 80 per cent to SETAs and channels 20 per cent into the National Skills Fund. SETAs, in turn, return up to 70 per cent of the total levy-amount to employers on the basis of defined actions of these employers in terms of skills development. Each SETA is allowed to spend up to 10 per cent of the total levy-amount for administration and running costs.

The skills development system is completed by Provincial Offices and Labour Centres of the DOL. Provincial skills plans are prepared which are made up of project skills plans linked to development projects. Provincial skills development forums (PSDFs) bring

together government departments, employers, trade unions and organized community groups. The NSF provides funds for the training part of approved projects. Labour Centres provide employment services for workers, employers and training providers, including improvement of such services to rural communities, and assist their clients in accessing education and training programmes.

Taken together, South Africa's skills development policies introduced mechanisms that are intended to ensure an integrated, demand-driven training market in accordance with Ziderman's third scenario set out in section 2. The establishment of the NSA, and in particular stakeholder-driven SETAs and PSDFs, aimed to keep training decisions close to the demand for and beneficiaries of training. Competitive tendering for long-term contracts was introduced for the development sector, and competition was also introduced between public and private sector providers. One of the objectives of the introduction of the NQF was to create a level playing-field between formal and informal training modalities.

Skills development information

Central in the institutional set up to inform skills development policies was the establishment of the Skills Development Planning Unit (SDPU) in the DOL. According to the SD Act, the functions of the SDPU:

a) to research and analyse the labour market in order to determine skills development needs for:
   a) South Africa as a whole;
   b) each sector of the economy; and
   c) organs of the State;

b) to assist in the formulation of:
   a) the national skills development strategy; and
   b) sector skills development plans; and

c) to provide information on skills to:
   a) the Minister;
   b) the National Skills Authority;
   c) SETAs;
   d) education and training providers; and
   e) organs of the State.

Apart from assisting in the formulation of NSDS I and NSDS II (2005-2010),[26] the SDPU has been pivotal in monitoring the strategies, and in particular the "success indicators" (see Annex 1 with reference to NSDS I). These indicators, which are used to measure progress in the implementation of the strategies, require administrative and other information. For this purpose, the SDPU liaises with a number of actors including SAQA, several departments of the DOL itself, including the provinces and the units dealing with the Development Levy Information System and Grant Disbursement System, the NSF and SETAs. With regard to the latter, a system of Quarterly Monitoring Reports was introduced soon after the start of NSDS I, which captured information on skills development activities in each sector (based on WSPs and enterprise training reports). Information on structured learning programmes, skills development grants, and learnerships by sector was assembled and analysed in the SDPU. Under NSDS II, following the amendment of the SD Act in 2003, attention shifted to reporting of SETAs in line with Service Level Agreements

[26] See Department of Labour, Pretoria, 2005.

between SETAs and the DOL. A very important source of information is the semi-annual series of labour force surveys conducted by Statistics South Africa (StatsSA), which provided the overall quantitative labour market framework of the skills development system. These surveys are used to produce estimates of the overall size of the labour force, and breakdowns by sector, educational attainment, etc.

In addition, the SDPU undertook or commissioned studies and evaluations on the productivity effects of skills development, industry-training linkages, and tracer studies, in accordance with the requirements of the NSDS. For example, indicators 2.1 and 2.2 (Annex 1) suggest that the contribution of skills development grants towards productivity and employer and employee benefits are measured, and indicator 5.2 suggests the use of tracer studies to obtain information on the effects of learnerships on employment. In collaboration with SETAs, an evaluation of learnerships was conducted at the national level which assessed both the costs involved in the development and implementation of learnerships and the "external efficiency" of learnerships, i.e. how learnerships affect the labour market possibilities of individual beneficiaries. An assessment was also made of the potential use of econometric, multisectoral models to inform skills policies. The results of this assessment showed that there is modeling capacity in South Africa, and econometric models could become important (together with other methods) to inform future skill needs. It is however also noted that improvement in data quality is needed.[27] More recently, and in line with NSDS II, ASGISA and JIPSA, information was needed on "critical skills". Accordingly, a list of critical skills has been produced on the basis of consolidated SETA inputs, stakeholder forums and other information, and building on earlier efforts to identify scarce skills using labour market signaling and the development of a job opportunity index.

Much of the work of the SDPU is reflected in annual implementation reports, annual reports on the "state of skills" in South Africa, and other publications that are available on the website of the DOL.[28] This work has been used to inform stakeholders through the NSA, SETA forums, PSDFs and other platforms.

A successful skills development system should not be confused with a successful skills development information system, but the two are clearly interlinked. Without proper information on which to base policy decisions and adjustments, it is not possible to effectively implement skills strategies and achieve targets. According to both the research of the DOL and independently conducted research, the South African system has met a range of targets, and there is evidence of growth in training activity following the introduction of the new system.[29]

Monitoring of the South African skills development strategies draws on most of the methods that have been discussed in section 2 (table 1). One reason for this is that there is not one superior method to inform skills development and identify future skill needs (or critical skills). Another reason for the use of various methods is that a range of skills development modalities is employed, and critical skills not only refer to pre-employment skills imparted through the education system, but also to skills that need to be acquired on-the-job through workplace skills development. Experience with monitoring skills development has resulted in capacity at both the central and the sectoral level to undertake labour market analysis, and an institutional structure has been created in which actors and

[27] See Wilson, Woolard and Lee, 2004.

[28] http://www.labour.gov.za/.

[29] See, for example, McGrath and Akoojee, 2007, pp. 421-434.

stakeholders collaborate in a network to monitor progress as well as to provide feedback into the skills development system. The emphasis on the monitoring of results as well as feedback to policies is reflected in the 2008 Budget Vote Speech by the Minister of Labour, which makes extensive references to the evaluations and research conducted by the DOL and others.[30]

At the same time, the introduction of a new skills development system and a commensurate monitoring and evaluation system has not been without problems, many of which are well-documented. One example concerns the introduction of the comprehensive National Qualifications Framework (NQF), which is supposed to encompass all learning activities. The fact that the NQF hardly existed before the NSDS was started created problems in monitoring success indicators that referred to the NQF, and by 2008, it was still only a small part of training activities that was conducted in accordance with NQF standards.[31] The introduction of the NQF also led to problems in terms of reconciliation of different traditions, interests and requirements of the education and training sectors, in particular between the Departments of Labour and Education.[32] Such problems clearly hamper the transition from an employment approach to an integrated approach to skills development information.

As was mentioned before, the SDPU has played a pivotal role in monitoring the skills strategies, and was established in the DOL for this specific purpose. This brought the advantage of a clear analytical focus and direct link to policy processes. Overall, the unit seemed to have served its purpose, while benefiting from technical cooperation (as part of the international support for the NSDS), and this experience could be relevant in debates on labour market observatories or labour market analysis units elsewhere.[33] It is however also important to note the specific characteristics of the South African skills development system in which the SPDU performed its functions. These include the strong political will to use skills development as an instrument for economic development and to redress the underutilization and exploitation of the labour force during the apartheid era, which resulted in a comprehensive re-engineering of the skills development system including most or all institutions involved. Furthermore, the South African experience in monitoring the NSDS benefited from a large corporate sector, which allowed for a levy-grant system producing administrative information that covers an important part of the economy. As expenditure on training is already far exceeding the amounts generated by the levy-grant system, this system may at some point in the future be abandoned, and alternative sources of information will have to be developed. As the economy develops, this is likely to involve a larger role for establishment surveys and enterprise training surveys.

[30] See http://www.labour.gov.za/media-desk/speeches/2008/budget-vote-speech-celebrating-ten-years-the-fruits-of-our-labour/.

[31] According to the Budget Vote Speech by the Minister of Labour, this proportion amounted to 22 per cent in 2006-07, up from 9 per cent in 2002-03.

[32] See, for example, Departments of Education and Labour, Pretoria, 2002.

[33] In both Botswana and Mozambique, for example, the discussion on the establishment and institutional location of an observatory or labour market analysis unit is ongoing in the context of the reforms of the TVET system in these countries.

5. Ireland: LMIA and skills for rapid economic growth

Two long-term trends have influenced the pace of economic growth in Ireland, namely the rising quantity and quality of labour supply.[34] The size of the Irish labour force increased rapidly during the 1990s, as those born during the baby boom of the 1970s came of age and stayed in Ireland in larger numbers. The quality of the labour force improved as those who had benefited from the expansion of education at second and third levels, dating back to the 1960s, advanced through the cohorts of working age. The ready availability of well-educated and trained labour has been one of the principal factors attracting continuing strong inflows of foreign direct investment to Ireland. Irish economic growth has been well-balanced, with indigenous and overseas sectors exhibiting robust growth in both manufacturing and services. Some sectors, such as software, electronics and call centres have shown exceptional rates of output and employment growth. Major segments of Irish-owned industry, such as engineering and consumer food, have also demonstrated a capacity for sustained expansion of production and employment in recent years.

A key feature of Irish economic performance since the 1990s has been the translation of rapid economic growth into large-scale job gains. Between 1991 and 2006, Irish GNP in real terms has grown on average by around 6 per cent annually, creating an additional 865,000 jobs with the total number in employment reaching 2 million in 2006.[35] The significant drive of recent growth has been domestic demand and the sectors driving this expansion have mainly been construction and services. The remarkable gains in employment have been accommodated by sustained increases in the size of the labour force, rising labour force participation rates and reductions in unemployment. The participation rate rose from 52.3 per cent in 1991 to 62.9 in 2006, while the unemployment rate declined from 14.8 per cent in 1991 to 4.3 per cent in 2006.

Ireland's investment in education and skills has played a central role in the economic growth experienced over the past decades. Since the 1960s, the share of national income devoted to education has doubled. In recent years, the Government has made major commitments to investments in education and training. Employment and human resource development have received considerable funding under the former National Development Plan covering the period 1994 to 2000. The Plan considers people to be the country's most important asset and almost 12.7 billion Euros was provided to increase their employability and adaptability, encourage entrepreneurship and promote equal opportunity. More recently, emphasis has been given to a new vision for 2020 in which a well educated and highly skilled population will contribute to a competitive, innovation-driven, knowledge-based, participative and inclusive economy.

[34] Ireland's economic transformation over the past decade is attributable to an array of mutually-reinforcing factors: low inflation, moderate increases in money wages under successive national agreements, the correction of the public finances, continuing inflows of private foreign direct investment, financial transfers from the European Union, tax reductions and broad stability in exchange rates. All of these factors have allowed the enterprise sector to regain international competitiveness while restoring credibility to public policy. Underlying these factors, however, two long-term trends have dictated the pace of economic growth – the rising quantity and quality of labour supply.

[35] See ILO, 2007.

Evolution of skills planning

Ireland has a long history of labour market planning and supporting skills development in strategic sectors. The links between identifying skill needs and translating them into supply have been varying in strength over time, but have become solid in more recent years.[36]

Taking a more detailed look, manpower forecasting on a national or sectoral level in Ireland goes back to the forecasts made by the Irish team that participated in the work of the Educational Investment and Planning Programme (EIP) initiated by the OECD Committee for Scientific and Technical Personnel in 1962. The manpower and educational forecasts of the Irish team were made for seven broad occupational groups and 99 industries for the period 1961-70. Projections of the level of output, productivity, and the number of workers required in each industry were made by the Ministry of Finance as part of its work on the *Second Programme for Economic Expansion*, which covered the period 1964-70. The Irish EIP team took these projections and used occupational information from the 1951 and 1961 censuses, the rate of change of productivity per worker, knowledge about the circumstances of each industry as well as judgement to convert the industrial employment projections into occupational projections.

The Ministry of Labour's National Manpower Forecasting Model which was used to make occupational forecasts for the period 1968-72 used Population Census data for occupations and industries for 1951, 1961, and 1966, classified by sex, which were allocated to 16 occupational and 24 industrial groups (in line with the United Kingdom's Standard Industrial Classification). Occupation by industry matrices for 1951, 1961, and 1966 were assembled and the absolute numbers were converted into percentages showing the occupational composition of each industry. Time trends were used to fit linear and exponential regression equations to the occupational percentages in each industry and the best-fitting equation was used to project the percentages to 1972. Ministry of Finance projected employment figures for 1972 were disaggregated by sex by extrapolating the trend between 1961 and 1966 in the sex composition of employment.

The next impetus for manpower forecasting came from the creation of AnCO – the Irish Industrial Training Authority – which needed forecasts to plan its training throughput. AnCO conducted and/or commissioned manpower studies with the establishment of its Research & Planning function from 1973 until its transformation into FÁS – the Irish Training and Employment Authority – in 1987.

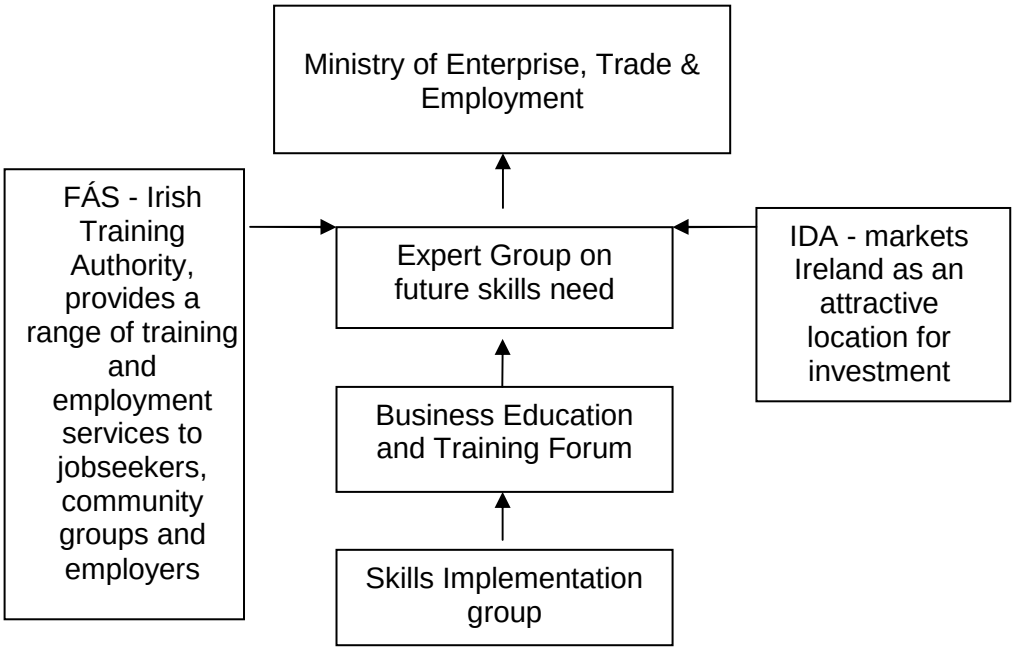
Shortly after the creation of FÁS a recommendation was made in the mid-1980s that a "Manpower Research Unit", which would be responsible for forecasting and manpower research generally, should be set up in one of the research institutes or located on or adjacent to a higher education campus. This recommendation was interpreted in practice by transferring the technical work of forecasting to the Economic & Social Research Institute – a government-subsidized private research institute whose primary interest was economic forecasting.

Following a major policy review of state-sponsored bodies involved in industrial development, the functions of attracting foreign investment and supporting indigenous industry were separated into two bodies, IDA and Enterprise Ireland (prior to this IDA had

[36] Much of the evidence contained in this section was taken from A. Maloney, "Labour Market Planning Ireland", in M. Powell (ed.), *Skill Formation and Globalization* (London, Ashgate Publishing, 2005), but has been updated to take into account recent changes.

been responsible for both), and a new super agency, Forfás, which was given the responsibility to coordinate these two agencies and to provide the support for an Expert Group on Future Skill Needs (see figure 5). Forfás reports to the Ministry of Enterprise, Trade and Employment.

Figure 5. Forum for addressing skill needs in Ireland



More recently, closer synergies have occurred between identifying skill needs and the development of national strategies. In September 2005, the Ministry of Enterprise, Trade and Employment requested that the EGFSN undertake research to support the development of a national skills strategy. The terms of reference for this study were to determine what skills are required to help Ireland make the transition to a competitive, innovation-driven, knowledge-based, participative and inclusive economy by the year 2020. The information gathered during this study helped form the vision for a national skills strategy, including future targets and an implementation strategy.

Organizations involved in determining skill needs

Responsibility for addressing skill and employment needs falls under the Ministry of Enterprise, Trade and Employment. As was mentioned before, the remit of this Ministry is to attract inward investment and support indigenous development. Beneath this Ministry is Forfás, the National Policy and Advisory Board for Enterprise, Trade, Science, Technology & Innovation. This Board advises the Minister on matters relating to support for industrial development, the coordination of such activities with Enterprise Ireland, IDA, as well as ensuring synergy with other activities, including technology, marketing and HRD.

There are three groups operating beneath Forfás and collectively they help to identify existing and future manpower requirements, develop strategies for responding to these skill needs and support human resource development in sectors viewed as important to the country's economic development. The first of these groups, the Expert Group on Forecasting Skill Needs has the following purpose:

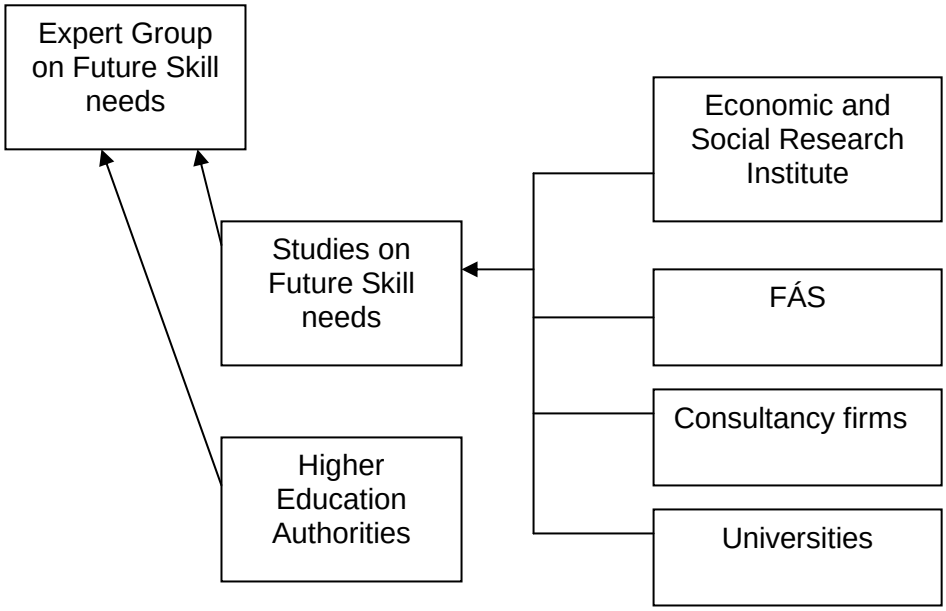
- To identify, in a systematic way, the skill needs of different sectors and to advise on the actions needed to address them
- To develop estimating techniques that will assist in anticipating the future
- To advise on the promotion of education/continuous training links with business at national and local levels
- To consider strategic issues in developing partnerships between business and the education/continuous training sectors in meeting the skill needs of business; and
- To advise on how to improve the awareness of jobseekers of sectors where there is demand for skills, of the qualifications required, and of how they can be obtained.

Membership of the EGFSN is tripartite and the involvement of the Ministry of Education & Science, the Ministry of Enterprise, Trade & Employment and the Ministry of Finance, helps ensure that policies will incorporate measures which support labour market adjustments in accordance with the needs of the economy. The participation of development agencies and the employment authorities means that the skill needs of development projects can be quickly communicated to the relevant training authorities. The private companies and employers' representation ensures that a commercial insight is taken on board. Finally, trade union representation/participation provides an opportunity for workers' views to be taken into account.

The EGFSN obtains its information from four different sources, including the Economic and Social Research Institute (ESRI), and FÁS (see figure 6). Each of these organizations provides different, but complementary functions. The ESRI is a government-subsidized private research institute, whose prime function is to undertake economic forecasting for the EGFSN. The second source of information is derived from FÁS, which provides a regionally-integrated and locally-based service for jobseekers, employers and community groups through a network of Employment Service Offices and Training Centres. The Employment Offices are designed to provide vocational guidance, registration, referral and placement services for jobseekers and employers. In addition, FÁS provides a range of business services to small, medium and large businesses, both indigenous and foreign-owned. For most sectors there are industry training committees, containing representatives of both employers and unions. These bodies advise on sector training needs. A final partner in the process of gathering information is the Higher Education Authority. Under the Higher Education Act of 1971 their functions are to assist and review the need for higher education and to assist in the co-ordination of state investment in higher education.

All of the information produced by the EGFSN is discussed at the Business Education and Training Forum and they recommend approaches for implementation. Subsequently, these recommendations are passed onto the skills implementation group. Membership of this group consists of public civil servants and the chairperson of the EGFSN. The responsibility of this group is to review the recommendations of the EGFSN and identify how they can be implemented.

Figure 6. Institutional sources involved in identifying skill requirements



Approaches to identifying skill requirements

As outlined earlier, in 2007 the EGFSN was requested by the Minister for Enterprise, Trade and Employment to help determine the country's future skill requirements in order to form the basis for a new National Skills Strategy. A look at this process will help demonstrate how labour market information is used as a basis to develop a skills strategy. The EGFSN used a combination of methodologies to determine the nature and extent of the country's skills requirements for 2020. This involved documenting the following:

- A review of the changing nature of employment demand and how it will impact on the occupational structure of the labour force
- The anticipated supply of skills in 2020 under the existing policy framework
- The expected demand for skills in 2020
- The ability of existing supply policies to meet the anticipated demand in 2020

Through this approach the EGFSN was able to highlight areas of possible skill shortages, a vision or skill map of the where the country needs to be and an operational strategy of how this can be achieved.

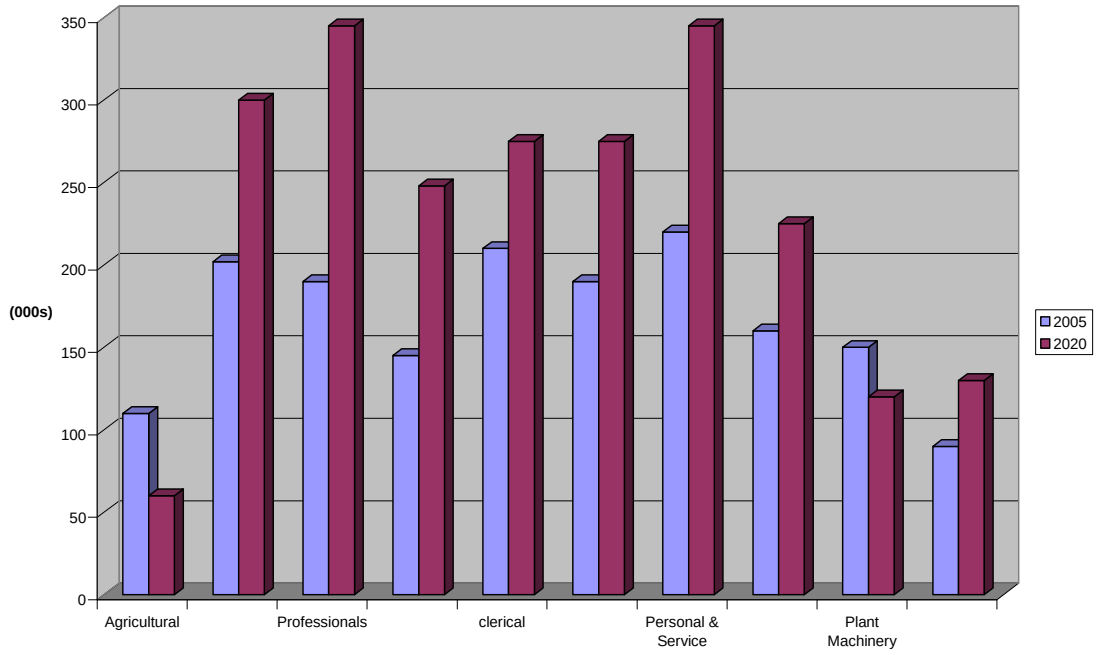
Understanding future demand

In the context of Ireland, the process of determining future skill needs begins by predicting employment levels for 2010 to 2020 though the use of the country's Medium Term Economic Review. This enables the EGFSN to show that employment levels within agriculture will fall in absolute terms, from 113,000 in 2005 to just 73,000 in 2020. Manufacturing levels are also expected to fall, with around 100,000 fewer people being employed in this sector by 2020. Whereas, the largest absolute increases are expected to occur in the financial and business service sector (+170,000 jobs), public administration (+125,000 jobs) and other market services (+80,000).

Moreover, in absolute terms the largest increase in employment levels is expected to occur in professional occupations, with around 107,000 new positions being created. Other occupations expected to experience strong growth are those in personal and service occupations (+79,000) and associate professional occupations (+74,000). Whereas,

occupations in agriculture (-47.6%), plant and machinery (-20.7%), Clerical (-5.5%) and craft and related are expected to decline in relative terms (see figure 7).

Figure 7. Total employment by major occupational group



Source: *Occupational Employment Forecasts* (Dublin, FÁS/Economic and Social Research Institute, 2002).

In addition to changing employment levels and the occupational structure of the labour force, the EGFSN also obtained qualitative information about how generic skills and skill sets within priority occupations will change over the 2008 to 2020 period. From extensive discussions with stakeholders they anticipate that generic skills become of increasing importance across all occupations, including the ability of individuals to work more autonomously; be self managing, work as part of a flexible team, adapt to change and solve complex problems. These assumptions are based on the movement towards a knowledge economy in which even those in low skill occupations will be required to use the former generic skills in their everyday activities.

When it comes to the changing skill mixture within occupations, the EGFSN commissioned Publica Consulting Ltd to identify how occupations will change over the next years and what demands will be placed on people to do their jobs effectively. Once again a number of common trends were identified across selected occupations.[37] First, each occupation will require an increasing breadth of knowledge. For instance, software engineers will need to have programme knowledge and also a better understanding of the business dimension that their research is targeting. Second, routine and un-intellectual demanding tasks will decline. A case in point is the work for cashiers, where routine tasks will become automated and they will spend increasing amounts of their time handling customers. Indeed, within all occupations it can be expected that people will spend more time interacting with other people and will have to develop the appropriate skills, particularly those associated with dependability and responsibility. The increasing role of legislation and regulation will have an impact on skills, including those associated with

[37] The occupations studied were: food processing operatives (SOC 809), software engineers (SOC 214), laboratory technicians (SOC 346) and cashier and counter clerks (SOC411).

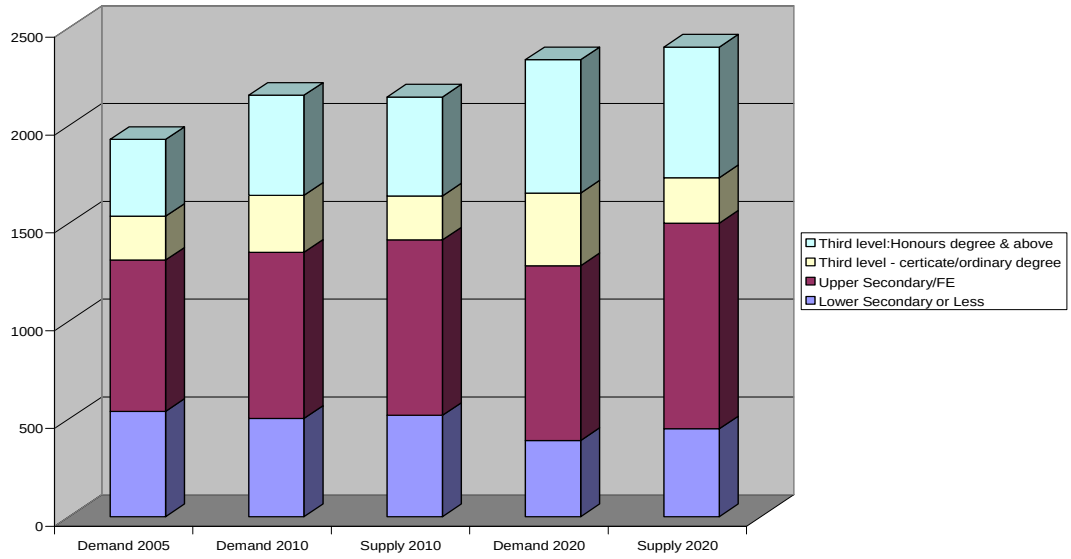
health and safety, as well as compliance with quality assurance systems and standards. Understandably, these new demands will increase the technical competencies associated with individual occupations and people in all occupations will require higher qualification levels.

Understanding future supply

Having documented the possible future structure of the labour force and what skills will be in demand in 2020, the EGFSN attempts to understand the supply of skills over the same period. This is achieved through analysing the country's demographic trends and existing stocks of skills. This enables the EGFSN to reach the conclusion that the Republic of Ireland will have a more educated labour force over the coming years and this is mainly due to the retirement of older workers who have a poorer education profile, as well as the fact that younger people and migrant workers will have a better education profile. Nevertheless, as by 2020 over half the country's working population will be over 40, the education profile of the existing stock, as opposed to the inflow, will be a major determinant of the country's future skill profile. As a consequence any attempt at raising the skill level must give priority to the current stock within the labour force.

The projections on future supply have been calculated on the basis that there will be no significant change in government policy for skills or education. Subsequently, the EGFSN attempts to identify how future projections on supply will respond to anticipated changes in demand (see figure 8). These figures suggest that demand for some of the higher level skills will outstrip their supply but, at the lower secondary level and below, supply will be greater than demand. The inferences from these trends are numerous, but the most important issue is that under the present policy scenario there will be considerable shortages of graduates in the future, and a significant number of individuals with lower secondary level or below qualifications are likely to be unemployed. The economic and social impact of this situation could be severe, leading to wage inflation, increased costs and many of the social ills associated with unemployment.

Figure 8. Supply and demand for skills in 2010 and 2020



Source: *Occupational Employment Forecasts* (Dublin, FÁS/Economic and Social Research Institute, 2002) .

Vision and policy response based on analysis

The EGFSN has developed a vision for skills which is to produce a competitive, innovation driven, knowledge-based, participative and inclusive economy with a highly skilled workforce by 2020. This vision is based on the preceding analysis and involves developing a skills road map for the Republic of Ireland. Table 2 highlights the current skills profile of the labour force and where the country intends to be in 2020. Within this table, the first column shows the current skill profile, the second column projects the skill profile in 2020 with no policy changes, the third column projects the demand for skills in 2020, the fourth column shows unmet skill needs, and the final column shows a vision of the skills profile for the new knowledge economy in 2020. All columns show the absolute and relative distribution of the labour force in terms of levels on the National Qualifications Framework (NQF).

Against this vision the EGSFN outlines a policy response for raising skill levels. Essentially, this centres on increasing the proportion of new entrants in the labour force with NQF level 4 and level 5 qualifications, and upskilling the qualifications of the existing workforce.

With regard to the first strategy, the percentage of the population aged 20 to 24 who have completed their upper secondary education (NFQ levels 4&5) is around 86 per cent. Based on the projections in figure 8, this should be raised to 94 per cent and could be encouraged through the established Leaving Certificate, the Leaving Vocational Certificate Programme and the Leaving Certified Applied Programme.[38]

Table 2. Skill profile of the labour force – absolute and relative share by NFQ level

NFQ Level	Column 1	Column 2	Column 3	Column 4	Column 5
	Current Skills Profile (2005)	Baseline Skills Profile in 2020 based on no policy change to supply	Baseline Projected Demand for Skills in 2020	Unmet Skills Needs (Column 3 less Column 2)	Vision of Skills Profile for "New Knowledge Economy" in 2020
Levels 8-10	20% 393,000	28% 667,000	29% 681,000	14,000	32% 776,000
Levels 6-7	12% 223,100	10% 233,000	16% 372,000	139,000	16% 385,000
Levels 4-5	40% 773,600	44% 1,051,000	38% 894,000	(157,000)	45% 1,90,000
Levels 1-3	28% 539,500	18% 450,000	17% 390,000	(60,000)	7% 180,000
Total	100% 1,929,200	100% 2,401,000	100% 2,337,000	–	100% 2,431,000

[38] The Leaving Certificate is the final course in the Irish secondary school system and culminates with the leaving certificate examination. The Leaving Certificate Vocational Programme is similar to the former course, apart from the fact that students take vocational subjects and it is designed to help students find their potential for self-directed learning, innovation and enterprise. Finally, the Leaving Certificate Applied Programme is to prepare students for adult and working life and comprises general education, vocational education and vocational preparation.

However, the most significant means by which the 2020 vision will be achieved is through upskilling the existing workforce. This will be achieved using a combination of adult education and training. Taking into account the earlier figures, the EGSFN identifies what output will be required per annum to achieve the vision identified in Column 5. Table 3 provides an overview of the responses necessary to achieve the shortfalls identified in this column.

The implementation will involve a "one step up" approach, consisting of a number of interconnected stages:

- Helping individuals and businesses identify their skill needs. FÁS and Enterprise Ireland should continue to assist companies to identify the training needs of their employees and to feed back this information to providers.
- Greater awareness about the benefits of education and training. A national media awareness campaign should be developed to highlight the value of education.
- Flexible and responsive provision. With the anticipated decline in the school cohort and the growing importance of the workplace, emphasis must be given to workplace training that is fitted around working hours.
- All provision under the "one step up" initiative should be accredited and quality assured.
- Attempts have been made to cost the operationalization of the "one step up" approach – upskilling levels 3, 4, and 5, a total of 153 million Euros; upskilling levels 6, 7, 8, 9 & 10, a total of 304 million Euros.

In addition to the development of the framework for a national skills policy, the EGFSN in conjunction with stakeholders monitors the labour market and regularly undertakes specific sector studies in areas viewed as strategic to the country's longer term development. A series of reports on the state of the labour market are published and disseminated on a quarterly and annual basis.

Table 3. Policy responses to raise skill levels to meet the 2020 vision

NFQ level 3	Emphasis will have to be given to improving literacy through adult education, involving participation of the vocational training organizations and the Back to Education Initiative
NFQ levels 4 and 5	Once again adult education can be expected to play an important role, but emphasis will be given to the training of those in employment, in which various organizations are involved (FÁS, Skillsnet, Failte Ireland, Teagasc and BIM). FÁS should also investigate the possibility of how the apprenticeship model could be rolled out to the adult workforce
NFQ levels 6 and 7	The main response is likely to come from the institutes of technology and the challenge is how to reach out to industry and provide flexible training options at these levels.
NFQ levels 8, 9 & 10	Universities, institutes of technologies and professional bodies should work together to meet this demand within the NFQ framework

How labour market analysis is used to influence skills policy

Much of the work undertaken by the EGFSN is analytical, drawing on a series of methods and approaches that were set out before in table 1 (section 2), including the use of basic labour market analysis, econometric modeling, dedicated and sector studies, administrative data and stakeholder driven forums. The analytical work results in a series of recommendations and policy options. The implementation of these recommendations is left to education institutions and the various agencies operating under FÁS who support skills development.

In Ireland the State has a voluntaristic approach to translating skill needs into the supply of skills. The State's role is to facilitate the timely flow of information between enterprises on the one hand and education and training providers on the other, and to ensure that a channel exists to communicate changing requirements to those within the workplace and the formal education system.[39] In terms of the institutional approaches discussed in section 2, Ireland is close to the employment approach, and relying on voluntary action to achieve its aims. Elements of the integrated approach can be seen as well. Membership of the EGFSN is tripartite and the involvement of the Ministry of Education & Science, the Ministry of Enterprise, Trade & Employment and the Ministry of Finance, helps ensure that policies will incorporate measures which support labour market adjustments in accordance with the needs of the economy.

However, it is important to emphasize that skills policy within the Republic of Ireland is in a constant state of flux and in the past used to be more interventionist. The EGFSN recognizes that their role includes ensuring that policy-makers are kept up to date with the latest labour market trends and shifts in skills demand. Therefore, it remains to be seen which of these policy options are taken forward and implemented. Nevertheless reference to the recent annual report of FÁS would appear to illustrate the organization's commitment to the National Skills Strategy Framework. Indeed, within FÁS's annual report it states "over the coming years FÁS will address, in consultation with social partners, the necessary steps to achieve the skill strategy's goals".[40]

6. Hong Kong, China: LMIA and skills for structural change

The Hong Kong Special Administrative Region (SAR) is part of the People's Republic of China, but retains a separate political governance structure and economic system. Hong Kong, China, has a highly successful economic record as it achieved growth rates of over 5 per cent during a period of 25 years or more. A number of factors have resulted in Hong Kong's (China) reputation as a leading manufacturing and service centre in Asia. Perhaps the most important amongst these are: free enterprise and free trade; the rule of law and a well- educated workforce.

The economy of Hong Kong, China, has successfully undergone a number of structural changes. Following the post-war period emphasis was given to manufacturing for exports, with the prominent sector being apparel and clothing. However, over the last decades the economic focus has increasingly shifted towards re-exporting and trade in services. The principal items for re-export are electrical machinery and appliances, a significant proportion of which are now being re-exported to China. The service sector has experienced a remarkable transformation over the past decade and now represents over 90 per cent of the economy of Hong Kong, China. Much of the manufacturing activities have shifted to mainland China to take advantage of the lower cost structures.

Free trade and globalization have had a significant impact on employment levels in Hong Kong, China. Under the Asian financial crisis unemployment levels increased from 2.2 per cent to 6.3 per cent in the late 1990s. Nevertheless, unemployment rates recovered

[39] The EGFSN has published a document entitled *Careers and Labour Market Information* which emphasizes the need for a central career portal and improved career guidance for those in the school system as well as adults in the labour market.

[40] *FÁS Annual report and financial statement* for 2006, p. 1.

back to 4.8 per cent in 2006, driven by a strong growth rate of 8.5 per cent in 2005. Employment is concentrated in the service sector, with an 86.3 per cent of total employment.

Despite having a very hands-off policy towards the economy, the government plays a significant role in supporting the development of pre-vocational skills. Perhaps the most significant organization influencing skill formation is the Education and Manpower Bureau, whose responsibility is to: (a) provide a well-trained workforce equipped to meet the demands of a dynamic economy; and (b) to contribute to the overall economic competitiveness of Hong Kong, China.

Under the Education and Manpower Bureau is the Vocational Training Council (VTC), the largest provider of skills in Hong Kong, China. The VTC is a tripartite body representing the interests of employers, employees and academics. A total of 22 people sit on this board and together they determine overall policy and strategy for the sector. Emphasis is on pre-employment training and programmes of study leading to a diploma or higher diploma-level qualification, and on developing practical competencies. Around 70 per cent of the time in many programmes is spent on practical activities and the remaining 30 per cent on theory. An estimated 160,000 young people graduate from the VTC each year.

Evolution of skills planning

Planning for Vocational Education and Training (VET) and skills has been going on for just over ten years. Given the emphasis towards free trade and laissez-faire, the Government's support for skills development is primarily concerned with support for pre-employment education and training. However, in view of the continual restructuring of the economy and the move away from manufacturing, there is also a government-sponsored retraining programme that provides displaced workers with the necessary skills to re-enter the labour market. In response to demographic trends, courses are being developed for older people in employment.

The Education and Manpower Bureau is responsible for the following programme areas: kindergarten education, primary education, secondary education, special education, tertiary education, vocational training and employees retraining, construction industry training, employment services, labour relations, employee's rights and benefits and occupational safety and health. The first programme for these different areas was developed in 1997, covering a ten-year period. The Government is now in the process of developing a second programme. Within each of these programmes emphasis is on broad aims, as opposed to specific outcomes or targets.

With regard to skills and VET the mandate of the Education and Manpower Bureau is to advise the Government on the coordination, regulation and promotion of vocational post-secondary and continuing education sectors. In addition, the Bureau advises on future skill needs and on the disbursement of funds to training providers. As specified previously, under the Bureau is the Vocational Training Council, the largest provider of skills in Hong Kong, China (see figure 9). Under the VTC are 21 vocational training boards (VTBs) covering all sectors of the economy, the composition of which are tripartite. These boards meet every six months to review their sector and to provide feed-back to the VTC on any important trends within their sector.

A number of other bodies report to the VTC including the Employees retraining board (ERB), the Apprenticeship unit, the Clothing Industry Training Authority (CLITA) and the Construction Industry Training Authority (CITA). The ERB is a statutory body set up in 1997 to enable displaced workers to re-enter the labour market, particularly domestic workers and security guards. The unemployed person receives training and three months'

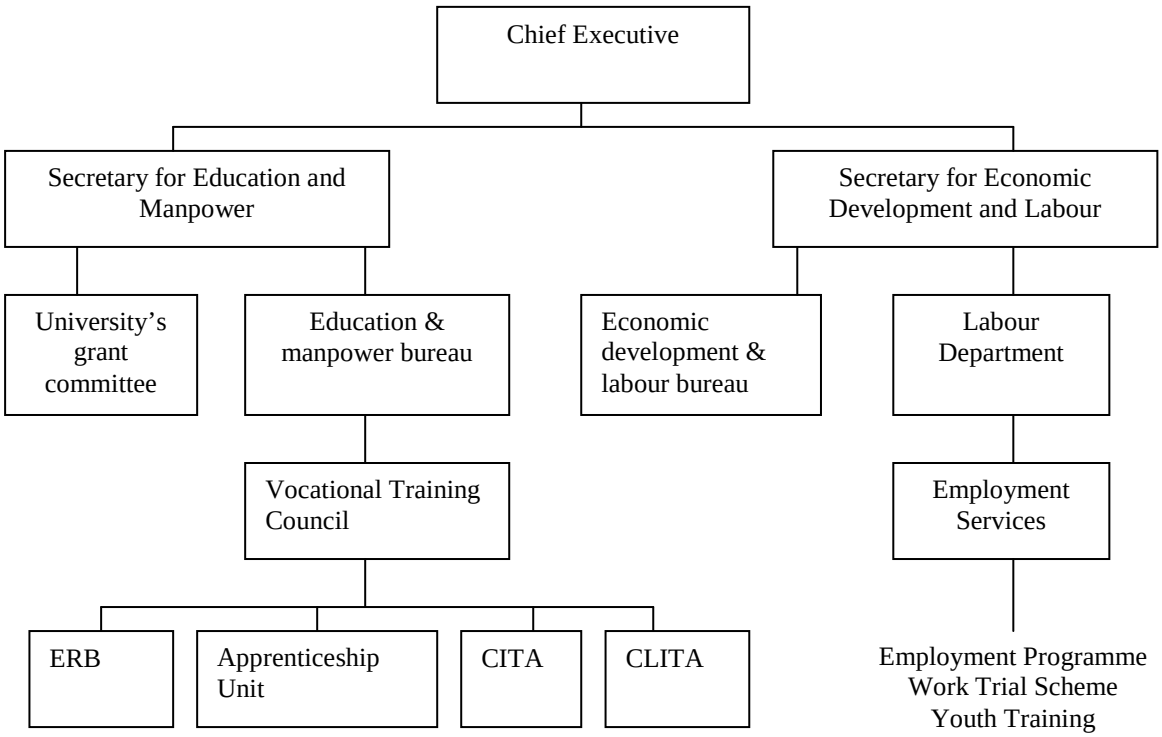
work experience. The employer also receives a subsidy and around 1 million retraining places have been offered since inception.

The CITA and the CLITA are also statuary bodies. They were established in 1975 to provide young people with training. Funding for these two bodies is provided from a levy on companies operating in this sector. Recently, the CITA and CLITA have begun to offer in-service courses for older workers in response to the demographic changes. The CITA also carries out trade tests in sectors that have important health and safety considerations.

The country's Apprenticeship Scheme was launched in 1997 to provide on-the-job training for young people in 77 specified trades. Under this scheme employers have to enter into a contract and register with the Apprenticeship Board if they wish to employ a young person. The training lasts for four years. Unfortunately, demand for this type of training has fallen from around 10,000 people in the 1980s, to around 3,000 in 2007. A number of factors can account for this decline, ranging from the length of service to the fact that some skills are no longer in demand.

The final scheme, the Skills Upgrading Scheme (SUS) was launched in 2001 to enhance the employability of low-skilled workers by providing them with industry-specific skills. However, in order to claim a grant, the training has to occur in an expanding industry and one that employs a significant amount of local people. A total of 24 industries have been identified for skills upgrading. The purpose of this scheme is to enable low-skill workers to become more employable in sectors that are expanding.

Figure 9. Organizations involved in skill formation in Hong Kong, China



Key:
ERB: Employees Retraining Board
CITA: Construction Industry Training Authority
CLITA: Clothing Industry Training Authority

More recently, in 2004, the Government has endorsed the country's qualification framework, consisting of a hierarchy of seven levels, each of which contains generic descriptions. The development of the different competencies are the responsibility of the Industry Training Advisory Committees, consisting of employer associations, trade unions, professional bodies and other bodies. The Education and Manpower Bureau is responsible for helping to establish these committees and so far nine have been established in the following areas: watchmaking and clock manufacturers, printing and publishing, Chinese catering, hairdressing, property management, electrical and mechanical services, jewelry manufacture, information and communications technology and automotive.

Organizations and processes involved in determining skill needs

The Education and Manpower Bureau (EMB), in combination with the VTC, is responsible for tracking skills that are in high demand, and has a particular focus on the demand and supply of skills in sectors that are strategic to the development of Hong Kong, China. At present the following sectors have been defined as strategic by the Economic Development and Labour Bureau: financial services, trading and logistics, tourism, professional services, creative industries, information technology and information services. Within each of these sectors the EMB identifies broad macro requirements for the medium term (three to five years). The intention is to provide a general reference or signal to planners, but not specific details on the numbers or type of occupations. The methodology involves a two-pronged approach, consisting of a number of quantitative projections and a series of qualitative studies. The quantitative projections identify demand for broad occupational groups in specific sectors and how they change over time. This is supplemented by a series of establishment surveys, mostly undertaken by the VTBs, as well as qualitative information. Each of these Boards undertakes a survey of skill requirements in their sector every two years.

The mandate of the VTBs is as follows:

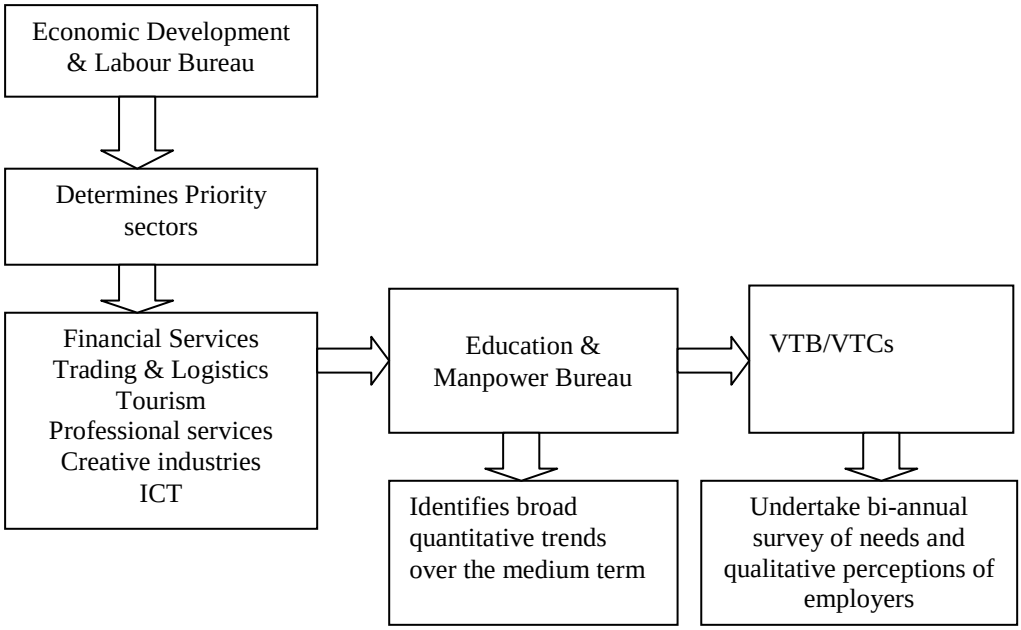
- To determine the manpower demand of the industry, including the collection and analysis of relevant manpower and student/trainee statistics and information on socio-economic, technological and labour market developments
- To assess and review whether the manpower supply for the industry matches with the manpower demand
- To recommend to the Vocational Training Council the development of VET facilities to meet the assessed manpower demand
- To advise the Hong Kong Institute of Vocational Education (IVE) and training and development centres on the direction and strategic development of their programmes in the relevant disciplines
- To advise on course planning, curriculum development and quality assurance systems of the IVE and training and development centres
- To prescribe job specifications for the principal jobs in the industry defining the skills, knowledge and training required
- To advise on training programmes for the principal jobs in the industry specifying the time a trainee needs to spend on each skill element
- To tender advice in respect of skill assessments, trade tests and certification for in-service workers, apprentices and trainees, for the purpose of ascertaining that the specified standards have been attained
- To advise on the conduct of skill competitions in key trades in the industry for the promotion of vocational education and training as well as participation in international competitions
- To liaise with relevant bodies on matters pertaining to the development and promotion of vocational education and training in the industry, including employers, employer's

associations, trade unions, professional institutions, training and education institutions and government departments
- To organize seminars/conferences/symposia on vocational education and training for the industry
- To advise on publicity relating to the activities of the training board and relevant vocational education and training programmes of the VTC
- To submit to the Council an annual report on the Training Board's work and its recommendations on strategies for programmes in the relevant disciplines

Additional studies are commissioned by the VTBs to provide qualitative information about changes in the sector, including how global trends, information technology and other factors are impacting on the sector. Where appropriate, the VTC will also establish a committee to look at cross-cutting issues that impact on each sector, such as disability or the role of ICT.

Under this two-pronged approach the EMB thus provides the macroeconomic framework for identifying broad skills areas over the medium term and the VTBs provide specific details about the short-term skill needs within each sector (see figure 10).

Figure 10. Approaches for determining skill needs



Understanding future demand

The EMB determines the manpower requirements for a period of five to six years, allowing them to understand which sectors are most likely to expand and contract. For the period 2002-07 the EMB found that, in line with the continual structural shift towards services in the local economy, future manpower requirements are projected to increase in the financing, insurance, real estate and business services, transport, storage and communications and community, social and personal sectors. As a consequence their combined share amongst the overall manpower requirement will increase from 47.7 per cent of total employment in 2001, to a figure of 51.5 per cent of total employment in 2007. In contrast, employment levels in the manufacturing sector are expected to decline by 61,300 over the same period (see table 4).

Table 4. Manpower requirements by economic sector

Economic sector	Estimated manpower requirement in 2001		Projected manpower requirement in 2007		Projected changes from 2001 to 2007	
	No.	% share	No.	% share	No.	Average annual change
Agriculture and fishing	11,000	0.4	8,400	0.3	-2,600	-4.3
Mining and quarrying	200	-	100	-	-100	-14.2
Manufacturing	212,500	7	151,200	4.7	61,300	-5.5
Electricity, gas and Water	13,600	0.4	12,600	0.4	-1000	-1.2
Construction	298,500	9.9	307,600	9.5	91,000	0.5
Wholesale, retail and import/export trades, restaurants and hotels	1,049,600	34.6	1,084,300	33.6	+34,600	+.5
Transport, storages and communications	262,400	12	417,100	12.9	54,700	2.4
Financing, insurance, real estate and business services	489,900	16.2	585,500	18.2	+95,500	+3
Community, social and personal services	591,600	19.5	655,900	20.4	64,300	+1.7
Overall	3,029,400	100	3,222,700	100	193,300	+1

Besides changes to the employment levels, the EMB predicts manpower requirements by major occupational categories. Once again the predictions suggest that as the economy shifts towards knowledge-based activities, future manpower requirements are expected to shift towards higher educated and skilled workers at the upper segment of the occupational hierarchy. Over the 200-07 period demand for professionals was expected to increase by around 3.4 per cent per annum and those for managers by a smaller 1.7 per cent over the same period. In contrast, the numbers in lower level occupations, including clerks and plant and machine operators, are expected to fall annually by 0.8 per cent and 0.7 per cent respectively (see table 5).

Having documented anticipated changes in employment levels within different sectors and the corresponding impact on the occupational structure of the labour force, the EMB anticipates the educational attainment over the same time period. Unsurprisingly, this shows that manpower requirements at the upper secondary level and below are expected to decline, but demand for levels above will increase. In specific terms the demand for workers at the degree level and above will increase at around 6.8 per cent per annum. In other words the demand for workers with higher education qualifications will rise from 19 per cent in 2001 to 27 per cent in 2007.

Table 5. Manpower requirements by major occupation category

Major occupation category	Estimated manpower requirement in 2001		Projected manpower requirement in 2007		Projected changes from 2001 to 2007	
	No.	% share	No.	% share	No.	% share
Managers and administrators	283,900	9.4	314,600	9.8	30,800	+1.7
Professionals	191,500	6.3	234,500	7.3	43,000	+3.4
Associate professionals	583,000	19.2	737,200	22.9	154,300	+4.0
Clerks	586,500	19.4	515,100	16	71,400	-2.1
Service workers and shop sale workers	430,800	14.2	461,700	14.3	31,000	1.2
Skilled agricultural and fishery workers	9,700	.3	6,600	.2	3,100	-6.2
Craft and related workers	291,800	9.6	278,900	8.7	12,900	-.8
Plant and machine operators	235,100	7.8	225,500	7	9,600	-.7
Elementary occupations	417,100	13.8	448,300	13.9	31,200	+1.2
Overall	3,029,400	100	3,222,700	100.0	193,300	+1

The second component for understanding demand involves the 22 Vocational Training Boards, each of whom undertakes an annual manpower survey. A look at one of the surveys will highlight the country's sector approach to determining skill needs. The Banking and Finance Industry Training Board (BFITB) is responsible for assessing the sector's training needs and making recommendations to the Vocational Training Council on how these can be met. Within the Banking and Finance sector there are a total of 6,197 establishments and the BFITB implements a stratified sampling method to survey around 7,000 establishments on an annual basis.

One of the first issues to be investigated by each of the Industry Training Board's surveys is the structure and characteristics of their sector. Within the Banking and Finance sector the survey documents how employment levels had changed in the different sub-sectors over the past two years, as well as current vacancies. Interestingly, the survey found that 1,430 vacancies existed in the sector, the vast majority of which were to be found at the managerial and supervisory levels. Similarly, employers are asked how many new people will be employed over the next 12 months and in what occupational areas. Again, the highest growth levels are expected to occur in managerial and supervisory positions. Another important issue investigated by the survey are the minimal educational qualifications for those working in different occupations within the industry. This has important implications for helping to predict future supply (see below).

Understanding future supply

At the national level the EMB makes comparisons between supply and demand by educational attainment (see table 6).

Table 6. Projected manpower resource balance by educational attainment in 2007

Educational attainment	Projected manpower supply in 2007	Projected manpower demand in 2007	Projected manpower resource balance
Lower secondary and below	1,236,200	1,102,700	+133,500
Upper secondary	958,900	876,400	+82,500
Matriculation	190,100	252,700	-62,600
Craft	30,200	14,600	+15,600
Technician	110,100	106,600	+3,400
Sub-degree	201,000	207,100	-6,100
First degree	455,900	538,500	82,600
Postgraduate	170,100	124,100	+46,100

The data in table 6 highlight a mismatch between future demand and supply. More specifically the table demonstrates a substantial surplus of manpower at the lower end of the education system. It can be expected that jobs at the lower end of the occupational spectrum will tend to be phased out by office automation or as companies outsource activities to the mainland due to lower costs. As a consequence many of those coming out of the education system with lower level qualifications will have difficulties in finding employment. In contrast the large shortfalls of manpower at the matriculation and degree levels are associated with the rising demand for better educated and higher skilled personnel, all of which are in line with the orientation towards a service-specialized and knowledge-based economy.

A similar approach to the one documented above is used by each of the Vocational Training Boards to help understanding the nature and extent of future demand within their sector. However, when undertaking this task estimations are used to match future supply with demand. A look at the approach used by the BFTB will help illustrate this point. From the sector survey it was anticipated that in the next year the industry would require an additional 2,236 managers and around 2,236 supervisory staff. However, according to the same survey 86.3 per cent of managers should have degrees and 74.4 per cent of those in supervisory positions should have a professional diploma/certificate qualification. This means that around 1,359 managers with degrees and around 1,660 supervisors with diplomas will be required. Subsequently, the BFTB analyses how this demand could be met. Using statistics from the University Grant Committee they show that around 4,932 fresh graduates will join the banking and finance sector in 2005. Therefore, it is expected that manpower demand at managerial and supervisory level could be easily met by fresh graduates, or through internal promotions. In relation to the clerical positions, the additional demand of 3,355 is only a fraction of the 100,000 Form 5/Form 7 school graduates each. Based on this scenario the BFTB comes to the conclusion that future demand will be readily met with existing supply patterns.

How LMI is used to inform and influence policy

Most of the labour market information produced by the EMB and the Vocational Training Boards is used to guide future policies. In response the VTC will review this information and where necessary influence the supply coming onto the labour market through the appropriate vocational training institution. In turn the activities of the VTC are guided by a strategic plan covering a period of eight years, but this is fluid and updated annually in response to new demands outlined by the VTBs. Attempts are also made to influence student choice through career campaigns and career guidance. Within the existing strategic plan the government proposes that 60 per cent of all school leavers should access post secondary education by the academic year 2010-11. This represents an ambitious task, but it is difficult to see how this figure was derived or how it will be implemented.

The way in which courses are funded also has an impact on student supply. For instance, where there is high economic demand for a particular programme of study, and one that requires high capital investment, tuition fees will be paid by the State. However, in subject areas where demand is high and there is no capital investment, such as accounting or business studies, the State will not pay tuition fees. This strategy ensures that state investment occurs in strategic skill areas that the private sector would not support.

The provision of work visas is also used as a mechanism for obtaining skills not available locally. Under this process a firm has to advertise locally, and if they are unable to recruit an appropriately skilled person, they will have to approach the immigration board for a work permit. In turn, the immigration board will approach the VTC to find out whether this skill is in short supply. If the application is approved the employer will be required to pay a levy. This levy will be subsequently used to support the upgrading of local skills through the employees retraining scheme.

There are also two other bodies that respond to employment and skill needs, namely the University sector and the country's Employment Services. The University sector has no direct relationship with the VTC and reports directly to the Ministry. As a consequence the Universities are responsible for making their own decisions about the labour market, with the result that the majority identify what are the most appropriate courses for the market place.

With regard to the Employment Services, they offer a free recruitment service to employers and jobseekers. There are a total of 12 job-based centres and each is linked by an interactive employment website. This website enables employers to register their vacancies and jobseekers to register their CV. In order to support this process of matching vacancies to employee, there is a telephone employment service centre and a processing centre. The employment service centre handles over 600 calls a day and the processing centre receives around half a million vacancies from employers each year.

The country's Employment Services also provide the following active employment measures for the unemployed: (a) an employment programme for the middle-aged; (b) a work trial scheme; and (c) a youth pre-employment training programme. The first of these, the employment programme for the middle-aged, provides employers with USD1,500 if they employ a jobseeker who is aged 40 and above for three months. This provides a means by which an employer can screen potential workers. The work trial is similar and lasts for around a month, providing the unemployed person with exposure to the workplace. The final scheme provides school leavers with work-based training for a period of eight months. The employers receive an incentive of USD2,000 per month for employing a young trainee.

7. Conclusions

This paper's main objective was to investigate strategic approaches that help planners and policy-makers understand the future demand for skills. In doing so the paper aimed to provide empirical data on how labour market information is used to inform or influence the development of skills policies. It was argued that labour market analysis can be used to identify signals about skills trends, and the first step is therefore to develop a set of indicators that describe labour markets. The example of Pakistan illustrated how labour market analysis can be developed in practice if data are available, including basic institutional arrangements to link analysis with policy development.

Pakistan also illustrates how LMIA can evolve, from the production of basic LMIA, to information and analysis that is closer to requirements defined by skills policies, and in line with the transformation of the TVET system towards a system that better meets market demand and will be better integrated with economic development objectives. With regard to LMIA, this process involves new data collection methods, and deepening of analysis using the range of methods that were set out in section 2.

In another country example, it was shown that many of these quantitative and qualitative methods are routinely used in South Africa, ranging from basic labour market signaling to special studies and stakeholder driven forums. In terms of institutions, South Africa shows how institutional development and the penetration of market reform are linked to the generation of information and analysis, driven by the strong political will to use evidence-based skills development as a tool in the post-apartheid era.

Both the case studies of Ireland and Hong Kong, China, provide evidence on how labour market information and analysis can be used to develop a coherent framework for future policies, including an identification of future occupations and the number of people needed at different skill levels. These two country examples also illustrate that despite the criticism on manpower planning, it still has a useful role to play in the planning process. However, the evidence also confirmed that manpower planning is being used as a tool to signal broad changes in future demand, as opposed to providing a prescriptive blueprint. Manpower planning methods can perhaps best be seen as a compass to provide a sense of direction, as opposed to a GPS that tells policy-makers what to do at each crossing.

The country case studies provide a number of important lessons for countries which are about to develop a labour market information system or to reform their existing one, especially with regard to how data was collected, analysed and most importantly utilized in the policy process. The links between data collection, analysis and utilization determine whether an information system is effective or not. Put simply, there is no point collecting data or producing information unless there is a demand for that information and it can be used in the policy process, whether it is to inform the development or modification of an existing policy or to monitor implementation towards established targets or goals.

The valuable lessons from Hong Kong, China, relate to how LMIA is used to directly influence the output of graduates from the country's TVET system. The close synergy between the country's 22 Vocational Training Councils and the Vocational Training Board help ensure that labour market information has a direct impact on future supply. In this system there is also a deliberate attempt to understand future demand in a strategic manner and to carefully monitor how this changes over time for occupations in different economic sectors. The experience of Hong Kong, China, also illustrates the importance of having the appropriate institutional structures in place to collect, analyse and utilize information. Moreover, within this approach there is a very short lead time between the identification of skills in high demand and changes in supply, ensuring that the TVET system is responsive to changing labour market demand.

A number of other useful lessons can also be gained from the case study of the Republic of Ireland. Once again there are valuable links between data collection, analysis and the structures that use labour market information. Similarly, short lead times exist between the processes of data collection and changes in the supply of skills. The case of Ireland is similar to Hong Kong, China, in that structures are designed to understand future demand and ensure that supply is responding appropriately, but there are also important differences. The Government of Ireland uses scenario planning to look at the demand for future skills in terms of qualification attainment. Subsequently, an attempt is made to answer the question of whether this qualification attainment could be achieved with the existing policy framework and, if this is not the case, which changes could raise attainment levels, such as recommendations about institutional reforms or new strategies. Moreover, in the short term specific studies are commissioned to identify needs and incentives are introduced to change supply. There is no doubt that this is a proactive and strategic approach.

Clearly, there are policy lessons for other countries to be gained from Ireland and Hong Kong, China, but decisions relating to the collection, analysis and utilization of data will be influenced by each country's level of economic development and environment. With regard to levels of economic development, the evidence would suggest that as countries become more developed, the state plays a more facilitative role, in that it will disseminate labour market information as widely as possible to stakeholders, institutions and individuals. This rests on the assumption that markets will become more efficient when people are provided with timely and accurate information and are able to make more informed decisions about labour market outcomes. In contrast, in developing economies there are few institutional structures that use labour market information and people are not familiar with making informed decisions based on such information. Under these circumstances the State must play a more centralized role in making decisions about what skills are in demand and how supply should respond accordingly.

However, in relation to the local environment, the distinction between developed and developing economies, and how labour market information is used to inform decisión-making processes, is more complex than the dichotomy discussed in the previous paragraph. First, markets and people do not necessarily behave in a rational manner, even if they have accurate and timely information. Second, contextual factors play an important role in determining what information is collected and how it is used to inform policy.[41] This is an important issue and beyond the scope of the present study, but reference to a number of examples will illustrate this point. For instance, in Singapore the Government primarily uses LMIA, not to understand trends in the economy and the labour market, but to determine in what direction the economy should move and correspondingly what skills will be required (in line with the integrated approach set out in section 2, and to some extent in contrast with the employment approach adopted in Ireland).

Another example is the distinction between the Anglo-Saxon and Continental European approach to how LMIA is used. Within the continental model, social partners play an important role in providing information about what skills are in demand and correspondingly support the implementation of responses. In contrast, the Anglo-Saxon model is based around individual choice and how individuals make informed choices about their labour market outcomes, provided they have timely and accurate information. There is a need for more research in this area, but what these differences suggest is that what works

[41] In simplistic terms contextual factors refer to how historical, geographical, political and cultural issues can impact on how information is used to influence labour market outcomes.

in one country will not necessarily work in another. Indeed, any approach to LMIA must take into account the specific context and cultural mores of that country.

Annex 1. Objectives and success indicators of South Africa's NSDS I

(1) to develop a culture of high-quality lifelong learning;

By March 2005,

(1.1) 70 per cent of all workers have at least a level one qualification on the National Qualifications Framework;
(1.2) a minimum of 15 per cent of workers to have embarked on a structured skills learning programme, of whom at least 50 per cent have completed their programme satisfactorily;
(1.3) an average of 20 enterprises per sector (to include large, medium and small enterprises), and at least five national government departments, to be committed to, or have achieved, an agreed national standard for enterprise-based people development.

(2) to foster skills development in the formal economy for productivity and employability;

By March 2005,

(2.1) at least 75 per cent of enterprises with more than 150 workers are receiving skills development grants and the contributions towards productivity and employer and employee benefits are measured;
(2.2) at least 40 per cent of enterprises employing between 50 and 150 workers are receiving skills development grants, and the contributions towards productivity and employer and employee benefits are measured;
(2.3) learnerships are available to workers in every sector (precise targets will be agreed with each sector education and training authority);
(2.4) all government departments assess and report on budgeted expenditure for skills development relevant to Public Service, Sector and Departmental priorities.

(3) to stimulate and support skills development in small businesses;

By March 2005,

(3.1) at least 20 per cent of new and existing small registered businesses to be supported in skills development initiatives and the impact of such support to be measured.

(4) to promote skills development for employability and sustainable livelihoods through social development initiatives;

(4.1) By March 2003, 100 per cent of the National Skills Fund apportionment to social development is spent on viable development projects;
(4.2) By March 2005, the impact of the National Skills Fund is measured by project type and duration, including details of placement rates which shall be at least 70 per cent.

(5) to assist new entrants into employment.

By March 2005,

(5.1) a minimum of 80,000 people under the age of 30 have entered learnerships;
(5.2) a minimum 50 per cent of those who have completed learnerships are, within six months of completion employed (e.g. have a job or are self-employed), in full-time study or further training or are in a social development programme.

National targets adopted for the beneficiaries of learning programmes across the five objectives:

(1) 85 per cent to be black;
(2) 54 per cent to be female;
(3) 4 per cent to be people with disabilities.

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