



**TECHNICAL AND VOCATIONAL
EDUCATION AND TRAINING
AND THE LABOUR MARKET
IN ISRAEL**



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TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING AND THE LABOUR MARKET IN ISRAEL

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2006*

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EXECUTIVE SUMMARY

The aim of this report is to contribute to a better understanding of the current status of technical and vocational education and training (TVET) for human resources development (HRD) and the labour market in Israel. It describes the role and involvement of the various sectors in HRD and identifies the barriers, challenges, priorities, initiatives and programmes to promote HRD in Israel.

In 2004 the population of the state of Israel inhabited an area of 22,145 km² and totalled 6,869,500. This number comprised 76% Jews, 16% Muslims, 2% Christians, 1.6% Druze and 3.9% unclassified. The average age was 28.3 years with 28% between 0 and 14 and 16% between 15 and 24. The GDP per capita was US\$16,400. The average net monthly income per household was US\$2,178 with an average monthly wage of US\$1,399. The employment rate was 70% among those aged 25–54, the unemployment rate was around 10% and the percentage of families living below the poverty line was 19%.

The Israeli economy has moved from an agriculturally based, largely collective economy to one that is technologically advanced, with the information and communication technologies' (ICT) industry acting as the frontrunner. The government's main economic policies consist of privatising state-owned companies, minimising the number of foreign workers, reducing the size of the public sector and encouraging people to move from dependence on welfare into employment.

Some of the key findings are listed below.

1. The forecasts of demographic trends in Israel indicate an absolute increase in the proportion of Arab and ultra-orthodox Jewish populations. This shows a need for greater investment in TVET for HRD in order to encourage these groups into gainful employment both for their own sakes and as a boost to the productive workforce of the economy.
2. Poverty is steadily increasing in Israel. The number of low-income workers has risen to 18%.
3. Israel has lower labour force participation rates (62.2%), lower employment rates (55.7%) and higher unemployment (10.5%) than the US or OECD countries.

Israel has adopted various approaches to tackling unemployment, most of these are focused on the demand for work while others are designed to boost the supply of jobs. One of the most significant programmes is the *Mehalev* national programme, which is based on the Wisconsin model. Its main aims are to reduce the number of those on income support and to increase the participants' motivation to find long-term jobs. Israel sees the development of small and medium-sized enterprises (SMEs) as another significant lever for the growth of its economy. There are already some 400,000 SMEs in Israel, comprising 98% of all businesses and employing 1.2 million people. Between them, they account for 60% of all employment in the business sector. Through the Israel Small and Medium-sized Enterprises Authority and its Centres for the Promotion of Entrepreneurship (CPEs), the Ministry of Industry, Trade and Labour (MOI) offers

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advanced programmes and HRD services aimed at improving management skills, promoting innovation in SMEs and facilitating access to sources of funding.

Technical and vocational education and training is the responsibility of two government ministries: the Ministry of Education, Culture and Sport (MOE) through its department for science and technology, and the MOI through its Manpower Training and Development Bureau (MTDB). There are two parallel processes of TVET under the supervision of the two ministries: for young people under the age of 18 who follow technical tracks in comprehensive schools and in industrial schools; and for adults who follow courses in colleges for technicians and practical engineers. One of the more significant challenges facing Israel is how to develop a coordinated policy of TVET for HRD which can benefit from the experience and expertise of both ministries.

The MOE has established two important committees: the Dovrat Committee, a national task force for the advancement of education in Israel; and the Preiss Committee, in charge of reviewing technical tracks and subjects. They published their final reports and recommendations at the end of 2004. The implementation of the Dovrat report's recommendations has come up against difficulties, especially in gaining acceptance from educational bodies and the teachers' unions. In order to implement the Preiss Committee recommendations, more funding will be needed for the development of technical education, including research and development curriculum, in-service training of teachers and teacher trainers and the renewal of equipment.

The current policy aims of the MOE for technical education in comprehensive high schools are as follows:

- developing and implementing a stronger scientific infrastructure for technical tracks and subjects;
- developing curricula with standards that are in accordance with the new rules of eligibility for full matriculation currently being determined at the MOE;

- implementing a five-year educational programme for the Arab population to reduce gaps in attainment and to promote the participation of female students;
- encouraging more female students to study science and technology subjects;
- regularly improving the skills and capacities of technical teachers through a broad spectrum of in-service training courses and study days.

The updated HRD policy for adults of the MTDB of the MOI emphasises the following aims:

- TVET and HRD should be much more focused on responding to the needs of trade and industry rather than on service industries.
- MTDB should provide cheaper and shorter courses that are partly on-the-job training.
- MTDB should deal with the formulation and control of policy for vocational training, while the actual implementation of TVET should be carried out by private or public companies and educational and training networks.

MAIN RECOMMENDATIONS

1. TVET for HRD should include basic competence in four subjects: mother tongue, English, mathematics and ICT. It should also include lifelong learning skills, with a special emphasis on personal and interpersonal skills as well as values and ethics. Some examples of these skills and values are the ability to listen and express oneself orally and in writing, the ability to learn as an individual and as part of a team, the ability to meet deadlines, reliability, integrity, responsibility and accountability as well as a positive and committed attitude towards work in general and towards one's place of employment in particular.
2. Targeted resources should be invested in TVET programmes with an emphasis on promoting affirmative action. This is needed in order to help those groups currently at a disadvantage or under-represented in the labour market

such as minorities, new immigrants, women, single-parent families, the unemployed, people on benefits and residents of development towns. They should be systematically encouraged to take advantage of the TVET programmes which have been designed for their benefit. Only long-term investments and multi-year projects and programmes can bring about the changes needed to ensure that Israel becomes a more equal society.

3. A council or a national authority should be set up to forecast HRD needs in Israel. Such a council should function as a legally defined statutory body, with structured methods and an adequate budget for ongoing HRD needs analysis and forecasting. This report also recommends establishing a mechanism for regular updating of TVET curricula.
4. The quality of the teachers and the teacher trainers in TVET is the most important ingredient in producing skilled

and educated workers. The government must recognise the value of technical teaching as a profession, and should express this recognition via higher pay and bonuses for outstanding achievements. At the same time, it is recommended that the prerequisites for people wishing to enter technical pre-service teacher training be made significantly higher than is currently the case.

5. Just as every year the government sets goals for inflation and budgetary deficits, it should also set itself annual goals for lowering levels of unemployment and poverty and for bridging social gaps in Israel. If measurable criteria are used and these are linked to specific work plans complete with schedules and adequate budgets, this could convey a message of commitment and responsibility to all the different groups and communities that make up Israeli society.

1. INTRODUCTION

1

The main objective of this country report is to present a clear picture of the current state-of-play in Israel's national HRD systems and to highlight what are the main issues and challenges that should be addressed.

The report describes the HRD and the labour market of Israel. It focuses on HRD policy within the general education system, technical education, higher education and especially vocational training in Israel. It covers the roles and involvement of the various actors in HRD: the government, the general public, NGOs, organisational councils and private companies. It identifies the future challenges and priorities and which initiatives are currently in place to promote HRD and TVET.

The report also touches on economic developments that are likely to influence HRD and the labour market. These include:

- the shrinking of the government and the public sector;
- privatisation processes;
- employment policy for foreign workers;

- policy for small and medium businesses;
- initiatives to boost the participation of groups currently under-represented in the workforce such as women, single-parent families, immigrants and minorities;
- changes in the structure of various branches of the economy and employment;
- demographic changes.

The report attempts to link developments in TVET to the wider political and social context such as the incidence of poverty, unemployment and employment in the different parts of society as well as attempts to reduce inequality in terms of access to and participation in education and vocational training.

The report describes the structures of TVET. It covers recent and ongoing reforms and HRD programmes and projects with an assessment of what stage of implementation they have reached and what impact they are having on the labour market. Similarly, the difficulties and constraints are identified and examined.

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Finally, the report draws several conclusions and makes various recommendations on how to promote a higher level of HRD and a more productive workforce that can in turn make its contribution to a more advanced and equal society [1].

The methodology of this project has involved several stages:

- planning the project and the structure of the report by the ETF country manager for Israel and the EU expert assigned by the ETF to the project;
- gathering and compiling preparatory information by the local expert on the socio-economic situation of the country including HRD, the labour market and the TVET system;
- organising and attending meetings with the ETF country manager, the EU expert, the local expert and representatives of senior management from the MOE and the MOI as well as from other organisations and NGOs involved in HRD and the labour market.

The sources of information used in preparing the report are varied and include: books, articles, surveys and reports in Hebrew and English; data from the Central Bureau of Statistics, government offices and independent research institutes; visits and interviews with experts and people working in HRD and in particular VET; as well as the latest information found on the internet. However it is worth noting that many of the published surveys and reports are based on data that are two or three years old, while the social and economic reality in the world in general and in Israel in particular are changing at an ever-increasing rate. Suffice it to say that the recent disengagement from the Gaza Strip and settlements in the West Bank, which has meant the relocation of some 10,000 people, calls for rapid reorganisation in terms of housing, employment, education and training. Current developments in the political arena place certain limitations on the ability of the author to analyse the findings of this report, especially with regard to conclusions and recommendations for the future.

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2

Data from the Central Bureau of Statistics show the following:

- In 2004 the population of the state of Israel inhabited an area of 22,145 km² (excluding the West Bank and Gaza Strip) and numbered 6,869,500.
- This number was comprised of: 5,237,600 Jews (76%), 1,107,400 Muslims (16%), 144,300 Christians (2%), 113,000 Druze (1.6%) and 264,600 not classified by religion (3.9%).
- This comprised 3,392,500 males and 3,477,000 females.
- The average age was 28.3 years with 1,947,500 (28%) between 0 and 14; 1,124,400 (16%) between 15 and 24; 2,594,400 (38%) between 25 and 54; and the rest 1,203,200 (18%) between 55 and 65+.
- The total number of immigrants from 1990 onwards was 1,010,900. Of these, 916,100 came from former Soviet Union countries and 69,400 from Ethiopia.

- The percentage of the urban population was 91.4% while 8.6% lived in rural areas. The average number of people in a family in the general population was 3.74. Of this number, there were an average of 3.54 in Jewish families and 4.91 in Arab families.
- Some 52% of the population lived in the centre of the country, 30% in the north and 18% in the south [2].

Data from the Taub Centre for Social Policy Studies in Israel [3] show that in 2004:

- the GDP per capita was US\$16,400;
- foreign trade constituted 37% of GDP, while government expenditure accounted for 30% of GDP;
- government expenditure was broken down as follows: 38% on social services; 17% on defence; 31% on debt repayment; and 14% for other purposes;
- national expenditure on education was 8.5% of GDP;

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- median years of schooling:
 - in 1961: total, 8.0; Jews, 8.4; Arabs, 1.2;
 - in 1980: total, 10.7; Jews, 11.1; Arabs, 7.5;
 - in 2003: total, 12.4; Jews, 12.6; Arabs, 11.1;
- school enrolment rates in the age group 14–17 were as follows: Jews, 98.1%; Arabs, 88.7%;
- national expenditure on health was 8.5% of GDP, with 3.6 doctors per 1,000 heads of population, 6.1 hospital beds per 1,000 heads of population and 32.1 geriatric beds per 1,000 heads of the population aged 65+;
- life expectancy at birth was 77 for men and 81 for women;
- the average net monthly income per household was US\$2,178, with an average monthly wage of US\$1,399;
- the percentage of families living below the poverty line was 19%;
- the employment rate of the population aged 15+ was 60% for men and 50% for women;
- the employment rate was 70% among people aged 25–54 and the unemployment rate was around 10%;
- expenditure on research and development accounted for 4.5% of GDP;
- ICT accounted for 8.3% of jobs in the business sector.

Responsibility for TVET is shared between the MOE and the MOI.

MINISTRY OF EDUCATION, CULTURE AND SPORT

During the 2003/04 school year, 2,068,726 students studied in institutions under the supervision of the MOE [4], as follows:

- 390,000 in kindergartens and 775,587 in primary schools (grades 1–6);
- 254,005 in junior high schools (grades 7–9);
- 347,662 in senior high schools (grades 10–12) of which:
 - 208,463 in the academic track;
 - 135,697 in technical and vocational tracks;
 - 3,133 in the agricultural track;

- 369 in other tracks;
- 251,972 students were in higher education and 49,500 in other institutions.

Within the MOE, the Science and Technology Administration is responsible for the teaching and studying of science, technical subjects and ICT in kindergartens, primary schools, junior high schools, high schools and colleges for technicians and practical engineers (prior to compulsory service in the Israeli Defence Force or IDF). Technical tracks in high schools cover a wide range of subjects including electronics and computer engineering, software engineering, mechanical engineering, biotechnology, computer-aided manufacturing systems, control and energy systems, industrial design, building and architectural engineering, industrial engineering and management, tourism and health systems.

The Science and Technology Administration is in charge of developing curricula, teaching and learning materials and aids, teacher training courses, standards for equipping laboratories and workshops and system-wide projects in the subjects of science, technology and ICT from kindergarten to junior (pre-military) colleges for technicians and practical engineers.

MINISTRY OF INDUSTRY, TRADE AND LABOUR

The MOI is responsible for developing and implementing policy, strategies and programmes for training vocational and technical manpower for the labour market. It oversees two main streams: youth vocational (before military service); and adult vocational (after military service) [5].

In the area of youth vocational training there are three sub-systems with about 15,000 students between them aged 14–18 in some 70 institutions [4].

1. Industrial schools, which operate in cooperation with large industrial organisations and companies including

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the IDF, hotels and large vehicle repair shops, offer places to some 13,000 students from grade 9 or 10 to grade 12 studying academic subjects (14–16 hours per week), theoretical vocational subjects (8–9 hours per week), practical work (22–30 hours per week) and dedicating three hours per week to educational and social issues. The students complete work placements in enterprise and receive a salary according to the hours worked and their vocational seniority.

2. Apprenticeship schools, with approximately 1,800 students. Within this sub-system there are a number of small factories that jointly operate a study workshop in a regional centre – a school for apprentices. The apprentices work in the factories and study between one and three days a week.
3. Work groups and courses for adolescents aged 15–17.5 who are not studying or employed elsewhere, offered in collaboration with large public institutions such as hospitals, the IDF and technical education and training networks. In this sub-system some 700 students study at apprenticeship schools between one and three days a week over a period of one to three years.

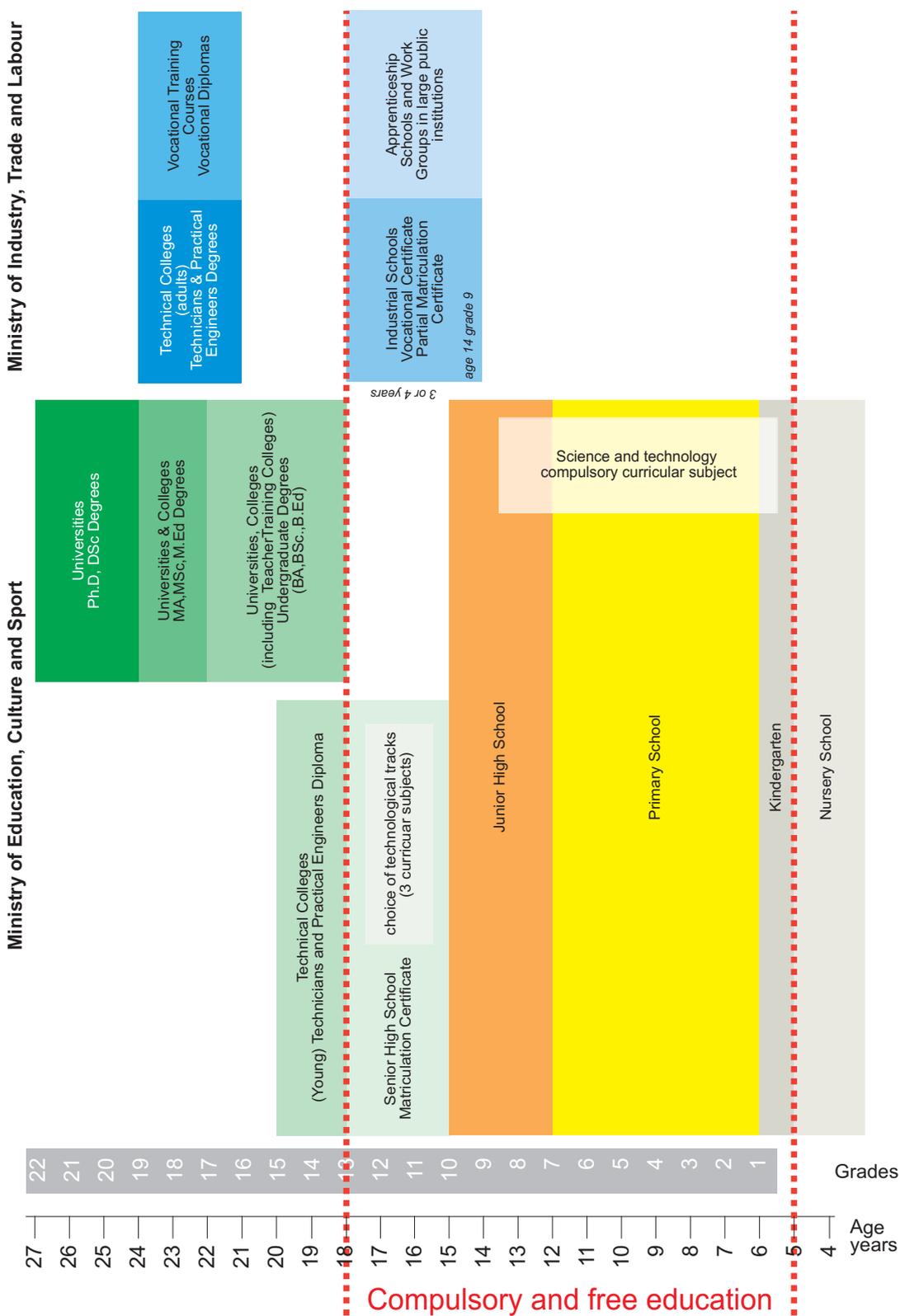
Vocational training tracks for youth include building, computing, hairdressing and beauty care, administration (including secretariat and bookkeeping), care workers for day care centres, metalwork and machinery, vehicle mechanics and electricity, hospitality, electricity and electronics, textiles, wood and furniture technology and dental technicians.

In the adult vocational system there are five main sub-systems training some 85,000 students on hundreds of courses in numerous institutes, training centres, technical and vocational education and training networks, factories and public sector organisations.

1. Vocational training courses at the vocational centres are spread around the country. They offer courses in different fields such as draughtsmanship, building, computing, printing photography and production, beauty care, maritime and shipping, administration, childcare, metalwork and machinery, transport and vehicles, hospitality, electricity and electronics as well as specific preparatory courses.
2. Training courses for handicapped people and their rehabilitation at work: this sub-system offers assessment and guidance on which training courses are appropriate for the participants and can help them find their place in the labour market according to their abilities and degree of disability.
3. Training technicians and practical engineers under the supervision of the National Institute for Technical Training (see chapter 4 for more information on this important organisation). Some 25,000 students are currently enrolled in 90 colleges.
4. Professional retraining for people with an academic degree (such as new immigrants), as well as retraining for people leaving the security forces for civilian employment.
5. In-house training for employee job promotion and also for unemployed people who are guaranteed a job at the enterprise in question after completing their training.

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Israeli education and TVET system



3. CURRENT SITUATION AND FUTURE TRENDS IN HUMAN RESOURCES DEVELOPMENT AND THE LABOUR MARKET

3

3.1 ECONOMIC CONTEXT

3.1.1 TRENDS IN THE STRUCTURE OF ISRAELI INDUSTRY

In the publication *The Israeli economy at a glance 2004* [6], the MOI states that the Israeli economy has moved from an agriculturally based, largely collective economic system to a technologically advanced economy in a liberalised marketplace.

Over the past 20 years, this transformation has been made possible by the development of innovative

knowledge-based industries, particularly in research and development, and the manufacture of hi-technology.

Government policies encouraging industrial research and development, capital investment, currency liberalisation and privatisation, as well as investment in human resources have allowed companies to develop and compete in the world marketplace, often at the cutting edge.

The following data which compares the composition of industrial exports in 2003 to that of 1980 (excluding diamonds) would seem to bear this out.

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Industrial exports by sector	1980		2003	
	US\$ million	%	US\$ million	%
Electrical and electronics	490	15	7,745	40
Chemicals, rubber and plastics	851	25	5,874	30
Metal and machinery	761	23	2,798	14
Textiles, clothing and leather	473	14	993	5
Others	292	9	911	5
Food and beverages	298	9	510	3
Mining and quarrying	175	5	619	3
Total	3,340	100	19,450	100

A breakdown of industrial production by sector provides the following picture.

Industrial production by sector	% of total
Electrical, electronics and transport	24.0
Chemicals, rubber and plastics	20.7
Food and beverages	14.7
Metal and machinery	12.3
Diamonds	10.5
Light industries (wood, paper, printing, furniture etc.) and miscellaneous	8.9
Mining and minerals	4.6
Textiles, clothing and leather	4.3
Total	100.0

These figures pertaining to the Israeli economy are very useful for suggesting the kind of workforce needed for an industry which is based on science and sophisticated technologies at all levels. This need for engineers, practical engineers, technicians, and other positions in research and development, assembly and maintenance workers, and sales and marketing staff will be discussed in detail in chapter 4.

Figures on civilian research and development expenditure as a percentage of GDP [6] in 2000 and 2001 show that at 4.7%, Israel is one of the highest spenders in the world. In other countries the figures are as follows: Sweden, 4.1%; Finland, 3.4%; Japan, 2.9%; Germany, 2.4%; USA, 2.3%; Denmark, 2.1%; France, 1.9%; and Ireland, 1.1%.

These findings are a reflection of Israel's policy of investing in research and development in innovative products. Its strategy is to identify niche markets in other countries and to develop products and processes for them which can offer sophisticated functional added value at a competitive price. Developing a highly educated workforce that is skilled in science, engineering, marketing and sales is therefore a high priority for Israel.

As we can see from the following data, ICT is the leading industry in Israel's high-tech sector [6]:

- ICT products as a percentage of total business sector product, 2000: Israel, 19.8%; Ireland, 16.1%; Finland, 15.8%; Korea, 9.9%; USA, 9%; United Kingdom, 8.2%; Netherlands, 8.1%; Japan, 8%; Italy, 6.5%; Germany, 6%;
- ICT exports as a percentage of total goods exports, 2001: Ireland, 40%; Korea, 31%; Israel, 27%; Japan, 24%; Netherlands, 23%; Finland, 17%; USA, 17%; United Kingdom, 15%.

This data has significant implications for science and technology human resources in Israel in the field of ICT, especially if we assume that this area will continue to develop in the future (though probably not at the same rate as at the end of 2000). There will clearly be a need for more education and training for the ICT branch of the labour market.

At the same time, the willingness of risk capital funds to invest in the future potential of hi-tech and ICT in particular, can be seen from the following [6]:

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- levels of venture capital investment in high-tech sectors (ICT and health/biotechnology) as a percentage of GDP, 1999–2002: Israel, 0.6; USA, 0.4; Canada, 0.3; Sweden, 0.25; United Kingdom, 0.2; France, Ireland, Norway and Denmark, 0.1; Japan, 0.04.

3.1.2 IMPLICATIONS OF THE 2005 BUDGET FOR THE ISRAELI LABOUR MARKET

In order to determine the government's broad aims for Israel's economic policies, we will examine the country's budget for 2005 (government decisions of 15 August 2004) [7]. Only those measures which are likely to affect HRD and the Israeli labour market are listed below:

1. increasing flexibility in the labour market by amending the law pertaining to the employment of workers by HR contractors, and postponing its enforcement to the beginning of 2008;
2. aiming to create more jobs and increase the rate of participation in the labour force by reducing the amount of national insurance paid by employers for their workers;
3. encouraging more Israelis into jobs instead of foreign workers by: allowing a foreign worker to be hired only if that person has special expertise; ensuring a significant but gradual rise in their monthly wages (twice the average market wage); allocating at least 40% of the budget for professional training to courses in those professions that currently employ a large number of foreign workers; allocating 40 million shekels (about US\$8 million) to fund moves to encourage Israeli workers to work in the building sector; and organising the departure of some 70,000 foreign workers who reside in Israel illegally;
4. reducing the bill for wages in the public sector by: reducing salaries for directors general of government ministries and those officials whose salaries are linked to theirs; reducing the salaries of workers on personal contracts;
5. reducing the number of people employed by the public sector (at an

average rate of 3% for 2005 and a further 2% in the budgets for 2006 and 2007), by reducing the number of staff in government offices, the National Insurance Office, employment agencies and the local authorities; reducing the amount of overtime worked by government employees; offering financial rewards to government offices that manage to reduce staff through early retirement comprising 75% of the cost of the annual salary expenses thus saved.

These government measures taken from the 2005 budget indicate a strong will to reduce the number of foreign workers while encouraging Israelis to take on these jobs. At the same time, steps are being taken to reduce the size of the public sector.

3.1.3 PRIVATISATION OF STATE-OWNED COMPANIES

One of the most consistent features of Israeli economic policy in recent years has been the process of privatisation.

'Privatisation procedures in Israel are regulated by the State-owned Companies Law, under which the State-owned Companies Authority operates. The current policy of the government is to accelerate the process of privatisation, which is clearly reflected in recent developments'[6]:

1. the privatisation of Israeli seaports;
2. the privatisation of Bezeq – The Israeli Telecommunication Corp Ltd;
3. the privatisation of Zim Israel Navigation Co Ltd;
4. restructuring Israel Electric Corporation Ltd;
5. restructuring Mekorot Water Co Ltd.

This policy of privatising state-owned companies is expected to produce a more flexible workforce in Israel, improve productivity and the quality of the services they provide and introduce more competition between companies. However, there is a risk that this policy might lead to lower levels of maintenance and safety in the products and services these companies provide, especially in the transport sector.

3.1.4 SMALL AND MEDIUM-SIZED ENTERPRISES AND JOB CREATION

Several decades ago, prevailing economic wisdom tended to prefer larger companies to smaller ones and saw great advantage in size, expertise, accumulated years of experience, financial solidity and the ability to negotiate both with suppliers and with clients. However, already in the 1970s, people were beginning to see that small and medium-sized enterprises (SMEs) have many advantages of their own such as: less bureaucracy, more flexibility, rapid and dynamic decision-making, closeness to the market and personal contact with the client.

And indeed, 'small and medium businesses are considered, according to accepted wisdom in both developed and developing countries, as a key factor in economic growth and job creation. In Israel the government sees these businesses as one of the tools to make its economic goals more flexible and as one of the cornerstones of Israeli economy and society'[8]. Small businesses in Israel can offer an appropriate solution to employment problems in the periphery, for under-represented groups such as women, immigrants, ultra-orthodox Jews and minorities, and as a response to the changing needs of the Israeli economy. At the same time, we should remember that small and medium businesses face problems of government bureaucracy, lack of managerial experience and difficulties in getting access to capital.

A survey carried out on behalf of the Israel Small and Medium-sized Enterprises Authority produced the following findings [10]:

1. Some 98% of businesses in Israel are SMEs, they number around 400,000.
2. SMEs employ 1.2 million employees, accounting for 60% of all those employed in the business sector.
3. Israel is in a reasonably good position with 60 small businesses per 1,000 citizens, as opposed to between 40 and 72 businesses per 1,000 people in other Western countries. For instance small

businesses in England and Finland account for 98% of the total and they employ some 43% of those employed in the business sector.

4. The Israeli SME sector has a total of 175,000 employers, 140,000 self-employed people and 85,000 companies. Women account for 30% of the self-employed and 13% of employers and their participation has been rising steadily in recent years.
5. The rate of growth of businesses has been 2.6% per year, slightly higher than the rate of growth of the population at 2.5% and that of the growth in productivity at 3.6%.
6. In recent years in Israel, between 40,000 and 47,000 new small businesses are set up and between 30,000 and 48,000 are shut down each year. These figures are not totally accurate however as some reflect a change in organisation or in ownership. The net addition of small businesses is actually 8,500 per year. The main areas of growth for small businesses are in business services, health and wellbeing and personal services.

Four major problems for the development of SMEs have been identified [9]:

- the need to improve management skills;
- difficulties in getting access to capital: a very unequal distribution of credit by the banks currently exists – 80% of loans are being granted to just 15% of customers, leaving just 20% for the remaining 85% of customers, who are mostly SMEs;
- competition from cheap imports;
- disadvantages when exporting due to size.

In order to support SMEs, the MOI has launched sophisticated programmes aimed at improving management skills and promoting innovation in businesses. These include:

1. The Business Tutoring Programme which helps SMEs with basic management skills in areas such as finance, marketing and human resources. Eligible SMEs can be from all sectors – industry, commerce,

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- tourism or agriculture. The SME pays 25% of the costs for up to 150 hours of tutoring. Three experienced organisations were chosen to provide this tutoring – one each for the northern, central and southern regions of the country. They currently provide tutoring for over 3,000 SMEs each year.
2. The Quality Management Programme which help firms to increase their efficiency, by applying methodologies such as Kaizen or 6-Sigma. The tutor usually sets quantitative goals for the business in order to improve. The SME pays 50% of the costs (some US\$400) for up to 400 hours of tutoring. Some 100 SMEs participate in the programme each year.
 3. The Marketing Tutoring Programme which helps SMEs that are starting to export by providing information, know-how and contacts overseas. An expert in marketing tutors an SME in putting together a strategic plan and helps with implementation. The SME pays 50% of the cost for up to 200 hours of tutoring.
 4. During the last five years Israel has developed 24 methodologies to develop innovation and applies 11 of them on a regular basis. The programme is called NITSOS (Sparks) for which the SME pays 25% of the costs for up to 150 hours of tutoring. Israeli success in developing tools to support innovation is shown by the fact that a plan for helping an SME innovate can be drawn up over a period of just five days using a very structured method. The methodologies of innovation are designed to create new ideas for new products, new and unique marketing methods and new strategies for the SMEs.
 5. One of the areas in which Israel is developing programmes to promote SMEs is in industrial design as it sees this as a significant area for economic development for the 21st century. One such programme is called *Shatil* which makes it easier for SMEs to take on graduates with engineering degrees or practical engineering diplomas in industrial design as a means to improving products. The programme pays the graduate a monthly stipend from the MOI for one year.
- Israel saw the need to begin actively supporting SMEs in the early 1990s when hundreds of thousands of qualified new immigrants arrived from the former Soviet Union needing jobs [8]. Together with the Joint, the Ministry of Absorption set up Centres for the Promotion of Entrepreneurship (CPEs). The government later used the MOI to set up the Small and Medium-sized Enterprises Authority that oversees these centres and has set up new ones. Today there are 25 such centres throughout the country. The CPEs serve as a one-stop shop for business owners or entrepreneurs where they can enjoy a variety of services at state-subsidised prices or be referred to institutions and other relevant bodies. The main HRD services provided by these centres are:
- professional counselling on how to set up a business, preparing a business plan, management, marketing, financial advice and human resources;
 - training and courses on a variety of subjects such as entrepreneurship, public relations, how to set up an online business, business English, e-commerce, time management and special courses for under-represented groups such as ultra-orthodox women, the Arab population or single-parent families;
 - referral to special sources of funding for SMEs and help preparing a business plan to apply for the funding;
 - a wealth of information about the programmes, projects and other initiatives in Israel that can address the needs of SMEs.
- Access to finance is one of the main barriers for SMEs. The Israeli government is promoting a policy which makes working capital for investment more readily available to SMEs. In September 2003 the government revised an existing working capital fund and established a new state fund to encourage SMEs. Funds which can provide help to SMEs include the Independent Immigrant Fund (which helps immigrants during their first 10 years in Israel), the Rashi Foundation, the Koret Fund (for setting up new businesses), the Moshavim Fund (for businesses in small

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rural communities) and the Fund for Businesses in Distress [11]. However, the greatest challenge for the government still remains how to encourage banks to provide suitable loans and credit to SMEs on terms similar to those offered to larger companies.

3.2 POLITICAL AND SOCIAL CONTEXT

One of Israel's major achievements since 1990 has been successfully absorbing over 1 million immigrants into an existing population of about 5 million. This has called for the reorganisation of housing, employment, health and education services on a national scale. Israel still faces the security challenge of how to cope with two intifadas and continuing terrorist attacks and, more recently, the disengagement from the Gaza Strip and the northern West Bank. Nevertheless the country is still facing what is perhaps the most important challenge to its continued existence and that is how to develop a society of genuine equality and justice.

Employment is one of main areas in which the link between the economy and society is the strongest. In this section we will examine the erosion of earning power and the growing incidence of poverty amongst families of both employed and unemployed people. In a later section the report will also examine the importance of the education system for bridging social gaps in Israel.

Over the last five years, a look at per capita government expenditure on social issues reveals an accumulated decline of 15%. In 2001 this expenditure stood at 21.3% of GDP, but had dropped to about 20% in 2003 and stood at only 18.3% in the 2005 budget. This decline can also be seen in the data on expenditure in absolute terms

at fixed prices – the total expenditure on social issues for 2005 stood at less than 97 billion shekels as opposed to more than 106 billion shekels in 2001 [12].

Since the 1985 stabilisation plan, successive Israeli governments have striven to reduce the share of social spending in the GDP and to redirect these resources to its activities in the business sector in order to promote sustainable growth. The weight of government spending within the GDP has dropped from 63% to somewhere in the region of 50% [12]. Naturally, government spending on welfare services has been cut back, but so have the services provided by the local authorities. As a result, welfare services, especially in towns with socio-economically deprived populations, have suffered. The welfare services most affected by the cuts are those which are not protected by law.

The government's policy of cutting back on spending such as welfare services while at the same time encouraging people on benefits to find work has not yet proven itself. Almost half of the poor that the welfare system is supposed to help find themselves in poverty because of the low wages they receive, not because they do not work, and that is why it is so important to invest in HRD for these specific groups [12].

3.2.1 DEMOGRAPHIC TRENDS, PRESSURES AND FORECASTS

Demographic trends

The following data from the Central Bureau of Statistics [13] show the Israeli population broken down according to religion at various years, including future projections.

Population	1995	2000	2010	2015	2025
Total (in thousands)	5,612.3	6,365.8	7,542.3	8,922.2	9,261.7
Jews and others* (%)	82.1	81.4	78.9	77.7	74.9
Thereof: Jews (%)	80.6	77.8	74.5	73.0	70.3
Arab population (%)	19.3	18.6	21.1	22.3	25.0

*The 'Jews and others' category includes Jews, non-Arab Christians and those not classified by religion.

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From the data we can see that the weight of the Jewish population in Israel could decline significantly in relation to the Arab population. This forecast is significant for the vision of Israel as a Jewish state. For this reason all Israeli governments have dedicated significant efforts and resources in encouraging Jews to immigrate to Israel from their communities around the world.

Today there is real growth in the total number of students, although in the Jewish population – in state religious and secular, primary and secondary schools alike – there is an absolute decrease in the number of students. On the other hand, the proportion of students from the Arab and ultra-orthodox Jewish population is growing [12]. Lately we have been witnessing a spurt in the growth of Arab student numbers for all age groups. This growth stems from two sources, natural population growth and also increased rates of attendance in kindergartens and secondary schools [4]. This finding is of special importance for HRD in the Arab population and its prospects of achieving gainful employment in the various branches of the economy.

The increase in the ultra-orthodox sector of the education system is very marked; in 2003 this group accounted for 24% of all primary school children (and about 20% of the whole system). The data show that the vast majority of the increase stems from natural expansion (and not from a transfer from the secular or state religious streams) [12]. Here the government must come up with a policy promoting the study of core subjects that are useful for them and for their families so that they can join the productive workforce and contribute to the economy.

Foreign workers

Another important issue of demography for successive Israeli governments in recent years is the question of foreign workers. In a statement to the press, the Central Bureau of Statistics [14] announced that the number of foreign workers at the end of 2004 was estimated at some 188,000, of these 91,500 had work permits while 96,500 did not. Some 96% of those with permits came from 12 countries including Thailand, the

Philippines and Romania. Women constituted 28% of people entering Israel with a permit. The number of salaried jobs for workers from the West Bank and Gaza Strip is about 11,000. The percentage of foreign workers in Israel is about 9%, a high figure compared to European countries such as Austria and Germany. The average wage of foreign workers in March 2005 was NIS 4,103 (about US\$912) as opposed to the average wage in Israel of NIS 7,201 (about US\$1,600).

As a result of the intifada which prevented workers from the West Bank and Gaza Strip from entering Israel to work on a regular basis, the government increased the number of entry permits for foreign workers, especially in construction, agriculture and food services. The use of foreign workers in the building trade has had various knock-on effects. The convenient supply of cheap labour has held back technological development, while at the same time lessening the chances of Israeli workers without higher education entering this kind of work. The relatively low wages of the foreign workers offers a great incentive to hire them. Since these workers are competing for jobs with unskilled Israelis, the wage for unskilled labour in Israel, which was fairly low to begin with, has also dropped [15]. Israel's budget report for 2005 [7] is one illustration of the government's tough and consistent policy of reducing the number of foreign workers by imposing strict limitations on their employment, deporting illegal workers from Israel and encouraging Israeli workers to take on this kind of work.

Poverty in Israel

The poverty line in Israel is defined as a level of income equal to 50% of median available income. According to this definition, any rise in the general income means a rise in the poverty line. In 2001 [16] the number of poor families reached 319,000 comprising 1,169,000 people, of whom 531,000 were children. These figures indicate a steady increase in families living in poverty compared to 2000 and 1999. In 2001 the poverty index stood at 38.5% before transfer and tax payments, at 26.9% after transfer and tax payments.

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A close look at this data shows that poor families are not necessarily those in which family members are unemployed or receiving state benefits such as the elderly, the sick or the disabled. In many poor families, people are employed but their jobs are too badly paid to help them out of the poverty trap.

The data show that poverty affects [12]:

- 9.6% of families where the head of the family is a salaried worker;
- 14.6% of families where the head of the family is self-employed;
- 18.6% of families with only one breadwinner and 3% of families where there are two breadwinners.

At 18%, the proportion of low-income workers in Israel has risen since the 1980s and is currently one of the highest in the OECD countries: this compares to 14% in Italy, 11% in Britain and Ireland, 8% in Austria and 7% in Finland. The Israeli economy is one of the few developed economies in which income gaps between skilled workers and those with higher education and unskilled, poorly educated workers have actually increased since the 1980s.

Government policy has aimed to wean fit people of working age off dependence on welfare and into the job market by limiting their entitlement to unemployment benefits and income support. This policy was based on a series of assumptions such as [12]:

- the problem of poverty arises because some people choose not to work;
- it is possible to differentiate between groups of people who could work but do not and those who are unable to work;
- a lean government and low taxation will increase economic growth;
- in a growing economy anyone who is forced to work will find appropriate work at a decent wage; hence poverty and economic gaps will be reduced.

These assumptions have not yet proven themselves and what we are now witnessing is a steady increase in poverty levels in Israel. One of the most notable

developments is the increase in poverty amongst salaried workers where one person's wages are not enough to keep a family above the poverty line. In 2002 this group accounted for 42% of all those designated as poor. In 1990 they totalled 34% of the poor.

Just as in other developed countries, economic growth in Israel is driven by advanced technology such as ICT. Therefore, an increase in GDP per capita does not lead to a rise in relative wages for unskilled workers or to a reduction in wage disparities. Moreover, the weakening of the unions in Israel and the declining importance of collective work and salary agreements have made the income gaps worse. The strengthening of HR contractors provides a third reason why wages have stayed so low for 'weak' workers such as the unskilled, the uneducated, the very young or very old, women and immigrants.

Recently voices have been heard within the government that the country must try harder to reduce these social and economic gaps and to reduce poverty. Consequently, as Zusman [12] points out, government policy must try and break the connection between unskilled labour and poverty. One of the tools that could be used to achieve this goal is a budget subsidy for low-wage workers, by instigating negative income tax, a mechanism that has proven successful in a number of Western countries. Similarly, the regulation of the working conditions of unskilled labourers employed by HR agencies should be tightened up, so that the status of these workers can be improved through legal means and collective agreements.

The trend in Israel for an increasing use of advanced technologies in industry and the need to raise the wages of the unskilled workers will require long-term investments in TVET for HRD. This is in order to promote workers to skilled jobs in more advanced branches of the economy that pay better, and thus could help reduce the inequalities in Israeli society over the long term.

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3.3 KEY FEATURES OF THE LABOUR MARKET

3.3.1 STRUCTURE OF THE ISRAELI LABOUR MARKET

The table below shows the Israeli workforce broken down according to sector, population group and gender. All data are supplied by the Central Bureau of Statistics [17].

Israeli workforce by sector (percentage)

Year	Thousands (Total =100%)	Agriculture	Manufacturing	Electricity and water supply	Building and civil engineering	Wholesale, retail trade and repairs	Hospitality	Transport, storage and communication	Banking, insurance and finance	Business activities
1995	1,968.0	2.9	20.7	1.0	7.2	12.7	4.2	5.9	3.5	9.0
1997	2,040.2	2.4	19.7	0.9	7.2	13.0	3.7	6.1	3.6	10.1
1999	2,136.6	2.3	18.4	0.9	5.7	13.3	4.3	6.4	3.5	10.6
2001	2,270.5	1.9	17.5	0.9	5.2	13.3	4.3	6.6	3.3	12.3
2003	2,330.2	1.8	16.4	0.8	5.6	13.5	4.0	6.6	3.4	12.8
2003 – Males	1,257.6	2.7	22.1	1.2	9.5	14.8	4.3	8.8	2.6	13.7
2003 – Females	1,072.6	0.8	9.8	0.3	1.0	12.1	3.7	4.0	4.3	11.9
2003 – Jews	2,006.0	1.8	16.1	0.9	3.7	13.2	3.8	6.7	3.8	13.8
2003 – Arabs	263.5	2.4	15.4	0.4	19.8	16.3	5.1	6.4	0.9	5.0

Israeli workforce by economic branch (percentage)

Year	Economic branch	Public administration	Education	Health, welfare and social services	Community social and personal services	Domestic services
1995		5.5	12.1	8.8	4.7	1.7
1997		5.6	12.1	9.1	4.8	1.6
1999		5.5	12.6	10.0	4.7	1.9
2001		5.6	12.6	10.0	4.8	1.7
2003		5.5	12.6	10.5	4.9	1.5
2003 – Males		5.5	5.6	4.6	4.3	0.3
2003 – Females		5.4	20.8	17.4	5.7	2.4
2003 – Jews		5.8	12.8	10.9	5.2	1.6
2003 – Arabs		3.7	13.0	7.5	3.2	0.3

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As the table shows, those sectors that have seen a rise in the numbers of jobs in recent years are:

- business activities
- health, welfare and social work
- transport, storage and communication
- wholesale and retail trade and repairs.

On the other hand, there has been a drop over time in the percentage of employees in:

- agriculture
- manufacturing
- building and civil engineering.

Part of this decline, in particular in the building trade, is the result of the introduction of new technologies.

The branches which employ more men than women are, as expected:

- agriculture
- manufacturing
- building
- transport, storage and communication.

There is a high percentage of female workers in:

- education
- health, welfare and social services
- domestic services.

One of the reasons why women's pay tends to be lower than men's is because they are employed as social workers, nurses and teachers, professions which pay less than jobs in the hi-tech industries. There is therefore a need for a systematic and consistent policy of encouraging girls to study and work in the fields of science, technology and engineering.

There are significant differences in the proportions of Jews and Arabs in different kinds of work. Workers in building and agriculture tend to be Arabs rather than Jews, but in business activities, banking, insurance and finance, the proportion of Jews employed is higher than that of Arabs. HRD which specifically targets the Arab population for these last sectors holds the key to better salaries and could contribute to creating a more cohesive and egalitarian society in Israel.

As mentioned in section 3.1.1, information-based hi-tech and ICT industries constitute a growing part of Israel's GDP and contribute 75% of all industrial exports. This fact underlines the need to equip people with scientific and engineering knowledge at all levels – from the assembly line workers, to the technicians and the marketers and development engineers.

3.3.2 LABOUR FORCE PARTICIPATION, EMPLOYMENT AND UNEMPLOYMENT

Some 4,800,000 of the total Israeli population of 6,800,000 are of working age. Of these, about 2,600,000 work. This figure includes: 2,400,000 Israelis, 180,000 foreign workers (with and without work permits) and some 20,000 Palestinian workers (with and without work permits). There are also 150,000 soldiers on national service and some 50,000 professional soldiers. The tables below compare Israeli 2004 employment figures with those of the US and other OECD countries [18].

As these tables show:

- Israel has a lower labour force participation rate, lower employment rate and higher unemployment than either the US or OECD Europe.
- Male participation in the labour market is low in Israel compared to the US and OECD Europe.

However, Israeli worker work longer hours and have a higher rate of productivity than their American or European counterparts.

The same report [18] provides the following observations and conclusions:

- Labour force participation rates rise rapidly in line with the levels of education for both men and women.
- When education levels are held constant, women's participation rates are lower than men's among those with lower levels of educational achievement, but equal those of men at higher levels.

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Total – men and women (percentage)

	Employment rate	Labour force participation rate	Unemployment rate
Israel	55.7	62.2	10.5
US	71.2	75.4	5.6
OECD Europe	61.5	67.8	9.2

Men

	Employment rate	Labour force participation rate	Unemployment rate
Israel	60.4	66.8	9.6
US	77.2	81.9	5.7
OECD Europe	71.0	77.7	8.6

Women

	Employment rate	Labour force participation rate	Unemployment rate
Israel	51.0	57.6	11.5
US	65.4	69.2	5.5
OECD Europe	52.1	60.1	9.9

- Labour force participation rates for men and women of all education levels drop substantially with age (especially after 50).
- People with higher levels of education retain higher labour market participation rates with age and are less likely to retire early.
- People with higher levels of education are far less likely to be unemployed.
- When education levels are held constant – women's unemployment rates are markedly higher at lower education levels but equal those of men at higher education levels.

These findings point to the need for massive long-term investment in raising the level of education of women in Israel. This should be done by means of affirmative action programmes in order to improve the educational attainment of women and thus increase their participation in the labour force, reduce their risk of unemployment and raise their retirement age.

The rates of unemployment from 1985 to 2000 broken down by towns [12] show an average unemployment rate of 12% in the development towns as opposed to 7.5% in the centre. A comparison of other parameters such as length of unemployment shows 27 weeks in the periphery as opposed to 21 weeks in the centre. By the same token, long-term unemployment (over 50 weeks) accounts for 24% of the total in development towns as opposed to 15% in the centre.

There seem to be two main reasons for these disparities. First, there are differences in the levels of education, experience and expertise of the working population. Second, there are differences in the quality of industry and trade – for instance the survival rate of factories in the centre tends to be higher, while in the periphery, problems with a particular industrial enterprise can often affect employment levels of an entire town.

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Other data show that Israel tends to compensate people who are out of work rather than providing them with active incentives to get back into jobs [12]:

- compensation for unemployment (as a percentage of GDP): Israel, 1.25; OECD, 1.1; EU, 1.45;
- spending on active labour market measures: Israel, 0.3; OECD, 0.65; EU, 0.8.

Israel must invest much more in active labour incentives as well as in developing and training human resources especially in the development towns.

3.3.3 EMPLOYMENT POLICY, PROGRAMMES AND CHALLENGES

Employment policy

The new world of work is characterised by globalisation of both manpower and products and by a rapid rate of change in professions and the skills they require. The growing reliance on new technologies increases the need for a skilled and educated workforce and reduces the need for unskilled workers. In Israel there are additional factors contributing to the rise in unemployment such as a significant increase in the number of foreign workers and growing levels of immigration from the countries of the former Soviet Union and from Ethiopia.

Over the years, Israel has dealt with unemployment in several ways, most of which addressed the demand for work, while some aimed to increase the supply of jobs [12]. They include:

- subsidies for employers: subsidising the salaries of new immigrants mainly in the fields of science and technology;
- grants to set up plants in development areas: aimed at reducing high unemployment rates in these areas;
- special projects of public works: activities such as building and maintaining roads or the development or conservation of natural and

archaeological sites. The projects were run mainly in the development towns or aimed at the Arab population, but due to inappropriate classification of workers, most were only partially successful;

- vocational training: one of the main tools for upgrading the supply of labour. In 2003 some 30,000 people studied in various programmes of the MTDB in the MOI.

Recent years has seen criticism of the vocational training system on two counts: first that the range of courses do not fit the needs of the labour market and that teaching methods are out-of-date; second that past policy, which did not limit eligibility for unemployment benefit for people participating in vocational training, had created a situation of 'permanent students'[18].

Consequently, in July 2002 the government decided to reduce the training budget and limit the amount and length of entitlement to unemployment benefit during training. Today the courses are mainly for people receiving income support and unemployment benefit who have completed less than 12 years of schooling. As a result of these changes, the number of participants and courses declined by over 50% between 2001 and 2004.

The recommendations of this report can be summarised as follows.

1. The current period of relatively high unemployment should be seen as an opportunity to get large numbers of unemployed people involved in training since the loss of productivity is negligible.
2. Vocational training should be targeted at the low-skilled employed or the working poor as well as the unemployed in order to provide better opportunities for future employment and earnings.
3. Seeing as government training courses are becoming shorter and more focused on work, the government must ensure they also provide some training in personal and interpersonal skills as well as basic knowledge in English, mathematics and ICT as this will help prepare people for a wider range of future work opportunities.

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4. All courses should include a period of on-the-job training to provide trainees with initial experience and put them in contact with possible employers.

Bar-Zuri [12] gives a number of proposals for tackling unemployment that have already been tested in other countries and are now being considered for Israel. These include:

1. Reducing the length of the working week and redistributing work between employees or introducing sabbaticals for employees. Integrating kinds of unpaid employment such as voluntary work and service jobs. Cutting out or strictly limiting overtime can also help add more people to the labour force. These solutions have been tried in France and Holland. In Israel they could help bring younger people into the labour market while they are still studying and also help mothers join the labour force. To the best of our knowledge, the results in France have not been successful. This mechanism increases the aggregate benefits the employer must pay while reducing the productivity of the worker.
2. Incentives for employers. This proposal involves reducing the amount of national insurance payable by employers as a way of encouraging them to hire new workers. It has been argued that this method does not focus on increasing the number of workers and that any reduction in national insurance contributions will lead to cutbacks in welfare budgets and vocational training. It could also be argued that it is an incentive for the 'rich' employer which does not necessarily create jobs for the 'poor' worker.
3. Incentives for employees. The idea of offering negative income tax for employees, in other words, providing a government subsidy for low-wage workers has already been mentioned. This could encourage people on benefits to get back onto the job market, while people who are already working for low wages could improve their standard of living and get out of the poverty trap.

4. Welfare to work programmes. Over the last few decades the individual treatment of the unemployed and those receiving income subsidies through the welfare programmes has been stepped up, while the efforts to find them jobs have increased. There is no doubt that there exists a mutual dependence between the job market and the welfare system both from the point of view of the individual and of the state. The most notable programme currently operating in Israel is called *Mehalev* (From the Heart) From Dependence on Welfare to Ensured Employability.

The *Mehalev* programme

Introduction and rationale

The Tamir Commission was set up in 2000 to look into the continuing increase in the number of people on benefits, which is much higher than the increase in the population. Its recommendations combined models used in the US and Europe and in particular proposed setting up experimental employment centres for a period of two years in four settlement regions around Israel.

Subsequently, in 2003 the government decided to implement the *Mehalev* programme through the MOI, the Treasury and the National Insurance Office. The programme was launched on 1 August 2005 and people receiving income support are beginning to come to the centres to get help finding work.

Implementation process

The programme is designed to help some 14,000 people receiving benefit (3,500 households in each region) who will be obliged to report to the centre. Over time, the programme aims to reach the entire unemployed local population of working age – people receiving unemployment benefits, income subsidies, mothers of young children, child support recipients and those on disability allowances.

The government put out a call for tender for the *Mehalev* programme looking to appoint two operating companies – one

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international and one Israeli – with experience in running similar programmes.

The companies are only paid if the workers manage to keep their jobs for more than six months. It is estimated that the operating companies can only earn a profit if over 30% of the programme participants manage to find steady work. One of the weaknesses of the Wisconsin programme was that it tended to create a revolving door effect whereby people were recruited for temporary jobs and then fired. The Israeli *Mehalev* programme has taken note of this problem and hopes to avoid making similar mistakes by making long-term employment one of the yardsticks of the success of the initiative.

Characteristics

The employment test, taken by all participants, is another unique feature of the programme. It aims to build a profile of the job candidate's skills, abilities and personality. Based on this information, the centre can develop a plan of action tailored to the individual, including training in job-seeking skills, supplementing education, vocational training, job placements, assistance in getting to work and arrangements for childcare. Each person is given a personal plan of 30 to 40 hours a week which includes all of the above, as well as community service activities for a period of four months. As some of the unemployed have not worked for years, the community work allows them to gain valuable work experience and can increase their chances of finding work in other ways, such as by providing references from their community employers. Through this community service in kindergartens, hospitals and retirement homes, participants can acquire self-confidence, work habits and may overcome emotional blocks as they prepare for formal places of work. People who refuse to take part in the programme lose their right to income support or unemployment benefit.

Criticism

The *Mehalev* programme has quite a few opponents and has come in for criticism in the media [20]. The committee of National

Insurance employees has threatened to disrupt the work of the centres due to their demands for more staff and higher salaries. The Employment Service sees the programme as a rival and has been critical of the aggressive demands of the operating companies in expecting employers and companies to create places of work. Non-profit associations that help the needy in the community, such as *Yadid* (Friend) or *Kol HaOved* (The Worker's Voice) who works with the Arab population, claim that many people on income support, who are obliged to participate in the programme, are aged 45 and over. They say that employers are unlikely to be willing to employ people of that age. Sometimes when unemployed people are called to an interview, they are nervous about attending. Many of them are new immigrants such as women from Ethiopia and eastern parts of the former Soviet Union, where they may never been expected to work outside the home. Some critics of the initiative have pointed out that the success of the original Wisconsin programme was due to the fact that it coincided with a period of growth in the American economy, something which has not been the case in Israel in recent years. Others are concerned that many participants could end up in temporary, part-time jobs with low pay that will not provide steady jobs or a way out of the poverty trap.

Success rates

During the two-year experimental phase of the programme, the government will invest NIS 80 million (about US\$18 million) in providing support services for programme participants. So far 70% to 80% of the unemployed asked to register at a *Mehalev* centre have done so. This shows that the majority of the unemployed believe that the programme can help them. People want to work and find a meaning for their lives [19].

The main quantitative measure of success for the programme is if it manages to reduce the number of people on benefit by at least 35%. However, it seems that a qualitative measure of success, which is no less important, would be to increase people's motivations and expectations of finding and keeping a job. In October 2005,

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a comparative study of the modernisation of employment services in 28 countries was published [38]. The report provides an opportunity for sharing experience and expertise between the EU and Israel and its *Mehalev* project. Israeli policy-makers would do well to review the conclusions of this report.

Promoting SMEs and entrepreneurship

It has been claimed that the Wisconsin programme and others like it can only succeed when the market has plenty of job vacancies due to a lack of suitably qualified workers. Therefore a better way of tackling unemployment would be to give the unemployed the knowledge and skills that will allow them to become self-employed and open their own businesses [21].

From the government's point of view, investment in training people for self-employment is usually a one-off event, and as soon as they can stand on their own two feet, the state does not have to invest any more resources. On the contrary, it begins to receive tax revenues from them and their employees. As for the individuals concerned, they can quickly become productive members of society and regain a sense of worth and, if their business succeeds, they can often create new jobs. The MOI's Small Business Development Centers (MATI) which we discussed in section 3.1.4 could be set up in every town, especially in areas of high unemployment [21]. The real challenge is to find a director for the centre with the necessary skills such as organisational and management skills, economic and business understanding especially in the area of SMEs and the ability to work closely with both government ministries and the private sector.

The growth of SMEs in Israel is hindered by two main difficulties. Registering a new business is currently a complex, bureaucratic process which should be streamlined as far as possible. A second issue is the difficulties small businesses face in getting access to credit. This credit restriction limits small businesses possibilities of growth, hinders the development of a productive workforce and

ultimately slows down the growth of the entire economy.

Challenges facing the Israeli labour market

The Israeli Industrialists' Association clearly highlights the difficulties and challenges facing the Israeli labour force. The Industrialists' Association, founded in 1921, is the sole organisation representing all sectors of industry in Israel: private, public and the kibbutzes. Over 2,000 enterprises, employing about 340,000 workers, are members. The association is highly influential in Israel's economy intervening at the macro level in legislation via its links with the Knesset, at the implementation level via its links with the government and the Histadrut (Labour Federation), and at the micro level by means of the various enterprises that constitute its membership. The association's HRD department deals with issues such as permits for foreign workers and helping immigrant scientists find work in industry. It also plays a role in vocational training by analysing HRD needs, developing and implementing assessment programmes and workshops on health and safety and hygiene in the workplace as well as projects for promoting HRD in industrial enterprises.

According to the association, a significant problem stems from the fact that technology and engineering are seen in Israel as essentially elite technology such as the hi-tech computer industry. As a result, there is very little vocational training for traditional areas of industry such as metals, machinery and building. The foreign workforce is highly unstable, depending on the changing political and security situation, and should be replaced by Israeli workers.

Another challenge is that personal and interpersonal skills such as time management, accountability and teamwork that are so important for successful employment in industry, are not properly addressed by the vocational training system. Representatives of industry should have much more systematic involvement in the TVET committees that decide on the curricula for the various vocations.

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Another difficulty is that TVET graduates lack knowledge and practical skills. First there is a need to screen the unemployed and people receiving income support to select only those who are really motivated to find work. Second, training should include a hands-on component of at least one day a week and a final project for technicians and practical engineering students in the workplace. The Industrialists' Association has run several projects for training soldiers a few months prior to discharge from the army or at the beginning of national service. This is designed to provide them with practical experience during military service so that they will be ready for jobs in industry on their release.

The public in general and young people in particular still see industry as primarily for blue-collar workers and therefore do not see a career in industry as particularly desirable. The association runs a major programme for primary and middle school pupils called Know Industry. The programme, which has been underway for a number of years, aims to introduce youngsters to the various branches of industry including the development, production and marketing of industrial products and to create a more positive attitude towards industry in general. It provides teaching and learning materials, conducts in-service courses for teachers and takes students on study visits to industrial plants.

Israel's overly bureaucratic system is holding back the development of the Israeli economy. Companies are required to fill out a large number of forms and obtain various certificates in order to open a new industrial plant or to provide vocational training in cooperation with government ministries.

The plans of the Israeli Industrialists' Association for the coming years tackle some of the major challenges facing Israeli HRD and focus on three objectives:

- transferring some 60 industrial plants from the centre of the country to the south;
- reducing government bureaucracy and simplifying the procedures of government ministries;

- getting more involved in VET in order to promote HRD which is more tailored to the needs of Israeli industry. In cooperation with vocational educational networks and the MOI, the association has recently begun a number of initiatives to train production workers in metals and machinery trades. It has also launched an accelerated study programme for a technician's diploma that provides graduates with a full matriculation certificate in addition to the diploma, as a joint venture with the MOE and ORT.

3.4 SUMMARY OF MAIN FINDINGS

1. Over the past 20 years the Israeli economy has moved from an agriculturally based, largely collective economic system, to a technologically advanced economy in a liberalised marketplace. ICT is the frontrunner in the Israeli hi-tech sector. This economy needs a workforce that is educated and highly skilled in science, engineering and technology.
2. Government policy, illustrated by the budgetary decisions of 2005, shows determination to sharply reduce the number of foreign workers by employing Israeli workers in their stead. At the same time, steps are being taken to reduce the size of the public sector.
3. The process of privatising state-owned companies has been accelerated in recent years to increase the flexibility of the Israeli labour market.
4. SMEs
 - SMEs are seen as a key factor in promoting economic growth and the creation of jobs, to meet the changing needs of the Israeli economy and increase employment especially in under-represented groups such as minorities, women and new immigrants.
 - There are some 400,000 SMEs in Israel, which comprise 98% of all businesses and employ 1.2 million people, accounting for 60% of all employment in the business sector.
 - The major barriers for the development of SMEs are: the need to upgrade management skills; the

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- difficulty in accessing capital; competition from imports and the difficulty of exporting.
- The MOI, through the Israel Small and Medium-sized Enterprises Authority and its CPEs, has a variety of sophisticated programmes and HRD services aimed at improving management skills, promoting innovation in SMEs and referring them to sources of funding.
5. Forecasts of demographic trends in Israel predict an absolute growth in the proportion of the Arab and the ultra-orthodox Jewish population. This indicates a need for greater investments in TVET in order to ease these groups into gainful employment both for their own sake and as a boost to the productive workforce of the economy.
 6. There is a steady increase in the incidence of poverty in Israel. The number of low-income workers has risen to 18%. Government policy is aimed at weaning fit people of working age off dependence on welfare and into the job market by limiting their entitlement to unemployment benefits and income support.
 7. Israel has a lower labour force participation rate (62.2%), a lower employment rate (55.7%) and higher unemployment rate (10.5%) than the US or OECD Europe. Israel should invest more in active labour incentives as well as in TVET in development towns and for women.
 8. Israel has dealt with unemployment in several ways, most of which have addressed the demand for work while some have been aimed at increasing the supply of jobs. One of the most significant programmes is the *Mehalev* programme, aimed at moving people from dependence on welfare to ensured employability. The programme is based on the Wisconsin model and its main quantitative target is to reduce the number of people on income support by at least 35%.
 9. Some of the challenges of the Israeli labour market are a lack of TVET provision for traditional industries such as metals, machinery and construction; TVET graduates lack practical, personal and interpersonal skills; many young Israelis do not see a career in industry as an attractive option; there is a need to reduce government bureaucracy and simplify procedures for setting up new SMEs; there is a need for conducting more vocational training and transferring industrial plants from the centre to the south of the country.

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4

4.1 THE STRUCTURE OF ISRAELI TVET

Section 2 described the management structure of the TVET system. As mentioned, two government ministries are responsible for TVET: the Ministry of Education, Culture and Sport (MOE) and the Ministry of Industry, Trade and Labour (MOI).

In this section we will focus on an analysis of the implications of two parallel processes of technical education and training under the supervision of two ministries: for those up to the age of 18, and the training of students over 18 to become technicians and practical engineers.

4.1.1 TVET FOR YOUNG PEOPLE

Comprehensive schools under the supervision of the MOE

Technical education in comprehensive secondary schools, (grades 10–12, ages 15–18), is under the supervision of the MOE. About half of the schools are managed by technical education networks such as ORT, AMAL and the College of Administration. Some are managed by private networks such as *Atid* and *Badarnah* while the rest are administered by the local councils. The operating budget, including wages, is mainly paid for by the state, based on student numbers, the range of study tracks and the occupational profile of the school's teaching staff such as expertise and seniority.

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The curricula, the examinations and the certificates are state-recognised and as such are supervised by the national inspectors of the different technical tracks at the Science and Technology Administration of the MOE [5].

At these comprehensive schools, students in the 10th grade may choose a technical study track in addition to compulsory academic subjects. They may choose technical majors such as electronics and computer engineering, mechanical engineering, control and energy systems or computerised manufacturing systems. About one third of the students in Israeli schools study in a technical track. Each study track has three subjects: the first is a science subject (physics, chemistry or biology) or the technology-sciences subject. The second subject is the study track major and the third is a specialisation in which many students present a final project. The students' main objective is to complete secondary school with a full matriculation certificate that allows them to apply for university and academic colleges. Those who are also successful in their technical studies (with a minimum of seven credits), have the option of studying to be a technician or a practical engineer, even if they do not have the full matriculation certificate. All students eligible for military service require permission from the army to defer national service in order to continue studying.

Studies in the technology track at secondary school do not usually include any element of vocational training, but are instead based on providing technical education. Studies are mainly theoretical and may include laboratory experiments but will include very little, if any, workshop components. The technical study tracks mainly concentrate on elite or advanced technologies and do not include employment vocations such as metal working, car mechanics or automotive electrical systems.

Industrial schools under the auspices of the MOI

In parallel, students in industrial schools under the auspices of the MOI study from

class 9 or 10 to class 12. The aim of these schools is to provide graduates with vocational training and a professional certificate as electricians, car mechanics, cooks, hair stylists or computer maintenance workers. Most courses are vocational and field work constitutes a significant component of studies, accounting for about two days a week. The MOI has an Institute for Teaching Methods (MEAH) which develops study programmes, teaching materials and in-service courses for teachers as well as providing national inspectors. They are responsible for setting exams and providing government diplomas. Several subjects such as mechanics and electricity are provided both in MOE and MOI-supervised schools, with very little coordination between the two systems.

Only recently has it become possible for students of MOI industrial schools to take the MOE matriculation certificate exams. In some of these schools, more time has been allotted for academic subjects and study programmes have been modified so that these students can sit for the National Matriculation Examinations. So far only a very small percentage of these students reach matriculation entitlement, but their number is growing every year. Other students are managing to acquire seven credits in three academic subjects (mathematics, English and language) and another seven credits in technical subjects. These 14 credits enable students to apply for studies as technicians and practical engineers. By increasing the academic and theoretical content of their vocational studies, these changes broaden the students' horizons and increase their social mobility. According to a survey by market researchers of the Geocartography Institute on behalf of the ORT network [23], although attaining the vocational diploma remains their primary goal, almost half of the students in industrial schools also attach great importance to the matriculation certificate. At the same time, students at the industrial schools still face obstacles their peers at schools under MOE supervision do not, such as: they do not have the benefit of a school mark and they are not allowed to take the exam at other sittings.

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This situation should be reviewed so that the overlap between the two systems is increased, thus offering equal opportunities to students at either type of school. Increasing the hands-on and workshop components in technical tracks in the comprehensive schools and increasing the theoretical studies in the industrial schools would help individual students as well as improving HRD and employment in Israel in general.

4.1.2 TVET FOR ADULTS

There are also two different routes for training technicians and practical engineers in Israel:

1. for young people, immediately after high school but before military service, under the supervision of the MOE;
2. for adults, usually after military service, under the supervision of the MOI.

The MOI training is carried out by the National Institute for Technical Training (NITT). As this is an important organisation, we would like to provide the following details.

The NITT was set up in 1970 to be a key factor in developing human capital and in training technicians and practical engineers, according to the needs of the economy and industry.

Around 25,000 students train to be technicians and practical engineers per year, according to Malul [25], head of the NITT's department for planning, budgeting and control. They attend some 90 colleges. A technician's diploma requires three semesters of study, while a practical engineering diploma requires four. The NITT also offers preparatory courses for helping students who do not have enough qualifications to apply.

The most popular study tracks are marketing and management, software engineering and electronic engineering. These tracks account for 75% of students while the rest study tracks such as mechanical engineering, architecture, building, electrical engineering, interactive

communications engineering, biotechnology, chemistry and visual communications. Studies are offered in daytime or mixed day and evening formats. The institute also has special projects targeting under-represented groups such as immigrants, women, ultra-orthodox Jews and minorities. The breakdown of students attending colleges under NITT supervision is: Jews, 84%; Muslims, 12%; Christians, 2%; and Druze, 2%. This more or less reflects the proportions within the general population. About 53% of the students are under 25, 26% are aged 16 to 30 and 21% are 31 and over. It is worth noting that the majority of those studying to be technicians (76%) are aged 31 and over. They are mainly industrial production workers who wish to improve their qualifications and, of course, their salaries.

The tuition fees for technician and practical engineering courses are around US\$3,500 a year. Half of this amount is paid for by the state with students expected to pay the other half. The curricula are designed and updated by the Pedagogical Division of the institute which, together with the various inspectors in the Department of Inspection and Information, is responsible for monitoring their implementation in the colleges. The colleges are administered by technical educational networks such as ORT, AMAL and the College of Administration or private networks such as *Atid*.

The NITT carries out the monitoring and supervision before a college can be approved to train technicians and practical engineers. The evaluation and monitoring procedures are based upon documentation provided by the college and visits by inspectors. An accreditation committee uses this information to approve or reject a college's request to be entitled to run these courses. The entire administration of the national exams – writing, implementing, and marking – is carried out by the NITT.

At the same time, there are around 5,300 young students who have just finished secondary school studying to be technicians and practical engineers under the auspices of the Science and Technology Administration of the MOE.

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This organisation is responsible for curriculum development, study materials, exams and approval of technicians and practical engineering diplomas. At some point in the past an Overall Steering Committee for Technicians and Practical Engineers was set up to coordinate the two ministries concerning curricula, examinations and authorising diplomas in specific subjects. However, to the best of our knowledge, this committee has not met for many years. Therefore it is clear that a unified government policy for training technicians and practical engineers is needed and there must be greater coordination between the two ministries in supervising the actual training.

It is worth noting that in the not too distant past there were teacher training colleges under the MOE which also dealt with retraining practical engineers as technical teachers in secondary schools. These practical engineers had experience and expertise in industry and their additional training related to teaching skills. When a new government policy was brought in which only allows people with a first degree to become teachers, the college programmes for retraining practical engineers to become teachers closed down. This policy is aimed at raising the qualifications of teachers, especially for teachers of academic subjects. However, when it comes to technical subjects, the hands-on experience of these practical engineers is extremely valuable, and could make a significant contribution to the quality of teaching given to technical track students in schools.

4.2 WHAT IS BEING DONE TO REFORM ISRAELI TVET

4.2.1 THE DOVRAT COMMITTEE

In recent years the Israeli public has become increasingly dissatisfied with the Israeli education system. Israeli students' achievements in the international PISA and TIMSS reviews have shown a sharp decline and, what is even more worrying, is the growing gap between the best and the weaker students. The increase in violence

among young people and the inadequate school climate have only heightened criticism of the system. The increasing involvement of industrial and economic figures in education and the political pressure for change led the government in September 2003 to appoint the Dovrat Committee – a national task force for improving the Israeli education system. The commission was asked to carry out a comprehensive review of education in Israel and recommend a programme for overall change – structural, organisational and pedagogical. The plenary of this task force had 18 members including educators from the academic world and from the field, experts in economics and law, managers from business and public figures. It did not include any high-ranking officials from the MOE or representatives of the teachers' unions from primary or secondary education. Eight sub-committees were set up comprising an additional 60 professionals, with each committee in charge of a different key issue. In December 2004 the national task force published a comprehensive report. It described the current situation of the Israeli education system and provided a new vision for the system including a programme of reforms and recommendations for implementation.

Below are listed a summary of the programme and its principal recommendations [26]:

- 1. Strengthening public education:** Creating a shared cultural and value system for the country's citizens in order to strengthen their social cohesion, by means of an obligatory core curriculum for all groups of Israeli society.
- 2. Bridging the divide:** The educational system must bridge the divide stemming from the socio-economic background of the students, their ethnic origin or place of residence, with special emphasis on bridging the divide between the Jewish and Arab populations.
- 3. Significant improvement in the status of the teaching profession:** The quality of teacher training must be improved, the range of teachers' duties increased, and pay should be raised substantially. A teacher should be at school for eight hours a day five days a week.

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- 4. Increasing the autonomy of schools:** Schools should be given full autonomy in pedagogical, financial and organisational issues.
- 5. Target-oriented and result-driven education:** The educational vision and objectives must be translated into clear priorities, with measurable objectives and long-term planning.
- 6. Decentralisation of management:** The MOE should become a body that makes policy, allocates budgets, sets standards and oversees performance. Its operational functions should be transferred to regional educational bodies that will run the schools and kindergartens. Schools will be held responsible for meeting a set of pre-defined objectives and for the level of achievement of their students.
- 7. Assessment, accountability and transparency:** These ideas must all become part of the management culture throughout the education system.
- 8. Strengthening the early stages of education:** Considerable reinforcement of early childhood education and kindergarten and the first years of primary school is needed.
- 9. Pooling of resources and greater efficiency:** The teaching budget in kindergartens and schools will be allocated on a differential basis, according to the socio-economic status of the student, with preference given to deprived areas. At least 90% of the education budget will be transferred directly to the schools and kindergartens and the management overheads of the ministry and the regional education bodies may not exceed 10%.

It should be noted here that concerning technical education and vocational training, the proposed method of budgeting does not give preferential treatment to technical subjects in comprehensive schools.

It is clear that teaching technical subjects properly calls for smaller class sizes than for academic subjects due to the additional lab work and workshops these subjects require. Moreover extra resources are needed for equipment for experiments and technical projects. Unless adequate

funding is provided, head teachers will have no incentive to provide technical study tracks for their students.

However the Dovrat Committee's interim report made no reference to technical education in schools. The final report mentioned the issue briefly, saying that in MOE-supervised comprehensive secondary schools there should be no pre-vocational training in technical study tracks. It also stated that the Dovrat Committee accepts the recommendations of the Preiss Committee (of which the author of this report was a member). This committee was appointed in June 2004 to review how technical tracks and subjects are taught in the Israeli educational system.

4.2.2 THE PREISS COMMITTEE

The main points of the committee's report [27] that have implications for TVET are listed below.

The committee believes that technical education still has a valid role to play for the following reasons.

1. The study of technical subjects is perceived by students as something relevant and innovative that can help them undertake more in-depth study of scientific subjects.
2. Studying the basics of a technical subject while young may help the student develop a vocational career later on.
3. Great importance is attached to the skills acquired in hands-on experience during technology studies, where technical tools are used.
4. Technical or vocational studies at a young age may save government expenditure on vocational training for adults later on.

The committee divided the technical study tracks into three categories.

- 1. Science and engineering tracks:** These constitute the basis for further education in colleges or at university. In these tracks the first subject is a

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scientific one – physics, chemistry or biology. Tracks in this category are: mechanical engineering, computer and electronic engineering, biotechnology and technical sciences.

2. **Technology tracks:** These constitute the basis for further education and future employment. The curricula in these tracks should provide the learner with current knowledge and skills but should also bear in mind the prospect of dynamic change both in the vocations themselves and in the skills required in future. The first subjects in these tracks are technical sciences, although the student may also choose a science subject. Tracks in this category are: computerised manufacturing systems; control and energy systems; industrial design; communication technologies; construction engineering and architecture and industrial management.
3. **Employment-oriented tracks:** These constitute the basis for a career that will allow the student and his family social mobility. These tracks incorporate a significant element of relevant, up-to-date practical work in order to help the student find work. The first subject in the track will be the 'technology sciences'. Tracks in this category are hotel management; tourism and leisure; education; health systems and business management. It is worth noting that the committee did not take a stand on whether the tracks in this category should be continued or not. It found that the content in these tracks is not necessarily technical, but that they do fulfil valuable social aspects which the MOE should take into consideration.

The committee stressed the importance of the final project in technical education. The project combines knowledge, skills and values in the planning and production of a process, product or technical engineering plan. Through the project the learner integrates a number of technical and scientific subjects, applies the theoretical knowledge studied and acquires skills such as decision-making in an environment of uncertainty, teamwork, responsibility and

accountability, a systematic approach, troubleshooting, initiative, creativity and innovation.

The implementation of the Dovrat Report, which was due to begin on 1 September 2005 came up against numerous difficulties such as obtaining sufficient resources for physical infrastructure and salaries or setting up regional educational bodies in a number of towns and settlements. However, it seems that the main stumbling block was due to the decision not to include representatives of the teachers' unions in the commission plenary. As a result, at the time of writing this report, the reforms have only been partially implemented and have only reached 5–10% of Israeli school children.

In contrast, it seems that the recommendations of the Preiss Committee enjoy a greater consensus among both the heads of the MOE and technology teachers. However, if special funding is not provided for head teachers who want to set up more expensive technology tracks, the committee's recommendations may never get off the ground and the quality of technical education will decline.

The Science and Technology Administration in the MOE has set the following goals for technical education in comprehensive high schools for the near future:

- introducing better scientific equipment for technical tracks and subjects;
- developing curricula with standards that are in accordance with the new rules of eligibility for full matriculation currently being drawn up by the MOE;
- implementing a five-year educational programme for the Arab population to reduce gaps in educational achievement and promote the role of girls;
- encouraging more girls to study science and technology subjects;
- improving and regularly updating the skills of technology teachers through a broad spectrum of in-service training courses and study days.

4.2.3 THE MOI'S NEW POLICY FOR HRD

In 2003, the Manpower Training and Development Bureau (MTDB) was transferred from the Ministry of Labour and Welfare to a new ministry called the Ministry of Industry, Trade and Labour (MOI). The Ministry of Welfare became a separate entity. This change is not just semantic, but rather reflects a change of policy concerning HRD, employment and vocational training. Horesh, head of the MTDB, outlines the updated policy of TVET for HRD in the MOI [29].

- TVET and HRD are to be much more focused on responding to the needs of trade and industry rather than those of the service industries.
- A forum of representatives of the government, industrialists, the Israeli Industrialists' Association and the trade unions has been set up to formulate HRD policy in Israel. This forum does not meet according to a regular schedule, but as and when needed.
- Priority will be given to TVET aimed at training people to replace foreign workers in trades such as building.
- The government's privatisation policy is also being applied to the MTDB itself. This body remains in charge of formulating policy for training, control and supervision of training activities, exams, diplomas and qualifications. However training is carried out by either private companies or NGOs that apply for government contracts.
- The government's policy of reducing the role of the public sector has led to a considerable drop in the funding available for vocational training. The MTDB therefore has had to focus on providing cheaper and shorter courses that are partly on-the-job training in order to respond to the needs of industry.
- At the same time, in the MOI's industrial schools, studies and vocational training are currently aimed at providing students with basic knowledge and skills that will give them greater opportunities to develop in their vocation in the future or move to other vocations. The intention is to turn out

graduates who have the skills and abilities for lifelong learning as well as employment.

Several key programmes and projects that are a result of these policies are described below [30].

- 1. Vocational training for the building industry:** This initiative provides in-service and on-site training for some 2,200 building craftsmen to replace non-Israeli workers. The training programme lasts six months. Groups of about 20 trainees participate in on-site training at the building site. The MTDB pays for the training and half of the trainees' salaries. Those who successfully complete the six-month programme are taken on by the building firm. The project is run as joint venture with the Employment Services and the Builders' Association.
- 2. Pre-employment orientation workshops:** The candidates are people on income support who are not yet ready for a vocational training course or able to get a long-term job. The programme is designed to develop employment skills, motivation and personal attributes which prepare the participants for re-entry to vocational training and the job market. The programme strives to provide tailor-made workshops which meet the needs of each individual.
- 3. Employment greenhouse:** These are centres for empowering people, mainly for new immigrants, by developing employment skills through training and working in a protected environment. The programme lasts for 600 hours and includes a preparatory course (basic learning skills, Hebrew, English, mathematics, basic ICT skills and employment skills); work experience in a number of occupations and job placements. Many Ethiopian immigrants have participated in this successful programme – 80% are now working.
- 4. Programme for helping single parents re-enter the job market [12]:** In May 2003 changes were made in welfare policy whereby benefits for the single-parent families were reduced and entitlement was made dependent on an

employment test. These changes were accompanied by a new programme to help single parents on income support and child benefit re-enter the job market. The programme began in August 2003 and was aimed at a potential population of some 100,000 single-parent families in Israel, 90% of which are headed by women. The programme includes vocational training, an economic incentive for both the working parent and the employer, help in funding childcare and transport to work. The programme was put together quickly and was not sufficiently adapted to the target population and many of the parents lacked the appropriate vocational skills and work habits. Up to April 2004, over 600 parents had attended the vocational training courses.

ORT¹ is one example of an organisation that was given a franchise from the MOI to provide study frameworks for technicians and practical engineers, vocational training for companies and for individuals. ORT is one of the educational networks operating in Israel which include colleges and schools for advanced technologies and sciences.

Miller has summarised the main developments arising from the MOI's updated policy as follows [31].

1. Payment for vocational training courses carried out for the MOI is based on the placement rate of the participants.
2. The possibility of privatising technical vocational training of soldiers, until now done by the IDF, is currently under discussion. In future this may be transferred to private and public training organisations.
3. Developing courses for the commercial market is based on an analysis of job vacancies in the newspapers, providing an up-to-date indication of present HRD needs in the Israeli labour market.
4. TVET does not provide enough manpower for Israel's low-tech industries.

4.2.4 PRIVATE SECTOR TVET CURRICULUM DEVELOPMENT

One innovative example of private sector TVET curriculum development in Israel is the Technical and Training Department for Israel's Aircraft Industries (MHT), a commercial organisation. MHT provides training in a wide range of technical subjects and topics, as well as methodologies of training needs analysis and innovative use of new technologies in training such as e-learning or electronic documentation. It also uses methods such as the Interactive Job Performance Training (IJPT), Kaizen and Feuerstein's method of instrumental enrichment. The aircraft industry has 15,000 employees and an annual budget of US\$1.2 billion, while MHT has 140 employees and an annual budget is US\$19 million [32].

A number of industrialists have claimed that Israel has no national policy for forecasting the HRD needs of its labour market and its economy. It is certainly true that Israel's economic and social strength depends on the quality of its human capital. The sharing of the knowledge and expertise accumulated by private bodies such as MHT, technical education networks, the Industrialists' Association, the trade unions and government ministries could make a big contribution to the improvement of HRD in Israel.

4.3 THE ROLE OF LIFELONG LEARNING

4.3.1 CURRENT TAKE-UP OF CONTINUING EDUCATION

The frequent changes that occur in skills needs and in the different professions of the modern job market can rapidly make peoples' training and qualifications obsolete. At the same time, automation and the introduction of new technology are reducing the number of labour-intensive occupations. This increases competition and lessens job security. Therefore any

¹ It should be noted that the author of this report is the deputy director general for research and development, and training of ORT.

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discussion of vocational training courses and their contribution to HRD must also address the issue of lifelong learning, both within formal and informal education and training contexts, whether for work purposes or for personal enrichment.

Sherri Pier's 2004 study [33] looked at the various parameters of lifelong learning in vocational training. The main findings are detailed below.

1. In 2004, some 573,000 people of the general population attended courses or vocational training. This represents 13.3% of the population of more than 19 years of age, 482,700 (20.6%) of the employed, 29,500 (11.5%) of the unemployed and 60,800 (2.8%) who are not part of the labour force.
2. Groups who are already in a strong position in the labour market in terms of employment status, nationality, length of residence in Israel, education and income, are more likely to participate in vocational training than other groups. For example:
 - The proportion of Jews completing courses and training is significantly higher than for non-Jews.
 - Established Jews have a higher participation rate than new immigrants, although the latter's participation rate increases with their length of residence.
 - The likelihood of an individual participating in lifelong learning increases in line with his or her level of educational attainment and income.It is possible that the low participation rate of weaker populations in courses and vocational training is partly due to their limited access to information about training possibilities. Also, a history of failure during their formal education may make people reluctant to undertake more training. Some people may also need to catch up on certain knowledge and skills in order to get into the vocational training courses. This issue is discussed in section 6.1.4.
3. Older workers over 55 tend to participate less in courses and training. This is probably because employers are reluctant to invest in older employees as

they have less time left to work. Older employees are also likely to be less motivated as they are less likely to be able to take advantage of new skills in future employment opportunities.

4. Women are more likely to participate in vocational training courses than men, even though 47% of women funded the training by themselves as opposed to 34% of men.
5. The choice of courses and vocational training is very broad and ranges from one-day workshops and study days to comprehensive long-term courses. About 40% of the participants trained in courses of over 100 hours, about 23% in courses of 51–100 hours, 29% in courses of 11–50 hours and 8% studied up to 10 hours.
6. Most of the courses (58%) are paid for by the employer, 9% are paid for by public funds and 41% are paid for by the participants themselves (some of the courses were paid for by more than one source). This finding reflects the recognition of the need for these courses, although they may also be seen as perks for employees.

4.3.2 BENEFITS OF IN-SERVICE TVET

TVET's contribution to the economy and to individual well-being is usually defined by economists in terms of the worker's improved ability to contribute to the national economy and his or her higher salary. However, there is another, more qualitative parameter that looks at TVET's contribution to improving the trainee's quality of life at work. These variables may include the degree of interest and enjoyment derived from work, the level of job security and the chances of promotion. A survey conducted by Zvi Yogev [34] examined these variables and the following are the main findings relevant to TVET.

- A survey six months after the end of training found that half of graduates who had found work believed their employment situation had improved. Most of them, about 80%, reported that there had been no deterioration in their working conditions.

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- Graduates of vocational training reported that the improvement is expressed mainly in terms of 'the work is more interesting', 'the chances for professional advancement are better' and not so much in terms of 'job security' or 'higher salary'.
- The results of training were better for men than for women, although the differences were slight.
- Vocational training produced better results for younger people than for older people (aged 45 and above).
- The main factor that made a real difference for people whose situation has improved after vocational training and those whose situation has worsened was 'finding a job in the field studied'. There is a big difference between those who found work in the field they trained for and those who found work in other fields. The ratio between the number of graduates whose situation has improved and the number whose situation has worsened is 3.16 (on average for all aspects), as opposed to only 0.96% for those who found work in other areas.

Measuring the quality of work life gives a different perspective on TVET outcomes and their impact on HRD. This interpretation takes into account the subjective perceptions of the trainee as well as objective results such as a rise in salary. This can provide a better insight into a graduate's behaviour and decision-making and, what is possibly more important, a person's expectations and motivation to advance and adapt to changes in a modern labour market.

4.4 SUMMARY OF MAIN FINDINGS

1. Technical and vocational education and training is the responsibility of two government ministries: the MOE through its administration for science and technology and the MOI through its manpower training and development bureau. There are two parallel TVET sub-systems under the supervision of the two ministries: for young people under 18 in technical tracks in comprehensive schools; and for adults in colleges for technicians and practical engineers. One of the more significant challenges is how to increase cooperation between the MOE and MOI in order to formulate an integrated policy of TVET for HRD in Israel, taking advantage of the experience of both ministries.
2. The Dovrat Committee, a national task force for improving the Israeli education system, and the Priess Committee for the review of technical tracks and subjects published their reports at the end of 2004.
 - The Dovrat Report describes the current situation of Israeli education and provides a new vision for the system via a programme of reform and recommendations such as strengthening public education; bridging the gaps due to the socio-economic background of students; improving the status of teachers and introducing a target-oriented and result-driven system.
 - The implementation of the Dovrat Report is coming up against many problems. During the academic year 2005/06, it is being only partially implemented, in no more than 10% of the education system.
 - The Priess Committee sees the need for the continued existence of technical education and recommends dividing the technical tracks into three categories: science and engineering, technology and employment-oriented tracks. It also stresses the importance of the final project in technical education.
 - It seems that the recommendations of the Priess Committee enjoy a greater degree of acceptance than those of the Dovrat report from both the MOE and technical teachers. However, in order for the Priess recommendations to succeed, more investment is needed for developing technical tracks.
3. The updated HRD policy of the MTDB of the MOI contains the following guidelines: TVET and HRD should be much more geared to responding to the needs of trade and industry rather than those of service industries; the MTDB

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- should provide cheaper and shorter courses that include on-the-job training; MTDB will be responsible for formulating training policy, while private or public companies and educational networks will actually deliver the training.
4. The MTDB's updated policy has resulted in several new programmes and projects such as vocational training for the building industry; pre-employment orientation workshops, employment greenhouses and a programme for helping single parents to re-enter the job market.
 5. The MHT of Israel's Aircraft Industries provides an innovative example of private sector TVET curriculum development in Israel. The MHT provides training in a wide range of technical subjects and topics, as well as methodologies of training needs analysis and innovative use of new technologies in training such as e-learning or electronic documentation.
 6. A study on the various parameters of lifelong learning found that groups who are already in a strong position in the labour market are more likely to participate in vocational training than others. Older workers are less likely to participate in training and the participation rate of women in vocational in-service training courses is higher than for men.
 7. A survey six months after the end of in-service TVET courses found the following qualitative outcomes: about half of the graduates believed their employment situation has improved; this improvement was expressed mainly in terms of 'the work is more interesting', 'the chances for professional advancement are better' and the most significant factor for many is 'finding a job in the field studied'.

5. LITTLE INVESTMENT BY BILATERAL AND INTERNATIONAL DONORS IN HUMAN RESOURCES DEVELOPMENT

5

The process of gathering material for this report involved interviews with and presentations by policy-makers and decision-makers, practitioners in the field and a comprehensive survey of the literature on TVET and the labour market in Israel. This search found no evidence of significant investments by international donors in HRD in Israel. We do not know of any activities by the World Bank, the European Bank for Reconstruction and Development or the EU for the reform of technical and vocational training in Israel.

To the best of the author's knowledge, some bilateral projects exist although they tend to be small in terms of scope and funding. These include a project to train the unemployed to work with computer technology and projects to develop curricula for the mechatronics and automotive trades between Israel and Germany through the Israeli Ministry of Industry, Trade and Labour.

Technical education networks such as ORT, Hadassah, WIZO and AMIT raise

their own funds of a few million dollars a year from donors, private institutions and foundations abroad. This money is mainly used to upgrade their schools and colleges, with some expenditure on curriculum development and technical HRD.

There are international support programmes for research and development in innovative and creative technologies that often involve cooperation between Israeli and foreign companies [16]. Examples include bilateral funds such as BIRD (Israel–US), CIIRDF (Israel–Canada), and SIIRD (Israel–Singapore). We should also mention Eureka, a European network promoting collaborative market-driven research and development projects in most fields of advanced civilian technologies and the European Research and Development Framework Agreement ISERD. Nevertheless, there are currently no projects for TVET reform involving significant investments from international or bilateral donors.

6. CHALLENGES FOR TVET IN ISRAEL

6

6.1 ISSUES AND PRIORITIES FOR HRD

6.1.1 THE AIM – HOW CAN TVET KEEP UP WITH CHANGES IN THE LABOUR MARKET?

Modern sophisticated economies need workers who are able to fill a variety of positions – production workers, maintenance men, technicians and engineers – people who are able to analyse and synthesise, detect problems and solve them, display creativity and original thinking and who have the motivation and ability to adapt to changes and continue learning and developing throughout their working lives. In contrast, most TVET systems, both in terms of subjects taught and methods used, cannot keep up with the pace of change in modern industry.

As Levinson puts it [35]: ‘Most vocational education systems are still stuck in the former “industrial economy” model, while

the trend of most industries is towards the “information economy” model’.

In order to bridge the gap between the needs of a modern economy and the capabilities of TVET, resources and efforts should be channelled into the following areas:

1. ongoing development of up-to-date curricula, including teaching and learning materials;
2. new methodologies;
3. design and delivery of in-service courses and training sessions for teachers and trainers in technical and vocational education;
4. regular upgrading of equipment and instrumentation in TVET centres;
5. improving the professionalism of teachers and trainers (discussed in the following section).

Bridging this gap will call for a well-coordinated national effort involving all players: the MOE and the MOI, the Industrialists’ Association, trade unions and the public and private TVET systems.

6.1.2 THE QUALITY OF TVET TEACHERS AND TRAINERS

Levinson poses the following question [36]: 'While the vocational language in modern industries has changed, the vocational training language has changed only slightly. One of the key questions is: how can the technical teacher be exposed to this new language and context when all of us know that instead of being exposed to it he is busy in his classroom?'

There is no doubt that, in any organisation, the quality of the workforce is the most decisive factor for success. In all countries, the quality of TVET teachers and trainers is the key to the development of educated, skilled and valuable workers for the economy. Israel is no exception to the rule.

Facilities do currently exist in Israel for updating the skills of teachers and trainers through in-service courses, study days, conferences and practical experience in industry. However, some teachers and trainers do not have the ability to keep up to date with new vocational or professional content, to adopt new ICT teaching and learning methodologies or to try out new equipment and instrumentation.

TVET teachers and trainers should have flexibility, open-mindedness and a capacity for change, the ability to focus on the process and not only on the result, curiosity, independence, self-confidence and teamwork skills. All this, of course, is over and above mastery of content and teaching ability. There is a need for redefining the characteristics and abilities required of teachers and trainers in TVET, as well as designing a clear and systematic sorting process that sets high standards for selecting future TVET teachers.

Another no less important issue is the increasing age of TVET teachers and trainers. This phenomenon is true for many European countries as well as for Israel. The Taub Centre report [12] shows that 26% of TVET teachers are over 50, 62% are between 30 and 49 and only 12% are under 30. Moreover the average retirement age of teachers is 54. This reduces their

motivation to learn new things, as close to 30,000 TVET teachers in Israel are expected to retire within the next five years. Section 6.2 contains some recommendations for raising the quality of TVET teachers, trainers and teacher trainers.

6.1.3 WHAT SHOULD BE TAUGHT – TVET IS NOT JUST FOR IMMEDIATE EMPLOYMENT

Industrial enterprises and SMEs in particular are looking to employ people who can fit into their business and become productive, efficient employees as quickly as possible. In most cases, SMEs do not have a training department for their employees. They therefore expect their prior training to provide the knowledge, skills and practical experience needed for their work.

Personal and interpersonal skills

However, research from 20 years ago show that then as now, like their counterparts in other countries, Israeli employers often find their employees lack soft skills. They see the need for more personal and interpersonal skills such as the ability to meet deadlines, to work on their own and in a team and to listen and express themselves in writing and orally. In addition, they must have significant basic literacy in four areas: mother tongue, English, mathematics and ICT.

Values and ethical attributes

TVET systems are also expected to impart certain values and ethics. In the age of technology, information, knowledge and materialism, we hear more and more of the desire to base manufacturing, research and development, marketing and sales on ethical business standards. Education and training graduates should enter the labour market with values of reliability, integrity, responsibility and accountability and a positive and committed attitude towards work in general and their place of employment in particular. Imparting such values can be done through case-study

analysis and discussion of ethical dilemmas in business, but also through the role models and behaviour of admin and teaching staff.

Compulsory core curriculum

In Israel there are hundreds of small schools that reflect the increasing divisions between different communities and minorities within Israeli society. Different groups, each with their own social, religious and ideological agendas have been allowed to apply these to education [12]. However this fragmentation makes it very difficult to run a cohesive education system. A compulsory core curriculum that can impart a shared body of knowledge, skills and values to all of Israel's citizens must be devised and applied in all schools throughout the country.

Balanced curriculum

Committees for curriculum design including representatives from industry, universities, the army, the MOE and the MOI should be set up to produce balanced curricula and training programmes that can produce the necessary knowledge and skills as well as social values. Their work should be based on available research, forecasts of the Israeli economy's HRD needs and profiles of the skills and abilities required in the different professions. Section 6.2.5 provides suggestions on how a model for regular updating of curricula in technical education and vocational training could be developed.

6.1.4 WHO SHOULD WE EDUCATE?

It is the country's duty to provide education for all its citizens regardless of race, religious belief or gender. In a situation where the educational divide between different parts of the population is great, wage differences between skilled educated workers and unskilled uneducated ones are growing and more and more families are living below the poverty line, there is a clear need for greater investment in vocational education and training accompanied by affirmative action to

ensure that the resources reach those groups in greatest need.

The broader picture of TVET is that its beneficiaries – people graduating from TVET programmes, students benefiting from the introduction of new technologies in teaching and learning, ordinary people taking advantage of the information made available by government and public and private bodies via the Internet – tend to be from the more privileged social groups. Therefore, if we really want to bridge the socio-economic divide, we must target investments at those less successful groups who need extra help to avail themselves of opportunities. This includes minorities, immigrants, women, single-parent families, ultra-orthodox Jews, the unemployed, people on income support and the residents of development towns.

Access to TVET

First, education and training must be made much more accessible to under-represented groups. Making the information available via the Internet, the press, radio and direct mailings is not enough to encourage people to participate. They need face-to-face meetings where they can be informed in a professional manner about the various training options on offer: the contents, the organisation of studies and practical experience they include, and of course, how this can benefit them. These meetings could also help the planners of TVET to understand the needs of these underprivileged groups in terms of what skills they require and how courses should be organised, for instance taking into account the special needs of single-parents.

Preparing the ground – soft skills and attitudes

Most members of these groups are not ready to go straight into regular vocational training courses. The gaps in their knowledge, study habits and motivation that may discourage them from signing up for training or lead them to drop out half-way through must be addressed first. Preparatory courses must be provided as an integral part of the training courses, not

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as an entry requirement, to fill in any gaps in learning and, even more importantly, to develop their self-confidence and feeling of belonging. Only by developing soft skills and attitudes such as these can people be empowered to study, motivated to carry on learning once the training is finished and helped to find stable, worthwhile jobs in the long term.

6.1.5 HOW – POLICY AND HOW TO IMPLEMENT IT

Many Western countries are currently trying to wean people off welfare and encourage them to stand on their own two feet by returning to work. This is attempted by short-term actions designed to increase the demand for labour by bringing about a reduction in the number of foreign workers, providing incentives for employers to take on more workers and increasing the number of temporary jobs in building infrastructure [12]. Longer-term actions aim to prepare people for the job market by investing in education from kindergartens to higher education and of course in vocational training for technicians, practical engineers and manufacturing workers.

Israel's economy is increasingly reliant on the hi-tech and information sectors, with the bulk of industrial exports provided by electronics, communications and biotechnology. This calls for a highly-qualified and skilled labour force. Advanced technology has also penetrated branches of agriculture, food and building and they too need highly-qualified workers.

Long-term planning

Only long-term investments and multi-year project planning for education and vocational training can deliver the changes needed to bridge the gaps between different groups in Israeli society and contribute to HRD, particularly in the more deprived groups and in areas where the level of socio-economic development is low. This means there is a need for a policy of long-term macro-economic planning aimed at promoting human capital and vocational training.

In recent years, the unstable political and security situation has made it difficult for successive Israeli governments to design and implement long-term policies for education and vocational training. But at the time of writing this report, it seems that the government understands that the central issue on the national agenda today is bridging the divide in Israeli society and fighting poverty.

National index for bridging the social divide

While it is the government's job to formulate a national policy for education and vocational training and oversee its implementation, it should bring in public and private institutions, organisations and companies to put it into practice. Israel has many organisations with a great deal of expertise in education and vocational training, such as the technical school networks or the aircraft industry's MHT who could target their activities to deprived groups and people living in development towns. Just as every year the government sets targets for inflation or deficits, it should also set itself annual targets for reducing unemployment and poverty and bridging the social divide in Israel. Setting goals, together with work plans including deadlines and budgets for reaching them, could convey a message of commitment and responsibility to all the groups and communities that make up Israeli society.

6.2 RECOMMENDATIONS

6.2.1 ESTABLISHING AN ORGANISATION FOR FORECASTING HRD NEEDS

Interviews held during the preparation of this report with stakeholders, decision-makers and TVET practitioners showed that no single organisation or structured procedure for forecasting the HRD needs of the Israeli economy currently exists. When it came to planning how TVET could meet the needs of the Israeli labour market even in the short-term, questions raised in the

interviews went unanswered. The MOI's vocational training policy is driven by the current needs of the labour market and by the government's recent decisions to reduce the number of foreign workers and to get the unemployed, single parents and people on income support back to work. Meanwhile the MOE continues to provide science and technical education (mainly science education) from kindergarten to the end of secondary school, while steadily reducing technical education at the secondary school level. It also continues to train young technicians and practical engineers using long-standing curricula.

There is an urgent need for a new council or national authority to forecast HRD needs in Israel. It should consist of representatives from:

- relevant government ministries: the MOI, the MOE and the Ministry for Science and Technology;
- the Industrialists' Association;
- heads of human resources in the Israeli Defence Force;
- the trade unions;
- research institutes and universities (such as the Institute for Technical Forecasting at Tel Aviv University and researchers from Ben-Gurion University in Be'er Sheva and Bar-Ilan University in Ramat Gan).

This organisation should function as a legally defined statutory body, with structured mechanisms and adequate resources to allow for ongoing forecasting of the HRD needs of the Israeli economy.

Some would argue that it is very difficult to predict what will be the technological breakthroughs of the future and which new professions will emerge in an era of rapid change. Such arguments lead them to conclude that it is better to just let market forces work and to concentrate on making the education and training system able to adapt rapidly to change. But even if this were the case, it is still possible to attempt a reasonable forecast of the skills and abilities that will be needed in HRD in Israel, without specifying in which specific industry or trade people will actually be employed. It is possible to make an

educated guess about which characteristics will be needed in the future, and as a result design long and short-term policies for vocational education and training. These characteristics include the ability to adapt to rapid change, the ability for lifelong learning and personal and interpersonal skills such as team work, decision-making in situations of uncertainty, turning information into knowledge and knowledge into know-how, entrepreneurship and creativity. These skills are already needed today and will continue to be needed in the future regardless of whether people are employed or self-employed or which particular branch they work in. Having an organisation in Israel which could define these skills and abilities would be a significant help to all those involved in designing and implementing TVET curricula.

6.2.2 ACHIEVING GENUINE COOPERATION BETWEEN THE TWO TVET MINISTRIES

One of the biggest challenges facing Israeli TVET is how to persuade the MOE, through its Administration of Science and Technology, and the MTDB in the MOI, to work together to draw up a coordinated policy for technical education and vocational training in secondary schools and training for young technicians, practical engineers and adults. Even though the aims of technical education in MOE-supervised secondary schools are not the same as those of vocational training in the MOI-supervised industrial schools, there are two compelling reasons why there should be closer coordination of their education and training policies.

First, every year a growing number of students in industrial schools take the MOE-administered *Bagrut* (matriculation) exams trying for a full matriculation certificate or at least to achieve the 14 credits needed for admission to study for technicians and practical engineering diplomas. These students routinely sit the matriculation exams under worse conditions than regular MOE school students. This anomaly must be corrected if we want to offer genuinely equal

opportunities to all students in Israel, regardless of the government body in charge of their school.

Second, the recommendations of the Preiss Committee for the examination of technical tracks and subjects did not provide the right answers concerning the cluster of employment-oriented study tracks currently studied at MOE-supervised schools. It is actually the MOI that has a great deal of experience and expertise in providing employment-oriented studies. Real cooperation between the two ministries could lead to more up-to-date employment-oriented curricula which would be implemented throughout the vocational education and training system.

It has already been recommended [5] that all training for technicians and practical engineers, whether young or adult, should be fully coordinated by the MOE and the MOI. As things stand, each of these ministries has separate bodies for curriculum planning, supervising organisational and management procedures and granting diplomas. However the graduates of both systems are officially classified as technicians or practical engineers and should therefore possess a similar quality of knowledge and skills to offer their employers. Thus, even though admission requirements are different for young candidates and adult candidates, the professional requirements are equivalent for graduates of both systems. Therefore it would seem logical to either unify the two systems or, at the very least, to set up a means of full coordination between them.

6.2.3 MORE RESOURCES FOR MIDDLE SCHOOLS

Average class sizes in middle schools are much higher than in primary schools or the upper cycle of secondary schools. In primary schools the average number is 30, in upper secondary 27, yet the average for middle schools is over 35. Such levels of overcrowding are far from the norm in other countries with a similar level of development [12]. We would argue that it is at precisely this age – 12 to 15 – that students' attitudes towards their future

choice of studies in the upper cycle are taking shape. The choices they make now will affect their chances of higher education and a career. Subjects like mathematics, science and technology call for smaller study groups so that students can gain practical experience in laboratories and workshops. So there is a need for more government investment to bring about a significant reduction in class sizes at the middle school level, at least for science and technology classes.

In terms of the curricula, we recommend introducing a new obligatory subject in middle school classes in Israel covering the following topics:

- **Skills for lifelong learning:** How to learn, logical thinking, how to express oneself in writing and orally, how to write a CV and interview skills.
- **Getting to know careers and the world of work:** Students will be exposed to different branches of industry, trade and services both in theory, and through practical hands-on experience in the workplace.
- **Entrepreneurship skills and social awareness:** There is no doubt that acquiring an entrepreneurial attitude is extremely useful regardless of whether the graduate goes on to become self-employed or a salaried worker. Social awareness can give students from an early age an understanding of weaker and under-represented groups within society and possible solutions for bridging the socio-economic divide.
- **An interdisciplinary and multidisciplinary approach:** This kind of approach is an increasingly important factor in the design, manufacture and maintenance of technical systems and processes. Students at this age should be made aware of the overlaps between different fields of knowledge such as biology, chemistry, physics, electronics, mechanics and computing and, of course – the user interface – the human being. One of the more successful ways of introducing this approach is using a multidisciplinary science-technology project. This approach should start in at middle schools and continue throughout secondary education.

6.2.4 MAKING TVET TEACHING A MORE ATTRACTIVE OPTION

Higher status and salaries

It is clear that the Israeli TVET system needs to attract better quality teachers and train them better. The profession calls for the ability to teach abstract theoretical science and engineering topics, to demonstrate and explain complex simulations and animations and to supervise practical experiments in workshops. Technical teachers and vocational trainers must be open-minded and ready to update their knowledge throughout their teaching career in order to keep abreast of new developments in science, technology and engineering. They must also be flexible and willing to integrate new teaching and learning methodologies such as e-learning which cross the borders of space and time. Consequently they also have to be prepared to be contacted by students outside of formal teaching hours.

Another important aspect is the competition with industry to attract people with the skills and abilities described above. Industry rewards high-quality manpower with salaries and bonuses that are much higher than those to be found in TVET. Furthermore, the social status of teachers and trainers in TVET is not high and is certainly less than that of engineers working in industry. This means that the government must give this profession the recognition it deserves and back this up by improving pay and giving bonuses for special achievement. Time for updating skills should be counted as an integral part of their working day. Only then can we hope to attract the high calibre people the Israeli TVET system needs.

Tougher admission criteria

At the same time, we recommend that admission criteria for people wishing to train as technical teachers be made significantly tougher than they are today. Only those individuals with above average personal skills and the ability to adapt to a fast rate of change should be chosen. This could be done by raising the required scores in the psychometric test commonly used in Israel, in the matriculation certificate in general or for certain subjects in particular, or by adapting entrance exams and personal interviews. Offering scholarships and other economic or professional incentives could also help attract outstanding students in the science and engineering faculties to teacher training.

6.2.5 THE IMPORTANCE OF STRIKING THE RIGHT BALANCE

In conclusion, Israel stands at a significant crossroads. The challenge it faces is how to strike a balance between two conflicting demands. It must sustain an economy based on manufacturing industry and the export of ICT and advanced technology, a market-driven economy supported by a skilled and educated workforce. But it also needs to reverse the growing inequality of Israeli society and to give a chance to weaker populations in the periphery, the minorities and single-parent families. A more balanced approach to socioeconomic policy implies substantial long term investment in TVET systems and HRD. If this is done, it will contribute to the future development of a more cohesive Israeli society and a more advanced economy as a whole.

ACRONYMS

CPEs	Centres for the Promotion of Entrepreneurship
ETF	European Training Foundation
EU	European Union
GDP	gross domestic product
HRD	human resources development
ICT	information and communication technologies
IDF	Israeli Defence Force
Mehalev	(From the Heart) From Dependence on Welfare to Ensured Employability
MHT	Technical and Training Department (of Israel's Aircraft Industries)
MOE	Ministry of Education, Culture and Sport
MOI	Ministry of Industry, Trade and Labour
MTDB	Manpower Training and Development Bureau
NGO	non governmental organisation
NIS	new Israeli shekel (Israeli currency)
NITT	National Institute for Technical Training
OECD	Organisation for Economic Cooperation and Development
PISA	Programme for International Student Assessment
SME	small and medium-sized enterprise
TIMSS	Trends in International Mathematics and Science Study
TVET	technical and vocational education and training
US	United States of America
VET	vocational education and training

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