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INTRODUCTION

In 2010 the European Training Foundation (ETF) launched the first round of the Torino Process, in which Israel participated by conducting a self-assessment report. The Torino Process is a participatory review of progress in vocational education and training (VET) policy which is carried out every two years by all ETF partner countries with the support of the ETF. The analytical framework lists the thematic areas for review and, for each of them, raises the main policy questions to be documented in order to assess the VET system and policy progress. The report encompasses the various main dimensions of technological education and VET in Israel (for example, the underpinning political vision and priorities, external efficiency, internal efficiency, governance and financing).

This report is the third since 2010, and it complements and updates the preceding reports. Together with the Torino Process reports from 2010 and 2012, these three reports present an interesting picture of the process of change and reform that has taken place in the perception of technology education in Israel, which for many years suffered from a low budget and a negative image. In the last four years, technology education has received a significant boost as part of a national strategy to strengthen it. Some of the changes – such as the reforms that address meaningful learning and changes in the structure of the matriculation examinations, while emphasising future projects and skills, as well as the emerging trend to integrate industry and study under the supervision of the Ministry of Education – are still in progress. Only in future years will we be able to assess the impact of these changes on the adult population.

The innovation of the 2014 Israel Torino Process self-assessment is the agreement among stakeholders to measure the country's education and training progress against EU benchmarks. The benchmarking exercise is an integral part of the Torino Process outcomes. It provides the basis for a new monitoring/reporting/evaluating tool which will allow Israel to set up its own targets and monitor progress at regular intervals.

The **first chapter** of this report discusses the fragmented structure of VET in Israel, its vision and horizontal development, with respect to IVET and CVET combined (initial training before entering the labour market, continuous training after joining the labour force), and the challenges that policy makers can expect to face from now until 2024.

The **second chapter** deals with the VET requirements from the economic perspective of Israel's labour market, looking at: economic activities that contribute most to GDP and employment, education levels, state investment in education, and employment challenges facing the country; mechanisms for identifying labour market demand and matching skills acquired for this purpose; the effect of VET on skills; and, in particular, the promotion of entrepreneurship.

The **third chapter** shows how vocational-technological education addresses social challenges, and discusses the advancement and inclusion of socially disadvantaged unique populations.

The **fourth chapter** begins with an overview of quality assurance mechanisms and policies, and examines a range of key areas of policy intervention in VET, such as educators and administrators, teaching and learning, effectiveness and efficiency of resource use.

The **fifth chapter** focuses on governance and policies, briefly reflects on state representation in each of the above chapters from a four-year perspective, and discusses the policy adopted at national, regional, local and provider levels.

EXECUTIVE SUMMARY

Israel's economic growth has been strong over the last decade. In terms of economic performance and human resource development, Israel has improved rapidly and ranks – in many respects highly – among the world's advanced economies. A favourable financial environment contributes to making Israel an innovation powerhouse. The combination of recent structural reforms and huge investments in Research and Development has led to a boom in high-tech industries. The Global Competitiveness Index 2013–14 (World Economic Forum, 2013) ranks Israel 27th in the world. Israel is identified as having a world-class capacity for innovation (third in the world); with a highly innovative business sector and some of the world's best applied research institutions. Israel ranks fifth among OECD countries in terms of expenditure on educational institutions as a percentage of GDP. However Israel's annual expenditure per student by educational institution (from primary to tertiary education) is almost a third less than the OECD average.

In its 2020 Strategic Vision for Economic and Social Development, Israel considers well-educated human resources as one of the country's major priorities. The majority of secondary education students (60%) enrol in general academic upper secondary education, one-third opts for technological programmes and 3% enrol in industrial schools or apprenticeship pathways. The government has launched the New Horizon reform[1] to address some of the issues in the education and training system and to break the correlation between the socioeconomic status of students entering the system and their potential socioeconomic status after graduation. This active government-led reform to put vocational education and training on a statutory basis through legislation is supported by the social partners – both employers and unions – who are both well organised and keen to engage more fully in the vocational education and training system.

These reform programmes contribute to the employment goals in line with government policy and future plans for innovation, change and entrepreneurship. It is apparent that the visions of both the Ministry of Education and the Ministry of Economy assign high priority to technological and vocational education. These two ministries join with leading technology education professionals to pursue the goals of significantly increasing students numbers and raising the knowledge and skills levels of students and employees, within the context of worldwide trends, innovation and the underlying employment crisis, while taking a broad systemic perspective that acknowledges the skills that will be required in future.

The key areas which the reform package focuses on are: a paradigm shift in teaching and learning; the impact of information and communications technology (ICT) and the knowledge economy; teacher professional development and teacher training, with teachers acting as facilitators rather than instructors; shifting power from central authorities (central office, districts and local education authorities) to the school level, towards school empowerment and school-based management; and internal and external quality control. Such initiatives are based on ongoing research and impact assessments, coupled with learning from peers.

The Israeli education system is compulsory between the ages of 5 and 18 (education is free between the ages of 3 and 18). The strength of the system is that it has a high gross enrolment rates – 105% at primary level (ISCED 1), 98% at lower secondary (ISCED 2) – and 90% of Israeli youth (ISCED 3) have at least upper secondary qualifications (higher than the OECD average of 82%) . In 2013 Israel ranked second among OECD countries for the percentage of adults with a tertiary education: 46% compared with an OECD average of 32%. The share of the population with at least an upper secondary education is 83%, well above the OECD average of 75%. Over the past decade, tertiary

[1] OECD (2013), Israeli Country Note, Annexes.

attainment (including advanced research programmes, i.e. ISCED levels 5A, 5B and 6) has risen faster than in upper secondary education[2]. In comparing Israel with the EU benchmarks of Education and Training and Europe 2020 (in education and employment), we conclude that Israel performs very well in tertiary educational attainment (50.73% compared with EU average 36.8%); early school leavers (8.1% compared with EU everage11.9%); lifelong learning (9.5% compared with EU average 10.4%); and employment (73.1% compared with EU average 68.3%). There have been praiseworthy efforts to promote innovation in delivery.

Even if Israel's population is well educated[3] , its complex education system faces many challenges, for example the country has an expanding population drawn from 79 different countries, speaking 40 languages, while 45% of school pupils in 2004 had one parent who was not born in Israel. Five streams cover primary and secondary education: three for Hebrew-speaking students (OECD, 2013); one for Arab-speaking students; and one for the Druze Community. This asymmetry has implications. While Israel is made up of both Arab and Jewish citizens, its educational system remains almost completely divided between these two nationalities as well as by other ethnic divisions. As a result, it has the largest educational gaps among the OECD countries. In Israel's increasingly segmented educational framework there is a large and rapidly growing share of children receiving what can only be described as a developing world education – with all of the implications that this has for the country's future (Ben-David, 2014). As shown in the Taub Centre 'State of the Nation Report, Society, Economy and Policy in Israel 2014'[4], this is due to a range of underlying factors, including lack of sufficient human capital, which results in the delivery of a poor basic education for ultra-Orthodox and Arab Israeli students in particular. As a consequence, Israel performs poorly in reading (23.6% compared with EU average 17.8%), mathematics (33.5% compared with EU average 22.1% and science (28.9% compared with EU average 16.6%). The evidence is that establishing equity in education and the improvement of opportunities for disadvantaged groups in the system poses major challenges (ETF, 2013).

Furthermore, Israel has the characteristics of an ageing society, and a pressing issue is making sure that the country has the right numbers of young people with the skills to replace older people in the labour market and who can take on new kinds of jobs in an economy that is among the most innovative in the world. Israel is faced with a number of serious and growing skills challenges which pose a threat to the country's inclusive growth. There is less vocational provision in Israel than in many other OECD countries, and funding in the sector is inadequate and in some areas declining. The vocational skills in the potential workforce are inadequate and this is a view strongly voiced by employers. This situation is due to different demographic patterns, with highly-skilled migrants from the former Soviet Union retiring and a shortage of vocational skills among Arab, Israeli and Haredi populations. The pathways of access and opportunity for vocational students remain a challenge. Those who graduate from vocational courses at the upper secondary level often face obstacles in entering post-secondary programmes, which damage the status of these vocational pathways. Although many graduates of practical engineering courses enter university programmes, when they do so, they often fail to receive adequate recognition for their practical qualifications.

Postsecondary Vocational Education and Training in Israel is diverse, with relatively good labour market outcomes for graduates. Bearing in mind the range of different options, including not only practical engineering, technician training and vocational courses, but also professional certifications and diverse private courses, as well as a range of targeted programmes directed at disadvantaged

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[2] Musset, P., M. Kuczera and S. Field (2014), A Skills beyond School Review of Israel, OECD Reviews of Vocational Education and Training, OECD Publishing. http://dx.doi.org/10.1787/9789264210769-en

[3] OECD (2013), Education at a Glance 2013| Israeli Country Note

[4] Dan Ben-David, Editor, State of the Nation Report-Society, Economy and Policy in Israel 2014, Taub Centre for Social Policy Studies in Israel Jerusalem, December 2014. http://taubcenter.org.il/wp-content/files_mf/stateofthenationreport2014english57.pdf

groups, the system offers options for most of the relevant student groups. There is an active framework of government-led reform in the Ministry of Economy and other government ministries and agencies, with plans to put vocational education and training on a statutory basis through legislation. The social partners – both employers and unions – are well organised and are keen to engage more fully in the vocational education and training system. There have been praiseworthy efforts to promote innovation in delivery. The certification system provides an effective means of upskilling. Although lack of data remains a challenge, research and analysis are well developed by international standards, with universities and research institutes demonstrating a strong capacity for research and enjoying international reputations (OECD, 2014).

Technological and vocational education and training (TVET) governance is fragmented, even though most provision is based in the public sector. The Ministry of Education and the Ministry of Economy maintain, manage and finance two distinct and parallel systems of TVET. There is no formal mechanism or requirement to coordinate the work of the two ministries, so they provide separate systems with no hierarchical relationships. Each ministry operates through its own district offices and functions independently. There are notable differences between their student populations and the nature of their curriculums. There are currently 361 466 students in grades 10–12 of the education systems administered by the two ministries. The total number of students in the technology and vocational education is 150 600 (41.7%). Data indicates that the percentage of students combining study and work in Israel is very low – only 4% in 2011 – however the combined percentage of students in technological education under the Ministries of Education and of the Economy currently stands at about 38%.

Another avenue for VET is available within the army. All graduates of secondary education must enter the army for military service, which lasts three years for boys and two years for girls[5]. During their military service, these young soldiers acquire skills in different vocational tracks; for this reason, the Israeli Defence Forces (IDF) could be included in platforms where skills and competence development are discussed.

To sum up, VET remains an area where more investment is needed given the current needs of the labour market, and improved provision in this area could play a role in combatting unemployment, especially among certain population groups such as the Haredi and the Arabs. Better mechanisms for forecasting and regularly monitoring skills needs should be put in place. Additionally, closer and more structured relations should be developed between the education and business sectors, involving all players concerned with human capital development (including the army).

[5] This is a rule applied to secular Jews only (not Arab and Haredi groups). As receiving training in the army is valued as a route to finding better jobs in technical/ technological fields, recently changes have been made to include Arabs if they want to take part. The Haredis refuse military service on religious grounds, but discussion is ongoing on whether to make the military service compulsory for them too.

1. VISION FOR THE NATIONAL VET SYSTEM

This chapter surveys the structure of the VET system in Israel, its vision and developmental outlook, with respect to both IVET and CVET (initial training before entering the labour market and continuous ongoing training after joining the labour force). It discusses the fragmented structure of VET in Israel, and the challenges that policy makers can expect to face from now until 2024.

Data indicate that the percentage of students combining study and work in Israel is very low – only 4% in 2011 – however, the combined percentage of students in technological education under the Ministry of Education and Ministry of Economy currently stands at about 38%. This chapter discusses the reasons for this disparity. The chapter ends by describing employment goals as reflected in government policy and future plans for innovation, change and entrepreneurship. It is apparent that the visions of both government ministries assign high priority to technological and vocational education. The ministries join with leading technology education professionals in pursuit of the goals of significantly increasing student numbers and raising the knowledge and skills levels of students and employees, within the context of worldwide trends, innovation and the underlying employment crisis, while taking a broad systemic perspective that recognises the skills needs of the future.

1.1 General

The education system in Israel is essentially heterogeneous, as reflected in its structure, budget and the multitude of types of educational institutions, catering to the needs of the different sectors. The Israeli education system can be divided into the following stages (or levels) by age of the students.

1. **Pre-primary education** for children aged 3 through kindergarten.
2. **Primary school**, including six years of schooling for children aged 6–12 (in some schools this stage includes eight years of schooling).
3. **Secondary school**, including junior and senior high school:
    - junior high school continues primary education and includes three years of schooling, 7th–9th grades (ages 13–15);
    - high school follows the junior high school, 10th–12th grades (ages 16–18);
4. **Post-secondary studies** (ages 18 and above) includes studies towards a non-academic diploma. Such studies focus on practical, technological or vocational skills and are intended to enable direct integration into the labour market. These studies award professional diplomas, for example registered nurse or loss adjuster.
5. **Studies toward practical engineer/technician diploma**. This track includes 13th and 14th grades students in post-secondary studies under the supervision of the Ministry of Economy.
6. **Higher education** – academic study towards a bachelor, masters or doctorate degree recognised by the Council for Higher Education. These studies are conducted at universities, academic colleges and colleges of further education. The primary difference between a university and a college in Israel is that only a university can confer doctorate degrees, and therefore tends to be more research-oriented than the more teaching-oriented colleges. Institutions of higher education in Israel are classified into three major groups by the Council for Higher Education: (i) universities and institutes with doctoral degree programs; (ii) academic and regional colleges with undergraduate degree programs; and (iii) teacher training colleges – colleges of education that grant bachelor education degrees.

1.2 Data on students and education[6]

The number of students at all levels of education increased from 141 000 in the 1950s to over 2 million in 2010/11. This increase is partly due to immigrant absorption and the extension of compulsory education by two years to include the 12th grade (instead of ending at the 10th grade).

In 2011, the rate of matriculation of high school seniors in Jewish and Arab schools reached 57%. The end of the first decade of this century saw a closing of the long-standing gap between the numbers of students entitled to a matriculation certificate in the academic and technological pathways. The number of students who met the university entrance requirements increased following the introduction of a measure allowing students to retake exams in English and Mathematics. In the Jewish sector, the number of students completing the matriculation certificate increased from 44% of high school seniors in 2000 to 46% in 2001, with a corresponding increase from 25% to 32% in the Arab sector. The percentage of students eligible for a vocational certificate or diploma in the vocation education frameworks of the Ministry of Economy in 2012 was 68%. A comparison of eligibility between the Jewish and Arab sectors showed no significant differences, with a slightly higher rate in the Arab sector.

Forecast: The total number of students in the school system is expected to increase from around 1.565 million students in 2012 to 1.744 million students in 2019 – an increase of about 182 000 students.

In state education, the number of students is expected to increase from approximately 672 000 in 2012 to 711 000 in 2019 – an increase of 5.8%. In state religious education the number of students is expected to grow from approximately 211 000 in 2012 to about 249 000 in 2019 – an increase of 17.7%. In ultra-Orthodox Jewish schools the number of students is expected to grow from approximately 265 000 in 2012 to about 327 000 in 2019 – an increase of 23.8%. In the Arab sector, the number of students is expected to grow from approximately 417 000 in 2012 to about 456 000 in 2019 – an increase of 9.6%. Over the past decade, there has been a significant decrease in the dropout rates, in both the Jewish and Arab sectors. The overall dropout rate in secondary education stood at 4.7% in 2001 compared to 2.9% in 2011. In the same time period, the dropout rate in the Arab sector declined from 6.6% to 4.0%.

Higher education in Israel has undergone many changes over the years: in the 1952 academic year, 3 394 students attended two institutions in Israel – the Hebrew University of Jerusalem and the Technion – Israel Institute of Technology in Haifa. In the 2011/12 school year 258 700 students studied at 70 institutions of higher education, including seven universities, 36 academic colleges and 26 further education colleges.

1.3 Structure of technological education in Israel

In Israel, TVET covers two separately operated paths: (i) technological-scientific education; and (ii) other vocational education. The Ministry of Education is responsible for the technological-scientific studies track through its Science and Technology Administration, and the Ministry of Economy maintains post-primary education systems that provide technological vocational training under its statutory powers (the 1953 Apprenticeship Act and the 1953 Youth Employment Act[7]), post-secondary

[6] Central Bureau of Statistics, *Report No 6, The face of Israeli society – Israel where from and where to?*, (October 2013), Introduction, pp. 20–21; Chapter 4, Education, pp. 122–146.

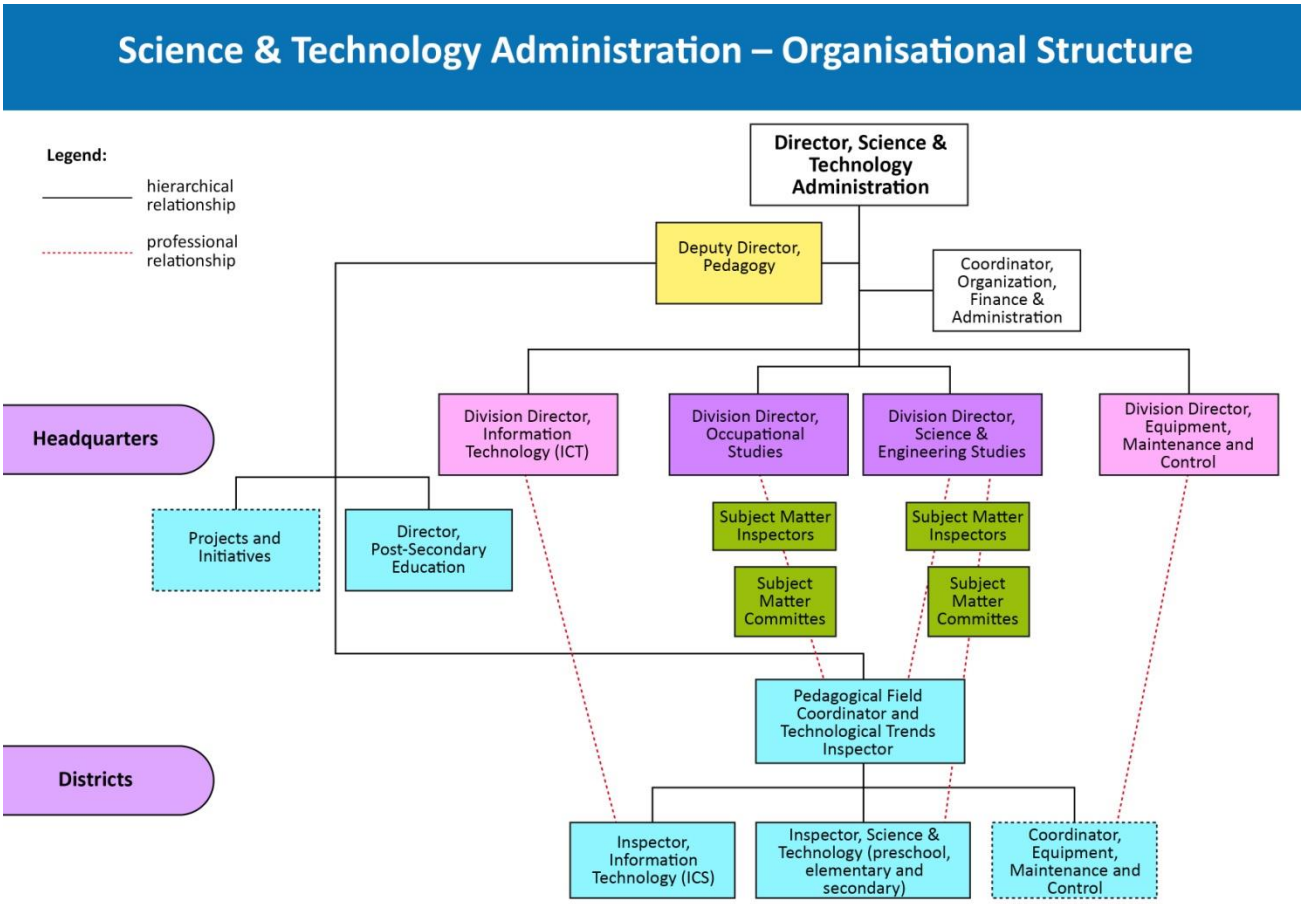
[7] The Youth Employment Law, 1953, is intended to regulate aspects of youth employment, such as age requirements, prohibited work, medical examinations, vocational training, hours of work and rest, annual leave, breaks, schooling and night work. Legislation is being drafted that would regulate adult and youth training, incorporating within it the apprenticeship law. The new vocational training law will grant legal authority to certifications.

systems at the National Institute for Training in Technology and Science (NITTS), and adult training programmes. Additional parties involved in technological education in Israel include local authorities, education providers (such as technology education networks like ORT and AMAL)[8], the Manufacturers Association of Israel (MAI) and colleges.

The vast majority of students in secondary education attend schools, under the supervision of the Ministry of Education, in keeping with the Compulsory Education Law[9].

FIGURE 1.1 shows the entities involved in the planning, implementing, supervising and evaluating the technological-vocational education systems under the supervision of the Ministry of Education.

FIGURE 1.1 ORGANISATIONAL CHART – SCIENCE & TECHNOLOGY ADMINISTRATION, MINISTRY OF EDUCATION



Study tracks in the scientific technology path under the supervision of the Ministry of Education are divided into three main categories: engineering, technology and occupational studies. The science and engineering track is intended for learners who will continue their studies at university. The technological track is for those who will go on to take the technician/practical engineer programmes in school or college. The vocational-occupational path is for learners who will enter the job market after

[8] ORT and AMAL are Israel's largest educational networks of schools and play a leading role in Technological Education. For more information see www.ort.org.il and www.amalnet.k12.il/Amalnet/

[9] The Compulsory Education Act, 1949, states that every child in Israel must be in an educational framework (kindergarten or school). The Compulsory Education Act is valid in most cities in Israel from age 5 (kindergarten) up to the 12th grade. The law requires parents to register children at an educational institution and to ensure attendance in school. The law prohibits high schools from removing students without ensuring that there is an alternative educational framework for them. The law also stipulates that compulsory schooling will be free until the end of the 12th grade.

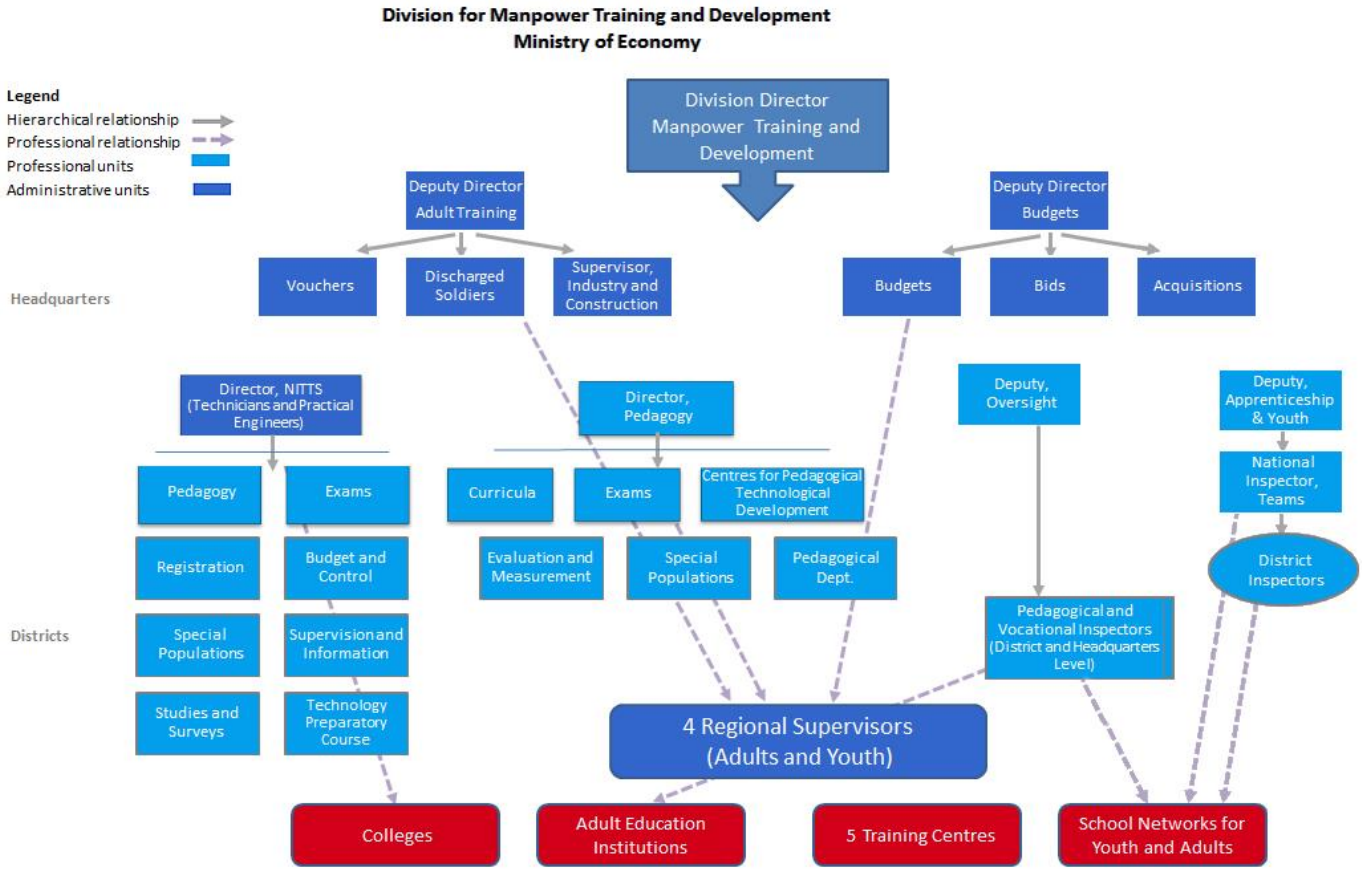
graduation. Students can continue their studies towards professional certification as technicians or practical engineers. However, the practical experience that they acquire during their studies is limited.

The Ministry of Economy provides professional solutions in three main tracks.

- The **Youth track,** operating under the 1953 Apprenticeship Act and the Employment Law 1953, provides a framework in which secondary schools studies offer vocational training for young people aged 15 to 18. In keeping with the 1953 Apprenticeship Act, the Minister of Economy declared that a specific occupational status shall be available through apprenticeship – a combination of study and work. Under the supervision of the Ministry of Economy, apprenticeship students comprised 3.7% of all students in the school system in 2012–13. Apprenticeship students study three days a week and work two or three days. Curricula in this track include general studies and theoretical and practical vocational studies. In the 10th grade all courses are held at the school; in 11th and 12th grades, students attend school three to five days a week and on the remaining days perform paid work in their field of study, such as electrical engineering and electronics, administration and hair styling. Students that meet the academic requirements and complete the industrial apprenticeship course earn a diploma (an official document recognising the level of education attained and endorsed by the Ministry of Education) and a professional certificate. During their studies, students have the option of earning credits towards a matriculation certificate in order to pursue technician/practical engineer studies, subject to their achievements. Students in apprenticeship tracks who do not meet all of the academic requirements but have passed their practical examinations are entitled to a 'practical diploma'.
- **Frameworks for certified technicians and practical engineers** through the National Institute for Training in Technology and Science (NITTS).
- **Adult vocational training frameworks** provide a range of professional training courses and seminars, at the end of which students that have passed their theoretical and practical examinations will be eligible for professional certification or authorisation, a certificate of completion or certificate of advanced study.

FIGURE 1.2 illustrates the organisation structure of the Division for Manpower Training and Development of the Ministry of Economy, including the bodies involved in planning, implementation, supervision and evaluation.

FIGURE 1.2 **ORGANISATIONAL CHART – DIVISION FOR MANPOWER TRAINING AND DEVELOPMENT, MINISTRY OF ECONOMY**



Vocational and technological training in Israel is carried out with the cooperation of various government bodies, including the Ministry of Health, the Ministry of Social Affairs, the Ministry of Public Security, the Ministry of Transportation, the Ministry of Tourism, local authorities, the Manufacturers Association of Israel, and education providers, such as universities, academic colleges and bodies such as ORT and AMAL.

1.4 Data on students in technology education

According to the Central Bureau of Statistics, in the 2011/12 school year approximately 375 000 students were enrolled in Israel's high schools, of which about 132 000 were following a technological track. The number of students in this track had increased by 3.4% compared to the 2010/11 school year. There was only a minimal increase in the number of students in the academic track during this period (0.6%).

The portion of high school students in technological tracks under the supervision of the Ministry of Education increased from 34.6% in 2010/11 to 35.2% in 2011/12. In addition, approximately 14 800 students took part in the apprenticeship programme, under the supervision of the Ministry of Economy, in 2011/12 – an increase of 3.6% compared to the previous year. Combined, students in technological education and the apprenticeship system comprised 37.6% of upper secondary education students in Israel. In addition, in 2011/12, approximately 4 600 students pursued their studies in the 13th and 14th grades (towards a professional certificate that enables integration into the work force) – an increase of about 5% compared to the previous school year.

However, data for 2012/13 analysed by the Ministry of Education and Ministry of Economy and contained in a recently prepared report on governance and employment (ETF, 2014), indicates an upward trend in the number of students engaged in courses under the supervision of the Ministry of Education, as follows: in 2012/13, 361 466 students were enrolled in grades 10–12, including 150 600 in the technological track (41.7%). Most of the students, 137 200, studied under the supervision of the Ministry of Education, 50% were boys and 28% were from the Arab sector. Additionally, 13 400 pupils (3.7%) studied in the apprenticeship system under the supervision of the Ministry of Economy, with 90% boys and 40% from the Arab sector. Furthermore, in 2013, 3 665 students studied in funded adult vocational training courses and another 37 427 students in supervised but unfunded courses. In 2013 an additional 24 789 students studied in the framework of practical engineer/technician studies, certified by the National Institute for Training in Technology and Science (NITTS), in around 73 academic colleges and branches.

FIGURE 1.2 PERCENTAGE AND NUMBER OF 10–12TH GRADE STUDENTS IN TECHNOLOGICAL STUDIES, 1994–2014

Source: Ministry of Education, Computing and Information Systems Administration

1.5 Vision and developmental outlook for technological education

Ministry of Education[10]

Following years of cuts to the technology-science education budget, the Ministry of Education, through its Science and Technology Administration, is now placing technological education at the top of its list of priorities.

Vision of the Ministry of Education

The vision of the Ministry of Education is set out as adapting the technology education system to the 21st century, in line with the requirements for knowledge and skills demanded of the graduates in each discipline, according to the current and future needs of the economy and industry.

[10] Information supplied by the head of the Technology Branch, Science and Technology Administration, Ministry of Education, May 2014.

Objectives of the Strategic Plan to Strengthen Technological and Vocational Education (Appendix 4)

The stated objectives of the strategic plan are: to provide the tools for each student in Israel to realise their potential while developing excellence in the professional area; to develop the work ethic in Israeli society; to nurture creative citizens who strive to advance in the workplace, in keeping with the motto 'great is the work that respects he who does it' (Bavli Talmud, *Vows*); and to contribute to the growth of Israel's economy and reduce unemployment rates by developing human resources.

How will objectives be met?

The strategic plan is part of a comprehensive process of developing meaningful learning, fostering the ability to think and to create and promoting self-learning, as well as encouraging personal growth and social involvement. The Plan to Strengthen Technological and Vocational Education seeks to further develop the existing positive aspects of the system, while dealing with the challenges facing the technology education system.

Key strengths

The key strengths of the current technological education system are listed below.

- It allows each student to continue to progress without sticking to a fixed track, thus avoiding the pitfalls of hitting a glass ceiling or dead end.
- It meets some of the needs of the IDF and the economy.
- It focuses on broad competencies (generic skills) rather than training for specific professions.

Challenges from now until 2024

The main challenges facing VET in the years to 2024 are:

- building a substantial certification authority, so that each student can leave the system with a certificate that has value in the labour market – by 2024 80% of specialised studies should lead to certification (currently only 37%);
- ensuring that 25% of students will continue into technician and practical engineer studies (currently only 8%);
- increasing the percentage of students in technological and vocational education from today's figure of 38.6% to 47% (50% including students from the Ministry of Economy) – based on a the belief that this will increase human resource capabilities in addition to meeting the needs of the IDF and the economy;
- increasing the percentage of students that incorporate learning and practical experience in the working world, while developing vocational education;
- as preparation for employment, all students will incorporate in their studies at least five matriculation units of practical subjects;
- establishing five courses of study within the framework in the Technology Departments of four colleges and universities (total 20 classes);
- responding to the needs of rapidly growing populations, such as the ultra-Orthodox and Arab sectors, and integrating them into society by enhancing their technology skills and employment horizons;
- improving the image of technological education;

- matching technology education to the future needs of the labour market in Israel, including the development of five new tracks in high school and post-secondary education;
- adapting existing tracks to developments in the labour market and increasing the percentage of students combining study and practical/work experience to approximately 20%.

In parallel with formulating the vision, changes are taking place in the education system which also affects technological education.

The new reform in matriculation exams to promote meaningful learning will be effective from the 2014/15 school year on.

According to the programme, the number of matriculation examinations will be reduced, and the subjects divided into three major clusters, except for mathematics and English. The matriculation exams will account for only 70% of the student's final mark; the remaining 30% of their score will be based on a research project or a similar alternative. Matriculation examinations will be held only in the 11th and 12th grades[11].

There will be pedagogical flexibility, with schools determining 25% of their working hours. Schools will formulate independent plans for faculty development and employ diverse evaluation methods for assessing students. Alongside tests, the school will evaluate students in a variety of ways, including research papers, oral presentation of work, role play, speech, portfolio preparation, project-based learning, and internal examinations. Across all the curricula, 70% of the course will focus on the acquisition of knowledge and skills in the subject matter and 30% will be based on elective subjects with the aim of providing greater depth.

The fundamental change in the perception of the matriculation exams serves to prepare the student for life, lending greater weight to the student–teacher relationship and, in particular, the teacher's judgement in assessing student achievement. The new evaluation system will test those skills relevant to the students' future and free up time for meaningful learning[12].

Ministry of Economy[13]

The Ministry of Economy addresses economic development, human capital, technological capabilities and commercial relations. Its brief is to develop the physical and legal infrastructure, industry, commerce and employment, while also supervising and regulating industrial and commercial activity in the labour market.

Vision of the Ministry of Economy

The vision on the Ministry of Economy is described as advancing Israel's economy on a path of innovation and growth, while developing human resources, improving productivity and encouraging competition, to place Israel among the world's 15 leading economies.

Goals set in 2014

The following goals have been set:

- expanding participation in the labour market;
- reducing the cost of living;
- increasing competition in the Israeli economy;

[11] www.ynet.co.il/articles/0,7340,L-4474612,00.html
[12] http://cms.education.gov.il/EducationCMS/Units/LemidaMashmautit/BechinotBagrut/
[13] Data provided by representatives of the Ministry of Economy, August 2014

- developing vehicles for growth and improving competition and innovation in industry, trade and services;
- strengthening small and medium-sized businesses;
- protecting labour rights;
- promoting employee safety;
- delivering improved service and optimal implementation of the Ministry's policy for the benefit of all citizens.

Vision for employment in Israel, goals for 2020

In 2012, the government decided to set up a section in the Ministry of Economy in charge of employment, with the goals of:

- expanding existing policy to increase participation in the labour market;
- increasing participation and employment rates of populations with low participation and employment;
- encouraging occupational advancement and increased earning capacity;
- improving management and work processes for various sectors, and unifying government employment policy and its implementation.

In 2010 the government set objectives for increasing employment rates by 2020, while reducing the gaps in employment between different population groups. The Ministry of Economy estimates that to meet the employment targets for growth between 2010 and 2020, the number of employed will need to increase by about 700 000, including 300 000 Arabs and 100 000 ultra-Orthodox Jews. The significant increase in the number of employees required from the Arab and ultra-Orthodox sectors is the result of an anticipated jump in employment rates in these populations due to rapid population growth in those sectors. The employment goals set by the government reflect a real change in employment patterns among various population groups. Further progress towards the overall employment goals depends largely on the development of employment opportunities among the Arab and ultra-Orthodox communities, as the proportion of these groups is expected to increase in the coming years. This requires continued investment of resources in the various employment programmes alongside macroeconomic conditions that favour an increase in employment.

Vision of the Senior Division for Vocational Training and Manpower Development

The Senior Division for Vocational Training and Manpower Development in the Ministry of Economy is the government branch responsible for the development of professional human resources for the Israeli economy, and for advancing and integrating different groups in the labour market. This division plays a central role in the Ministry of Economy's vision for leading Israeli society and its economy into the global era of the 21st century. The division is in charge of preparing the technological and professional human resources infrastructure required by the economy and industry, and helps to reduce economic and social gaps by increasing labour force participation and employment rates, advancing groups with low participation rates in the labour market and regulating the training market. The division handles a wide range of groups, from those who opted to learn a profession through the apprenticeship system, soldiers, unskilled older job seekers or professionals who wish to change profession, to unemployed university graduates seeking to join a profession for which there is a high demand and advance their careers.

The division operates in a number of ways.

Vocational schools for youth

These are operated by education networks and provide courses of study and professional training, with students working towards a vocational certificate and diploma. These qualifications enable professional integration in the IDF and the world of work, and prepare students for the possibility of professional advancement to higher classifications, including technicians/practical engineers.

Initiation, planning and implementation of training activities, professional training, retraining and upgrading

The division is responsible for training at all levels of professional classification in 20 economic sectors and more than 350 regulated professions, including 70 that require licences. The training is open to unemployed adults aged 18 and over through courses funded by the State, including classroom training and work based learning offered by industry or on-the- job training (OJT), as well as through individual vouchers for vocational training courses offered to pre-defined target populations.

Accreditation and supervision of vocational training courses and professional training for the general public

At the end of their course students sit exams administered by the division. Successful graduates are granted a government diploma and a trade/vocational certificate in the subject studied.

Training of technicians supervised by the National Institute for Training in Technology and Science

The National Institute for Training in Technology and Science is a state body in charge of the training of certified technicians and practical engineers. Practical engineers and technicians perform central technological roles in industrial plants, high-tech enterprises, research institutes, authorities and other public institutions. Courses for certified practical engineers are provided through a network of 73 technological colleges and schools throughout the country, accommodating approximately 5 000 students studying with a view to gaining practical engineer/technician certification within a variety of specialised tracks.

Development of an updated pedagogical infrastructure adapted to the needs of the economy

Creating an effective educational infrastructure attuned to the needs of the labour market involves the regulation of new professions and the continual updating of existing courses, as well as establishing professional standards and rules of eligibility for different courses. Also important are curriculum development and the establishment of examination guidelines for youth and adult tracks. The division is further responsible for the development of teaching methods and materials, the quality of professional training for teachers, and for providing accreditation appropriate to different sectors, such as the Ministry of Education, the IDF and new immigrants.

Key strengths and challenges for the youth apprenticeship model

Vocational schools for young people make a unique social contribution in that they recognise the enormous potential that exists in many teenagers and allow them to develop a sense of their own competence along with confidence in themselves and their future as employed and productive members of society. VET schools thus contribute to increasing young people's chances of finding employment. They systematically consolidate young people's employment experiences over time, focusing on the development of their values and understanding of the world of work, and helping them to progress in the development of skills and entrepreneurship. These traits are essential for advancement and professional development in the workplace over the employee's lifetime. Training young people in these areas in high school saves the Israeli economy money and enables the job market to evolve, with employers able to draw on a workforce who are not only proficient in certain subjects, but also have a clear professional identity and a broad occupational vision.

The major challenges faced by vocational schools are:

- improving curricula and developing a training system and educational approach that takes into consideration recent theories and empirical findings;
- increasing involvement and cooperation with the business sector in the development of curricula and certification tests to ensure that content is relevant to the current and future labour market, and consistent with the theoretical and practical aspects of the experience of apprenticeship in the workplace;
- developing industry mentors, making sure they are highly regarded professionals in their field and are given the appropriate pedagogical training;
- replicating successful vocational schools models in factories and military bases (for example, ORT aircraft industry, the Nuclear Research Centre, ORT Ormat, ORT Maritime, Tel Nof ORT, AMAL Ramat David that integrate prestigious study tracks.

Challenges from now until 2024

The key challenges in this area are:

- improving the image of vocational education for youth;
- increasing the percentage of students attending vocational schools;
- expanding the types educational framework, especially with regard to schools in factories;
- increasing the rate of graduates completing professional certificates and diplomas;
- reducing the apparent and veiled dropout rates;
- designing a vocational education model for young people that emphasises innovation and updating apprenticeship studies, introducing more core subjects;
- eliminating irrelevant subjects and converting approved trades into the apprenticeship format;
- updating the conditions for eligibility for vocational certificates and diplomas;
- developing new professions based on the needs of the economy;
- encouraging graduates of the system to continue on to the level of technician/practical engineering studies;
- strengthening ties with industry and employers;
- introducing incentives for employers to take on apprentices through providing government support and assistance;
- encouraging professional development for industry training mentors for optimal absorption of trainees in the workplace;
- reinforcing teacher training courses in the industry.

Key strengths and challenges in training certified practical engineers/technicians

To address the economy's needs for professional and technological human resources, the following key strengths need to be reinforced and challenges met:

- providing training for the relevant personnel, particularly in terms of enhancing their professionalism, the currency of their skills and their self-learning ability;
- branding the practical engineering degree and technician's diploma, and positioning certified practical engineers and technicians through the Certified Practical Engineer and Technicians Law (2012);
- strengthening ties with industry and employers to create a socioeconomic culture that encourages employers to commit to the professional development of the next generation;
- developing a system of supervision and control consistent with the requirements of the future;
- expanding the numbers of students who complete certified practical engineer/technician studies with diplomas;
- setting quality standards for the implementation of training, including teaching approaches and physical infrastructure, and updating tracks according to the needs of the economy.

Key strengths and challenges for adult training courses

Adult training faces the following challenges:

- updating and adapting the subjects taught, the training processes, pedagogical content and supervisory systems to keep pace with the changes of the 21st century and the needs of the Israeli economy;
- establishing a network of professional technological personnel;
- increasing labour force participation and employment rates;
- regulating the training market;
- reducing the duration of unemployment;
- developing training frameworks for disadvantaged and marginalised populations, and those with special needs;
- promoting the employment of groups with low participation rate in the labour market;
- reducing gaps between Israel's centre and its periphery;
- fostering a socioeconomic culture that incorporates employment groups and the employers themselves into the training framework;
- recruiting employers who will enable students and graduates to gain hands-on experience and provide vocational training;
- recruiting employers to consult and assist in the definition of new subjects according to their demands and market requirements;
- establishing a national body involving all the key stakeholders, including the ministries, employers and unions to deal with skills anticipation and provide strategic guidance on the development of the VET system;

- promoting the enactment of a professional training law.

Vision of the Manufacturers Association of Israel[14]

The Manufacturers Association of Israel (MAI) is the sole representative organisation for all industrial sectors in Israel. By representing the country's largest employers, it contributes to macro-economic decisions and leads the economy's system of organised labour relations.

One of the most important resources in industry is its professional and high quality personnel. The graduates of technological education who are employed by industry in Israel form the 'backbone' of human capital in all manufacturing companies. These graduates have fortified Israel's industries since the State's inception and now place industry at the forefront of technological progress in the world, while maintaining the competitiveness of Israeli industry and the socioeconomic health of the State of Israel.

MAI partners with government ministries and the IDF to lead programmes to promote vocational and technological education, professional training and ongoing development for existing workers in the industry, with an emphasis on matching the needs of the economy and industry. These activities aim to increase the scope of studies in the vocational and technological tracks, and ensure the continued existence of Israeli industry.

Below is a list of long-, medium- and short-term operations for the training of human resources in keeping with the quantity and quality requirements of the industry:

- the development of high-level vocational education in Israel with the leadership and involvement of employers in cooperation with government agencies;
- the establishment of leading study centres for dedicated professions, offering practical experience and theoretical study to realise the potential in each student ;
- increasing the number of students in technological tracks;
- increasing the scope of adult vocational training according to the needs of industry;
- the development of a meaningful certification system in cooperation with the government, the employers and the labour unions;
- the adaptation and validation of programmes by industry to the fullest extent possible;
- exposing graduates from different study tracks to work that is in demand in industry;
- the construction of ways to improve access to industry with an emphasis on successful operation and reduced regulation (for example, internal training, classrooms in the factory, occupational tracks);
- professional development for teachers of technological systems in industry ('Ta'asiyeda');
- changing the basic image of vocational and technological studies and of employment in manufacturing/industry;
- promoting the integration of special populations in industry – through, for example, the signing of a collective agreement for the employment of people with disabilities in the economy and the establishment of professional forums for industrialists.

[14] Gil Regev, Representative of MAI, 2014.

1.6 IVET – vocational technological education before joining the workforce

Ministry of Education

The Ministry of Education has responsibility for the following areas:

- **engineering education:** electronics and computers, software engineering, biotechnology, science and technology, mechanical engineering, health care systems and industrial management;
- **technological education:** fashion design, computerised manufacturing systems, construction and architecture, communications technology, energy control systems, media and advertising, automotive professions and water systems;
- **occupational education:** hair design and cosmetology, cooking and baking, book-keeping, human resources management, hospitality management and tourism, early childhood education, and computerised communications.

FIGURE 1.3 MINISTRY OF EDUCATION VET STUDIES BY SUBJECT AREA (PERCENTAGE AND NUMBER), 2013

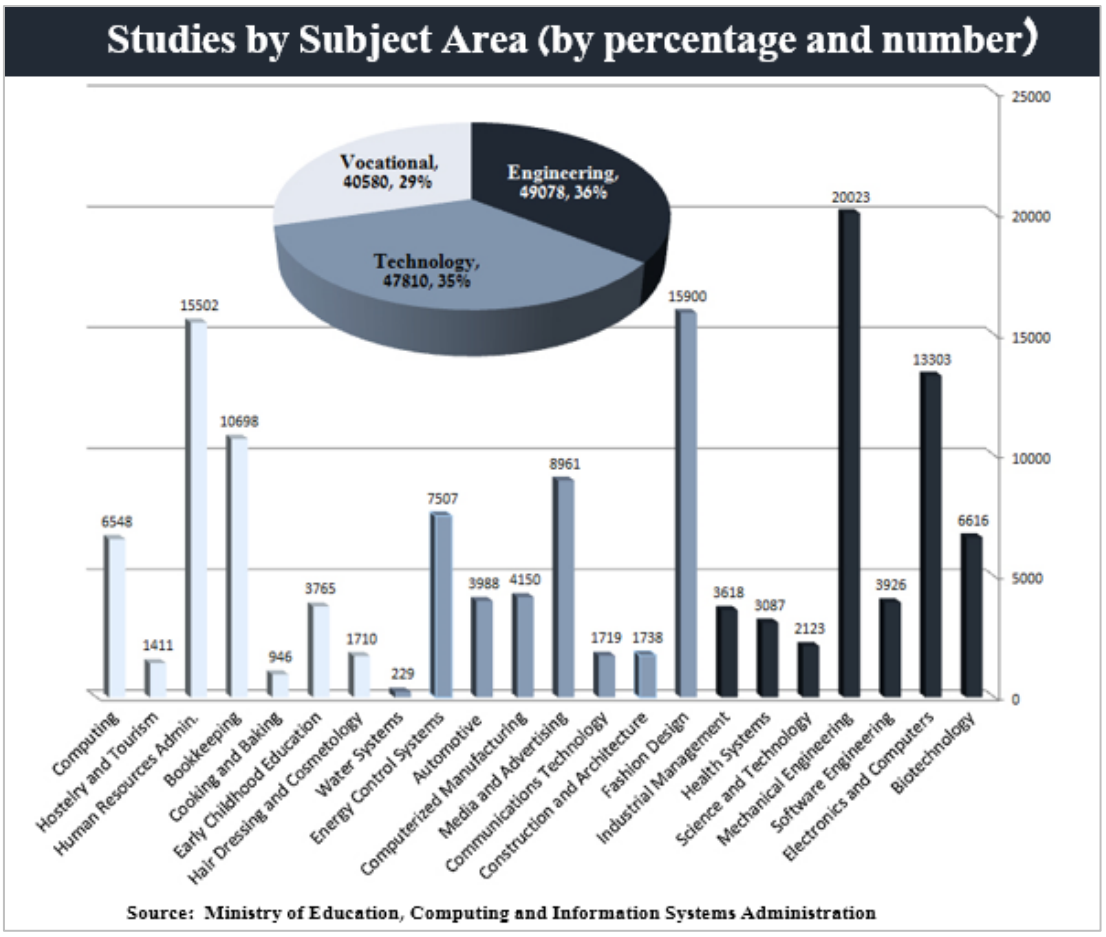
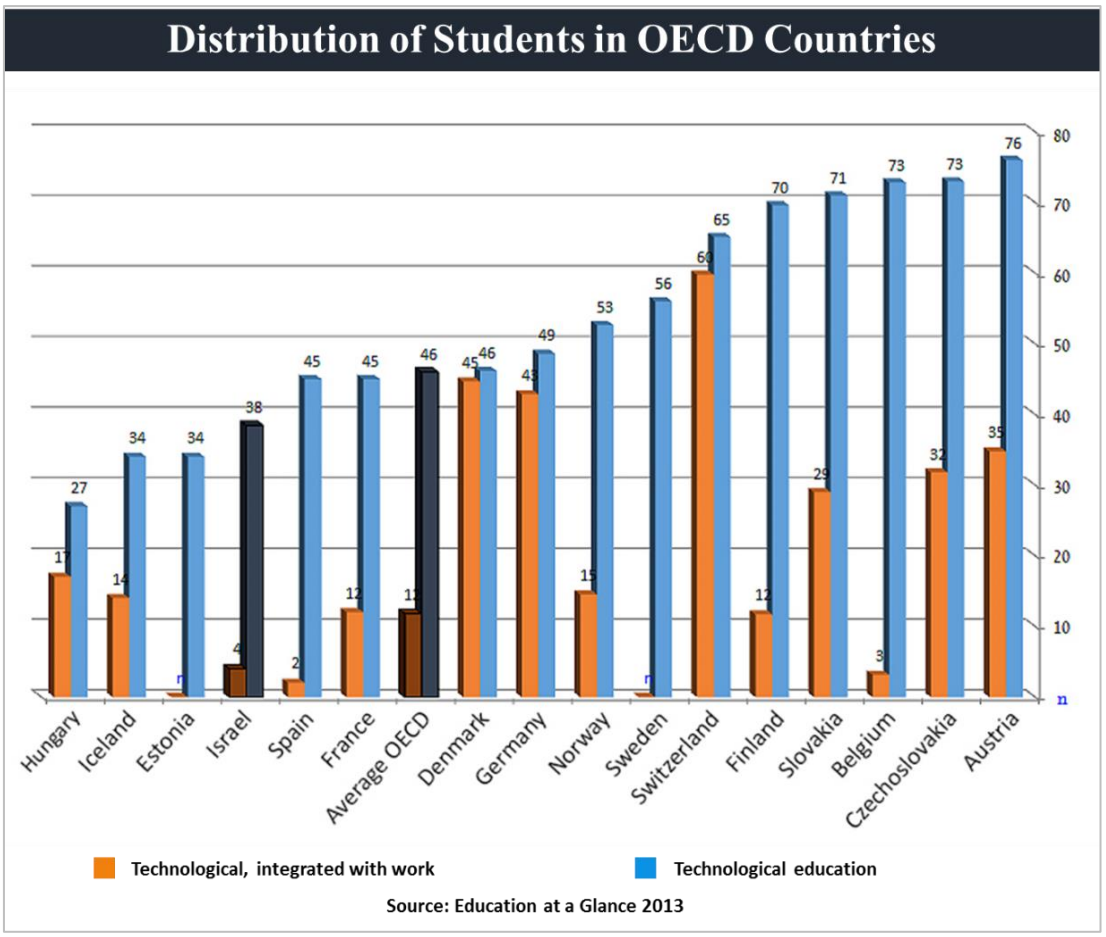


FIGURE *1.4* compares the percentage of students combining study and work in 2011, according to OECD countries.

The data in **orange** indicates that the percentage of students combining study and work in Israel is very low, standing at 4% in 2011. This is a third of the OECD average, which was about 12% for the same period.

The data in **blue** indicates that the percentage of students in technological education in Israel in 2011 was 38%, which is about three-quarters of the average in the OECD. There is a wide gap between the percentage of learners in technological education and the percentage of students that combine study and work. There are two main reasons for this finding: (i) the Compulsory Education Law stipulates that all children under the age of 18 must study in the education system (which is the responsibility of parents); and (ii) students are drawn to pursue technological studies in the high-tech industry, which do not integrate work while in school. Students studying vocational technological paths are generally low academic achievers who have had difficulties in mainstream education.

FIGURE 1.4 DISTRIBUTION OF STUDENTS IN OECD COUNTRIES



Source: OECD, Education at a glance, 2013

Ministry of Economy

Vocational schools for youth

In the Ministry of Economy the education system is smaller. The students learn vocations such as mechanics, electronics, computers, administration, child care and hairdressing. Graduates earn a vocational certificate from the Ministry of Economy. Through their studies the students earn credits towards a matriculation certificate, but most of them do not earn enough credit to be eligible for the matriculation certificate at the end of their studies. Still, it is possible for them to earn enough credits to allow them to continue studying towards certification as a practical engineer or technician. Students receive a paid practical training apprenticeship for a few days a week. It should be noted that it is the Apprenticeship Law and the Youth Employment Law that grant the Ministry of Economy the authority to offer the unique combination of study and apprenticeships in the workplace. Finally, it should be emphasized that usually students studying a vocation in a school operated by the Ministry of

Economy, typically start after the Ministry of Education was unable to provide an appropriate educational solution for them.

The industrial apprenticeship system enables young people to acquire a profession while gaining experience in the modern technological world through vocational schools and training programmes that combine study and work. The vocational school programme is a four-year programme.

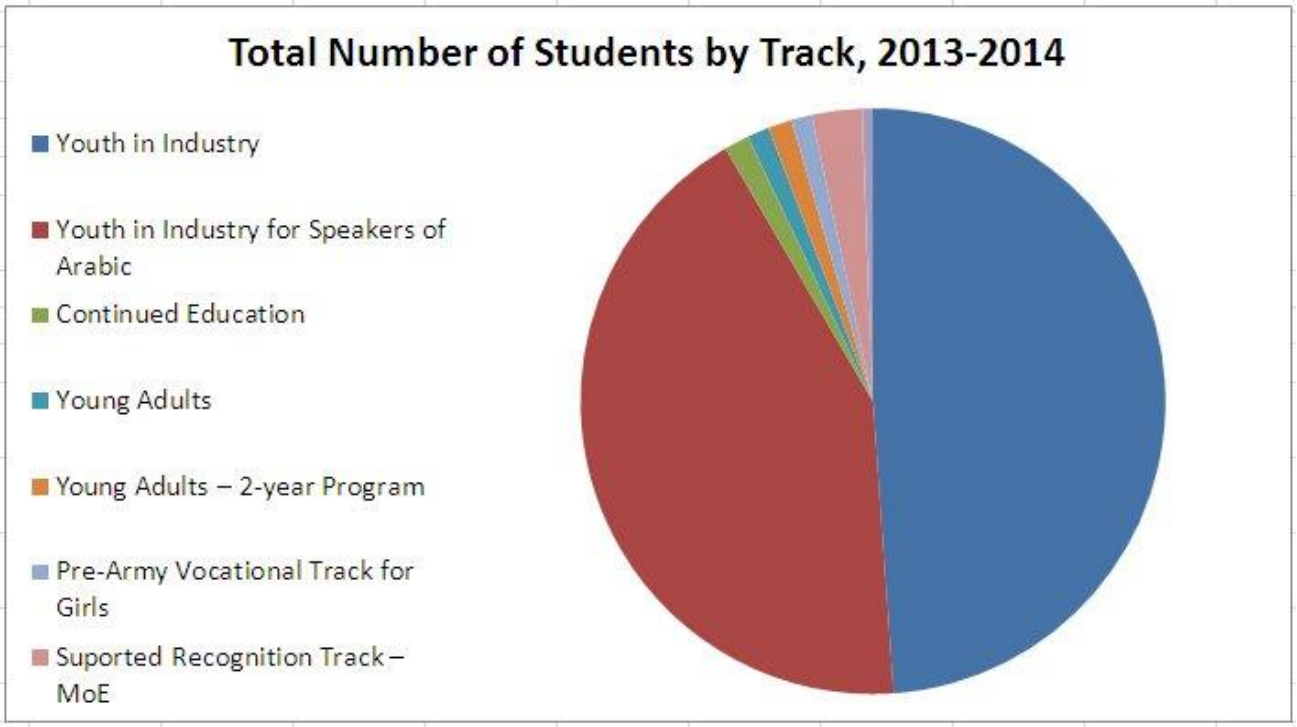
The first year is dedicated to general guidance and preparing for technological studies; the second year is devoted to professional studies; and the third and fourth years (11th and 12th grades) operate according to two alternative systems for combining study and work, with three or four school days. There are also one-year and two-year vocational training courses. In the Ministry of Economy framework of youth training, there are 60 learning tracks in 15 branches of study[15].

- **Industrial youth:** The main track combines study with practical experience through paid work (outside of school) and is designed for the Hebrew-speaking population. Students start in the apprenticeship track in grades 9 and 10.
- **Industrial youth for speakers of Arabic:** The main track combines study alongside practical experience through paid work (outside of school) for the Arabic-speaking population. Students start in the industrial track in grades 9 and 10.
- **Adolescents' track:** This programme is designed for youth who arrived in vocational education at the age of 17 and therefore study in only a one or two-year framework. Classes are held exclusively in the schools.
- **Continuing education:** This programme is designed for graduates of the 12th grade to enable them to complete a higher professional classification. It lasts one academic year.
- **IDF preparation for girls:** A special project in collaboration with the Ministry of Social Affairs for disadvantaged girls who have completed 12 years of school, but who are not deemed suitable for military service. This track provides one year of professional and general studies, after which the girls enlist in the IDF and serve in the profession studied.
- **Supported recognition track:** The Ministry of Education finances and oversees the core subjects while the Ministry of Economy finances and oversees the vocational track.
- **Special projects:** Projects in collaboration with the Ministry of Social Affairs for youth at risk.

The following were the main study tracks of the Ministry of Economy completed by students in the 2013/14 academic year, in descending order by numbers of students: auto mechanics; certified electrician; PC and network maintenance; computerised design and manufacturing; hair styling; construction framing- air conditioning and practical electricity; office management systems; and automotive electric and electronic systems.

[15] The number of young people in training programmes, by track, in 2013/14 is detailed in Appendix 1.

FIGURE 1.5 **DISTRIBUTION OF STUDENTS BY TRACK, 2013/14**



Note: youth in industry – 6 364; youth in industry for Arabic speakers – 5 560; continued education – 180; young adults – 159; young adults, two-year program – 171; pre-army vocational track for girls – 148; supported recognition track, Ministry of Education – 358; supported recognition track, youth admin – 3; special projects – 77.

1.7 CVET – vocational technological education after joining the workforce

Vocational education for 18+

The Vocational Training and Manpower Development Division of the Ministry of Economy currently operates several training programmes for adults aged 18 and over.

Courses financed by the Ministry of Economy for the unemployed

Professional training courses for the unemployed take place in a variety of frameworks, including weekday classes in training institutions, classes in factories, on-the-job training (OJT) and courses provided through personal vouchers. Funded by the government, these courses are intended for the unemployed and, in special cases, for non-professional employees who are exempt from tuition fees – except in the field of hospitality management, where education providers have been authorised to charge for tuition at rates set by the provider and according to the subjects studied.

- **Courses at training institutions – daytime studies:** Duration: four to 12 months, five days a week, depending on the profession. Completion of studies earns the student a vocational certificate in a specific subject and/or a diploma in a variety of tracks. These studies include some 300 occupations in various industries, including electrical engineering and electronics; computers; metalwork and machinery; the automotive industry; construction; administration; hospitality management; printing, photography and production; and caregiving. They provide students with technology preparatory courses and an opportunity to complete their education, as well as reinforcing their suitability for entering the labour market by acquiring work skills and developing a sense of personal empowerment.

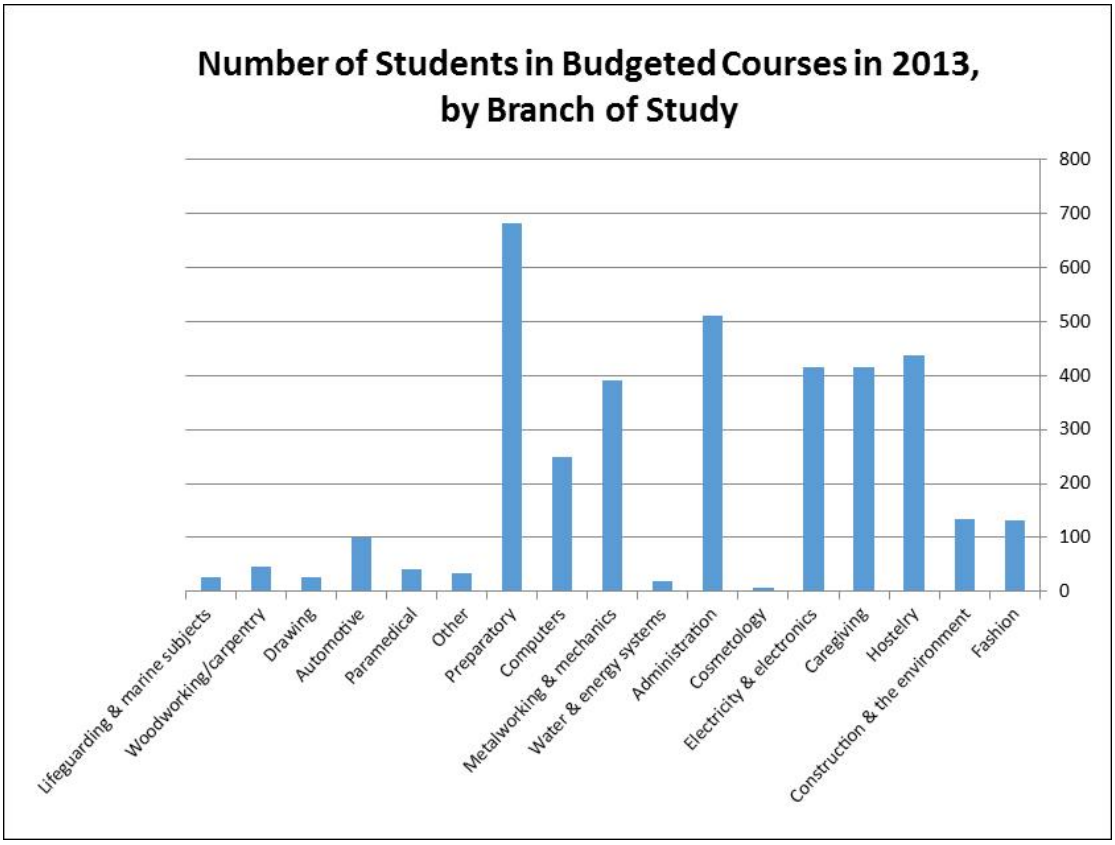
In 2014 the Ministry focused on occupations with high demand such as construction, metalworking, nursing, electrical trades, and new trades related to energy, water and natural gas. These courses are

held in five government training centres (Holon, Karmiel, Tamra, Tel Arza and Ashkelon) and are run by training providers, according to the Tenders Law, including vocational education networks, technological colleges, higher education institutions, industry enterprises, private schools and government training centres.

- **Training based on the requirements of employers:** Employers seeking to absorb new employees in areas of high demand can hold government-funded courses in one of the following frameworks.
- **Classes in the factory:** This track enables employers to open a vocational training course dedicated to a group of jobseekers in various areas, such as computing, administration, caretaking and automotive subjects (in accordance with the relevant regulations). Training is carried out on the employer's premises or at an institution recognised by the Ministry, with the practical training to be carried out by the employer.
- **On-the-job training (OJT)/internal training:** The aim of this track is to integrate people into employment during training; new employees work with an experienced professional who guides them.
- **Training through 'personal vouchers':** To promote the employability of people from different populations, the Vocational Training and Manpower Development Division operates a training track using vouchers funded by the Ministry of Economy. The voucher system is both flexible and accessible and acts as an effective tool in allowing people who require professional skills to establish themselves in the workplace to choose the appropriate vocational training course. Tuition is partially funded by the voucher. Course graduates who find employment in the studied profession receive a grant. In 2013 (the start of the programme), 1 496 vouchers were approved.

Over the years, government support for vocational training in this area has been cut back considerably excluding the more able individuals. Thus, governmental training that is funded through the Vocational Training Division covers only a very small proportion of the target population: those on long-term benefits (especially those receiving income assurance benefits), Arabs (especially women), ultra-Orthodox individuals (especially women) and people with disabilities.

FIGURE 1.6 **NUMBER OF STUDENTS IN GOVERNMENT-FUNDED COURSES BY BRANCH OF STUDY, 2013**

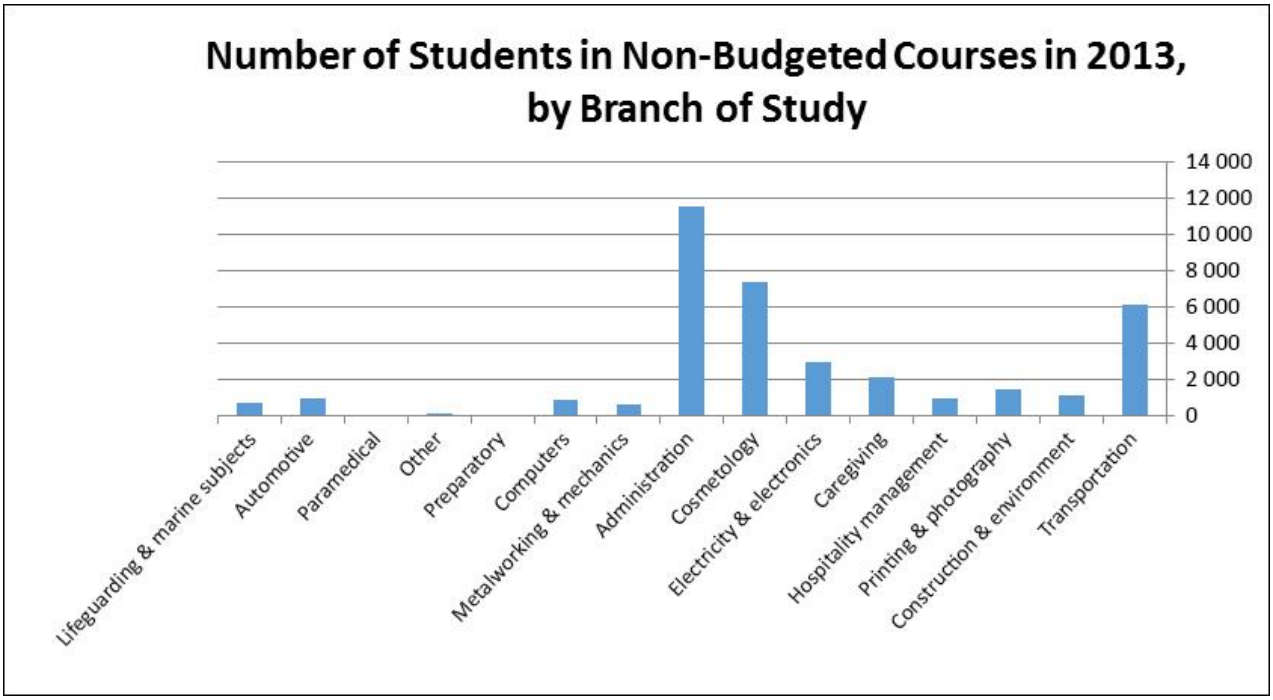


Courses under the supervision of the Ministry of Education – paid for by students

The Training Division supervises and regulates adult training in subjects classified under the School Supervision Act of 1969. These courses are intended for the general public, and individuals who want to study or learn a trade can do so at their own expense. The duration of studies varies depending on the subject matter and the curriculum, and the learner works towards the granting of a diploma, and in some professions a licence to practice or professional certificate, upon successful completion of exams.

Courses are offered in a total of 350 subjects spanning a variety of occupations in the electrical, computing, transportation, building, administration, hospitality management, and other fields. Training providers undertake to act in accordance with a commitment provided to the Division, and the training itself is carried out within the framework laid out in the Supervision Act. In 2013, 37 427 students studied in 2 484 non-funded courses under the supervision of the Training Division.

FIGURE 1.7 **NUMBER OF STUDENTS IN NON-FUNDED COURSES BY BRANCH OF STUDY, 2013**



Institutions authorised for the training of discharged soldiers

Institutions can be authorised to offer training pursuant to the Discharged Soldiers Law to utilise allocated funds. Authorisation to carry out courses is granted based on professional criteria rather than testing, including an evaluation of the physical structure, the infrastructure, teaching staff and curriculum, which is backed up by regular inspections to ensure that the training outcomes conform to those agreed to in the approval process. In 2013, 436 institutions operated courses for discharged soldiers in the framework of 2 080 course approvals.

Training for certified practical engineers and technicians

Training courses for certified practical engineers and technicians are intended for adults[16] and are conducted through NITTS. NITTS currently supervises the operation of some 73 colleges and branches across the country. Approximately 25 000 college students are studying towards the degree of practical engineer or technician. Classes are held in the morning or in combined morning/evening programmes in a variety of technologies, such as architecture and interior design, electricity, electronics, civil engineering, chemical engineering, bioengineering, software engineering, mechanics, mechatronics, refrigeration and air conditioning, film and television, media design, and industrial design.

Colleges are granted recognition each year by the NITTS Commission on Recognition based on consistent and transparent measures, including: financial stability, levels of achievement and pedagogical criteria – the quality of teaching, the pedagogical infrastructure – as well as the physical infrastructure. Recognised technological colleges are funded by NITTS according to defined criteria. Curricula are written by experts on behalf of NITTS, and updates are implemented according to the needs of the economy and industry and are mandatory for all technological colleges. The training process in the various tracks is monitored by professional consultants on behalf of NITTS, who hold professional responsibility for the training process until the receipt of a diploma. Students who do not meet the criteria for college admission are offered the possibility of taking a one-year technology preparatory course.

[16] Not in the framework of the13th–14th grades, which are supervised by the Ministry of Education

Graduates of the practical engineers and technicians course receive a practical engineering or a technician's certificate after having met the admissions requirements, passing state-wide final exams and completing a final project.

The practical engineer diploma enables graduates to continue their studies at university towards a bachelor's degree. Certified practical engineers and technicians are entitled to register in the Practical Engineers and Technicians Registry and work in the government and public sectors. Holders of certificates in the fields of architecture and interior design, civil engineering and electricity must register in the Practical Engineers and Technicians Registry as licensed practical engineers and technicians. In addition, the recognition of diplomas is part of the function of the Registry and is important for the integration of new immigrants into employment.

Ministry of Education

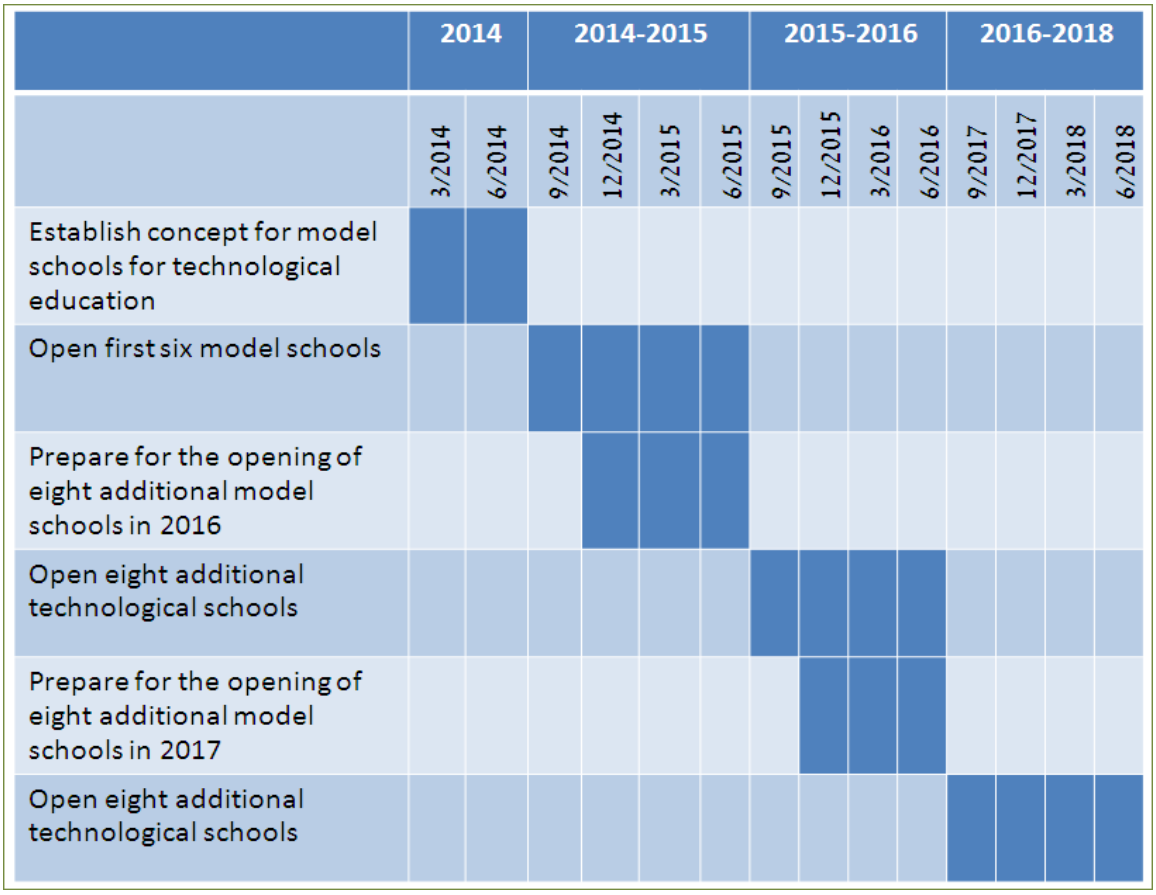
Establishing schools for service and technology professions

A new national project was launched in 2013–14 – the establishment of model technological schools for related professions, from a generic perspective. This would result in classifying particular schools for certain areas, for example defining a school for construction trades, a school for computers, a school for cinema and music, a school for electricity and electronics, and so on. Originating in the Science and Technology Administration, this new plan seeks to combine **industry**, **academia** and **technology**. Schools will serve as centres of knowledge in a given field, and act as a bridge to the world of work and industry in that area. The intention is to enhance the existing technology trends and consider a different approach to pedagogy and learning, in coordination with industry and the needs of the economy.

Initially, the pilot project will include six schools – four technological schools (which provide solutions for less able students) and two prestigious schools, which are developing different technologies within the framework of existing tracks. The model schools will provide technological and vocational education with a focus on developing broad skills and project-based learning. They will place a firm emphasis on experiential learning, on ties to the community and the world of industry and on providing a modern and welcoming environment. Additionally, existing technological education centres will be upgraded under the supervision of the Ministry of Education, and new technological education centres will be opened in order to achieve the objective of national distribution.

A timetable for the establishment of these schools is given in **TABLE 1.1**.

TABLE 1.1 TIMETABLE FOR ESTABLISHING SCHOOLS FOR SERVICE AND TECHNOLOGY PROFESSIONS



Plans include the construction of three model vocational schools each year and two new technology centres, as well as the upgrading of five technological education centres.

By the end of 2020, there will be 30 model schools for technology and service occupations and 60 new technological education centres.

Practical experience – learning and teaching through project-based learning

The structure of the curricula is undergoing reform so that from the 10th grade onwards students will gain practical experience through project-based learning.

In the 10th grade the students will carry out a project consisting of one study unit. In the 11th grade the students will carry out a project consisting of an additional two study units (preferably in industry or the community), and in 12th grade at least three units.

A project database will be set up for each track, with the projects from the 10th grade serving as a minimum threshold level for required projects. In addition, a practical training system will be set up for teachers and teacher trainers. Teachers will be trained through practical and project-based in-service training. Teachers will prepare projects themselves and will be trained to lead project-based learning in the classroom. The integration of industry and community volunteers will help teachers to promote meaningful project-based learning.

Strengthening excellence in technological and professional education

A team of excellent students will be established in each track. Such ‘first-rate’ teams will represent Israel in international competitions with the aim of broadcasting excellence in each of the tracks – in areas ranging from software engineering and electronic design to hair care and cosmetics. Emphasis will be placed on increasing the percentage of students in technological education and graduates who

complete five units of matriculation in mathematics and physics, particularly in the engineering (electronics, software engineering, mechatronics, engineering science, biotechnology) and industrial engineering tracks. In addition, 'first-rate' teams will be established in two additional tracks to represent Israel in the International Work Skills Olympics. Each year 20 additional classrooms will open to build up a reserve of scientific technology training, encouraging students to achieve excellence in engineering areas and increasing the percentage of students in these courses from the current level of about 10% to approximately 25% in 2020.

Suitable environments

In order to create new trends that will increase the percentage of students in technological education to meet the needs of the IDF and the economy, it is necessary to establish new workshops/workspaces. To meet the target growth for senior high schools, 50 new workspaces will need to be established each year. To reach the target of 10 000 students in grades 13 and 14, 30 new workspaces a year need to be funded in technological colleges. At the same time, existing tracks in the secondary school need to be adapted to changing demand. Furthermore, to keep the professional and technological education up to date and relevant, it is necessary to upgrade 300 workspaces in the high schools and another 30 post-secondary workspaces. In this way, the cycle of workspace upgrades will be completed every five years.

Acquisition of skills for the 21st century

With respect to future skills, the OECD has defined a new international assessment programme for adults (PIAC[17] testing) which will evaluate such new sets of skills as may be required in the future. These new tests, which will dictate the nature of education in the coming decades, will test some 15 skills that have become increasingly important in the 21st century, including problem solving, teamwork, analytical skills, verbal communication, influencing others, scheduling individual and group tasks, the reading of texts, the ability to think in quantitative terms, the use of the internet, and computer skills.

The accompanying recommendations seek to adapt the curriculum to the needs of the labour market and prioritise investment in 'soft resources', such as developing skills, encouraging learning in pairs, introducing more flexible systems of education, and supporting the training and incentivising of high-quality teachers. These skills relate to the third wave of change in the educational paradigm that emphasises two key concepts in the design of learning: student involvement in learning, ensuring engagement in the education process, and identifying learning challenges. The significant question today is how to make learning relevant for the student, and how to involve the student more in learning. Educational institutions today benefit from greater operational flexibility, and the teachers have a 'wider range' in the choice of curricula, which can be tailored to individual student needs. The current Minister of Education's 2014 plan for the encouragement of meaningful learning[18] engages with these issues and encourages students to engage in complex studies that combine a variety of disciplines in order to bring about a significant learning process and pave the way for the acquisition of skills that will serve them throughout the years.

Ministry of Economy

Strengthening excellence and professional empowerment

Within the framework of bilateral cooperation agreements with the German Ministry of Education, Science and Research for the exchange of information and knowledge in the field of dual-system vocational training for young people, a group of high achieving students from outstanding professional

[17] 'Educated without skills?' /www.nrg.co.il/online/16/ART2/307/426.html?hp=16&cat=1901&loc=47

[18] For details see page 7 of the *New Reform in Matriculation Examinations – meaningful learning* (Hebrew), which will be implemented in 2014.

schools of the Ministry of Economy travelled to Germany in 2013 for a three-week professional development course. The course focused on vocational schools and industrial plants of the leading companies in the field of advanced vehicle systems and autotronics. In 2014 another delegation went to Germany for professional development. This group was comprised of outstanding students in the metal industry, mechanics, and electricity and electronics, and its goals were to gain mutual familiarity of industry and education systems between Germany and Israel and to enhance the professional development of the students, by allowing them to gain practical experience in a foreign environment, improving their ability to cope with foreign and international standards, and giving them access to work internships in industry. The course thus gave students the opportunity to acquire new job skills while promoting cross-cultural understanding. At the same time, in 2013 and 2014, the Ministry hosted student delegations arriving from Germany to take part in vocational training programmes for young people in schools and factories in Israel. An additional delegation to Germany is planned for the upcoming school year.

In September, a delegation of teachers from vocational schools will go on an exchange trip for 'Qualification of Teachers and Trainers in the VET system in 2014' training. The Ministry of Economy attributes great importance to these exchanges and to cooperation with European countries that have a long tradition of managing vocational education, in terms of the opportunities these links afford for updated learning, managing change and improving the low image of vocational education in Israel.

New tracks

Following the identification of needs and technological developments over the past year, it became necessary for Vocational Training Curriculum Unit to launch new vocational tracks for young people and adults.

The new tracks included: water systems and renewable energy systems, chemical operators, unmanned aircraft operators, and community caregivers.

The Ministry is currently working on the development of a unique track for Orthodox youth, which combines religious studies and vocational studies. At the end of the track, students who pass the necessary tests will receive a certificate that will enable their vocational and social integration into the labour market, with the potential for further professional development.

Projects for vocational training for young people and adults

In recent months, under the guidance of the Deputy Director General in Charge of Employment, the Training Division and Joint Distribution Committee (JDC) have been working to update and formalise an adult education programme that includes a combination of vocational training and paid practical work. This project answers the needs of employers in cities where there is a shortage of workers and provides a solution for the unemployed and for workers who want to move forward and find professional jobs. The project is scheduled to begin operation in 2015 in a number of districts for selected study tracks.

New trends

The new trends in adapting the certified practical engineer/technician study programme to technology updates and the economy are presented below.

Mechanical engineering track – energy systems sub-track, with natural gas specialisation

The use of natural gas in the country is expected to double by 2020, and within a few years natural gas is expected to reach the whole country. The data in **TABLE 1.2**, obtained from a number of sources and government agencies dealing with the issue, define the need for a new track at NITTS: Mechanical engineering – energy systems sub-track, with natural gas specialization.

TABLE 1.2 **SKILLS ANTICIPATION FOR ENERGY SYSTEMS SUB-TRACK QUALIFICATIONS**

Forecasted potential demand	2011	2012	2013	2014	2015	2016–20	2021–25	2026–30	Total
Estimated demand – Operators	120	48	211	491	492	933	565	408	3 266
Estimated demand – Installers	40	22	113	270	26	499	413	303	1 925
Estimated demand – Inspectors	20	11	49	111	109	189	111	86	684
Total	180	80	372	872	868	1 620	1 088	796	5 875

The on-shore natural gas sector is divided into three sectors of activity: the natural gas conductor network; the natural gas distribution network; and the 'internal' network, operated by professionals trained and certified for this purpose by the Division for Vocational Training and the Ministry of Energy's natural gas and water authority. NITTS is involved in the field of natural gas in its training framework for practical engineers intended for employment within the 'internal plant': (i) certified natural gas installers; and (ii) natural gas operators, with level 1 certification. It should be noted that as of today, there is no licensing requirement for work with natural gas. The licensing requirement is expected to be reflected in new regulations. When new rules and regulations take effect, efforts will be made to require employees to be graduates of the mechanical engineering track – energy systems sub-track, with natural gas specialisation, in order to qualify.

Mechanics track – heavy equipment sub-track (construction equipment), with tunnelling expertise

The heavy equipment industry in Israel is constantly evolving and is influenced by global trends in the heavy equipment market. The 21st century has seen the increased use of tractors and bulldozers. They are currently used for the development and maintenance of national over ground and underground infrastructure (for example, quarries and roads, laying railroad tracks, tunnels and jacking pipes for water, sewerage and telecommunications), the operation and maintenance of natural gas engines for power generation, and the extraction of minerals deep in the earth. Heavy equipment is now characterised by GPS-based control and auxiliary systems, advanced forward propulsion, and a multitude of computing tools. It is estimated that in the coming year there will be a need for 1 000 to 2 000 new employees in this sector. These workers must be knowledgeable in various fields, especially mechanics, electronics and control systems, hydraulics and pneumatics, and communication. At present, a large number of foreign workers hold key positions in the heavy equipment market. Tunnelling has expanded greatly in recent years in Israel and is expected to continue to grow in the coming years. Compared with the growth in the number and complexity of the projects, there is a significant lack of professional knowledge or any curriculum in the country to train the personnel required for the job of operating and maintaining advanced tunnelling equipment. Twenty-seven tunnelling projects and 25 pipe installation projects are planned for the coming years. As part of its objectives and goals, NITTS is responsible for the training of the practical engineering personnel required by the economy. In addition to professional training based on mechanical engineering, specialised courses on heavy equipment will from an important part of the curriculum.

1.9 Summary: vision for the VET system

There is a consensus that the lack of high-quality technological-professional manpower, at all levels, can adversely impact on the competitiveness of the State of Israel. A set out in their visions, the government ministries clearly assign high priority to vocational and technological education, and their aim is to join together with leaders of technology education to significantly increase student numbers

while raising students' and employees' levels of knowledge and skills through initiating new and innovative tracks, set against the background of a worldwide employment crisis and within a broad systemic perspective that takes into account the skills needs of the future.

An increase in the number of students will serve as a mechanism for boosting productivity and economic growth. Educational mobility and skills development are the foundation for economic growth and expanding employment horizons. Since the main factor in achieving long-term economic growth is qualified human capital, that is, knowledge, education and skill sets, it is very important to invest in technological education and vocational training. To meet their goals and objectives, government ministries, in cooperation with MAI and the major technology education networks (ORT, AMAL and AMIT[19]), encourage employment and educational mobility for young people and adults through the development and operation of attractive programmes, while attending to the needs of industry and the economy, and strengthening marginalised populations. At the same time as we strive to lead innovation, we strive to impart the skills of the 21st century to young people, not only in terms of computing, but throughout all educational processes and learning that takes place in school. This can be accomplished through the transition now taking place to meaningful multi-disciplinary project-based learning. To be able to implement this change on a system-wide basis requires systemic and institutional recognition, allowing teachers to take responsibility for the process of teaching, and students for their own learning process. The Israeli nature is well suited to the development of creative, entrepreneurial, multi-disciplinary and divergent thinking, as well as learning in teams. It is time for a major change that will lead high school studies in a new direction, and the new reforms in education that are to be put into practice in the coming school year are expected to address these issues.

[19] AMIT is Israel's official schools network for religious technological secondary education. For more see http://amitchildren.org/who-we-are/our-schools/

2. EFFECTIVENESS AND EFFICIENCY IN ADDRESSING ECONOMIC AND LABOUR MARKET DEMAND

This chapter presents information on the requirements of Israel's VET labour market from an economic perspective. It looks at the industries that contribute most to Israel's GDP and employment levels, state investment in education and the employment challenges faced by the country. It also examines mechanisms for identifying labour market requirements and adapting the acquisition of skills to meet these needs, as well as the effect of VET on skills, and on the promotion of entrepreneurship in particular.

This chapter shows that the national expenditure on education in Israel is high relative to OECD countries – 7.4% of the country's GDP, despite the high percentage of young people in Israel and the relatively small percentage of the working-age population who can finance their own education. Public expenditure on education in Israel stands at 5.9%, also higher than the OECD average; however, data indicate that total public expenditure on education is relatively low, at approximately 80% (the OECD average is about 85%). Moreover, comparing the average expenditure per pupil at fixed international prices (PPP) shows that the average expenditure per student at all levels of education is lower than the average in OECD countries – 20% compared to 40% – with a particularly large gap at secondary school and higher education levels.

The heterogeneity of Israel's population is almost unprecedented in the contemporary western world. Poverty in Israel is distributed very unevenly across the population: two large groups of minorities – ultra-Orthodox Jews and Arabs – together account for roughly a quarter of Israel's population yet represent more than half the number of families living in poverty. The main factors behind such high poverty rates include very low employment participation among ultra-Orthodox men and Arab women, discrimination, cultural differences and high birth rates. Analysis of the poverty data and its distribution clearly indicate that the lack of suitable employment is one of the main contributing factors.

According to the Manufacturers Association of Israel (MAI), the current employment market is characterised by a constant demand for specialisation, requiring the continuous updating of technological and other developments. The dominant characteristics of the Israeli workplace and the industries that drive economic growth are a sophisticated and innovative industrial sector and economy, alongside a constant shortage of skilled professionals.

Today, in response to the obvious needs of Israeli society, many programmes are in place to reinforce the work of technological education professionals in Israel. In recent years, ties between MAI and the government have grown stronger in an effort to better match the various study tracks to the demands of industry and the employment market. Indeed, data on employment published by the OECD in 2014 showed that the increase in employment in Israel, at approximately 13%, was the highest of all OECD countries, and far above the OECD average of just 2% (Pilot, 2014). The data are particularly encouraging considering that in 2010 Israel had one of the lowest employment rankings, about 5 percentage points below the OECD average, an important measure that describes the number of working-age citizens who want to work, find a job and are actually employed.

2.1 National expenditure on education in Israel

Most recent OECD data show that Israel's national expenditure on education is relatively high – approximately 7.4% of the GDP compared to the average of 6.5% for OECD countries. However, this comparison should take into account that the percentage of young people in Israel is higher than that

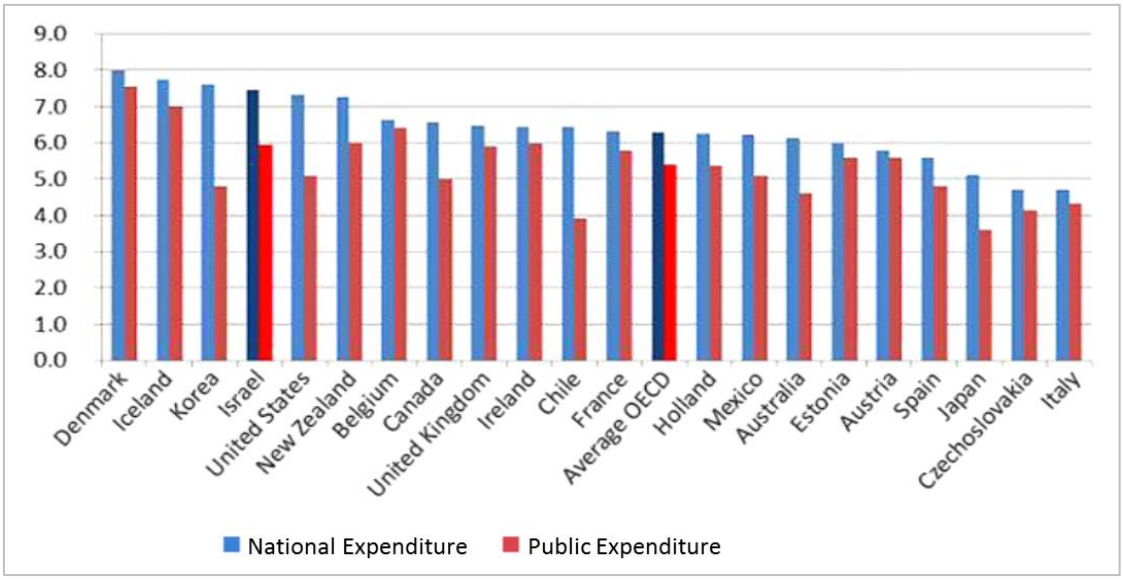
of the OECD countries. On the one hand, Israel has a relatively high percentage of students, on the other; the percentage of the working-age population who can afford education is relatively small.

National expenditure on education, including spending from pre-school to higher education, consists of public expenditure (through government ministries, local authorities and non-profit organisations, which receive most of their funding from the government) and private spending (for example, households and private organisations). According to the Central Bureau of Statistics, in 2011, national expenditure on education came to ILS 73.4 billion, representing 8.4% of the country's GDP. In 2010, national expenditure on education was ILS 66.5 billion, representing 8.2% of GDP. National expenditure per capita increased in 2011 by 3.8%, continuing its rise of 3.6% in 2010, preceded by an increase of half a percent in 2009. In 2012 the national education expenditure increased (in constant prices) by 3.6% following an increase of 5.0% in 2011.

Source: *OECD, Education at glance 2013, p. 122*

shows the rate of public and national expenditure on education relative to GDP in Israel and OECD countries in 2010. This figure shows that national expenditure on education in Israel in 2010 was high in comparison to OECD countries.

FIGURE 2.1 COMPARISON OF PUBLIC AND NATIONAL EXPENDITURE ON EDUCATION AS A PORTION OF GDP, 2010



Source: OECD, Education at glance 2013, p. 122

According to the OECD Education at glance 2013, the national expenditure on education in Israel in 2010 was about 7.4% of GDP, compared with an average of approximately 6.3% in OECD countries. Public expenditure on education in Israel in 2010 was about 5.9% of GDP, higher than the 5.4% average in OECD countries. Nevertheless, data show that the public share of expenditure on education out of the total expenditure in 2010 was approximately 79.7%, a rate lower than its weight in the OECD, which averaged 85.8%.

Comparison of average per-pupil expenditure in constant international prices (PPP) shows that the average expenditure per student at all levels of education was 20% to 40% lower than the OECD average. The gap was particularly wide in elementary and high school education: USD 12 568 in Israel versus USD18 239 for the OECD, and in pre-school education USD3 953 in Israel compared to USD 6 254 for the OECD.

The latest financial data for 2010 show that the government, local authorities, foundations and donations funded 80% of the expenditure on education, with households financing the remaining 20%[20].

The percentage of young people in the Israeli higher education system is high in comparison to OECD countries: in Israel, students comprise 22.7% of the population compared to an average of 22.1% of the population in OECD countries. In addition, the rate of growth of the student population in Israel is higher than in OECD countries: from 2010 to 2011 the number of students in Israel increased by about 5%, compared with a decline of roughly 4% in the number of students in OECD countries. The change in the number of students influenced the average expenditure per pupil on education in Israel: in 2010–11 the number of students increased by about 27%, with an increase in average expenditure per student of approximately 20% – this in comparison to an increase of 22% in OECD countries' expenditures on education, with a like increase of 22% of expenditure per student. Despite the fact that Israel's expenditure on education increased at a higher rate than other countries in the comparison study, Israel's average expenditure per student has remained low compared to OECD countries due to the sharp increase in the number of students in Israel.

Based on the 2009 data, the expenditure per student in secondary education in Israel was approximately 31.5% lower than the OECD average[21]. However, it should be noted that in recent years 2012–14 three reforms have recently been implemented in the school system. These reforms resulted in an increase in expenditure per student at all stages in the education system, some of which are not yet reflected in the detailed comparison of data above: The 'New Horizon' reform in Israel's elementary schools and the 'Courage to Change' (*Oz Le'Tmura*[22]) reform in the high schools are bringing about a gradual increase in teachers' salaries, hours of instruction and government expenditure on education. The third reform, in early childhood education, is bringing with it increased subsidies for pre-primary education and reducing parents' payments.

The relatively low average expenditure per student in Israel is influenced by several factors, including teachers' salaries, class sizes, and the number of teaching hours. **TABLE** shows these figures in Israel and in OECD countries for 2011.

Average teacher salaries, teaching hours and class size in Israel and the OECD in 2011[23]

TABLE shows that teachers' salaries and class sizes in Israel contribute to the low average spending per student in Israel compared to OECD countries. Teachers' pay in Israel is low compared to that of teachers in OECD countries: the average teacher's salary in Israel is about two-thirds of the equivalent wage in the OECD. Class sizes in Israel are higher by about 29% and 23% compared to the number of students per class in OECD countries in elementary schools and junior high schools, respectively. In contrast, the number of teaching hours in Israel is significantly high than the OECD average – approximately 19.2% in elementary schools and 6.2% in junior high schools. As noted above, teachers' wages refer to the year 2011 and do not include the full increase in wages following the 'New Horizon' reform in Israel's elementary schools and the 'Courage to Change' (*Oz Le'Tmura*) reform in the high schools.

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[20] Source: *Ministry of Education budget report, 2013–2014*, Knesset Research and Information Centre and Education at a Glance 2013: OECD Indicators © OECD 2013.
[21] *Israel's education system -an international perspective according to Education at a Glance 2013*, Ministry of Education, Economy and Budget Administration.
[22] For further details on *Oz Le'Tmura* see Chapter 4.
[23] *Ministry of Education budget report, 2013–2014*, Knesset Research and Information Centre, p. 3.

TABLE 2.1 **COMPARISON OF TEACHERS' PAY, ISRAEL AND THE OECD**

School level	Average teacher's pay Teachers' salary (annual, in USD 2011 constant prices)			Teaching hours			Number of students per class		
	Israel	OECD	Gap (%)	Israel	OECD	Gap (%)	Israel	OECD	Gap (%)
Elementary	27 174	38 136	40.3	956	802	19.2	27.3	21.2	28.8
Middle/junior high	24 997	39 934	59.8	981	924	6.2	28.7	23.3	23.2
High school	21 316	41 665	95.5						

2.2 Scope of investment in technological education

FIGURE 2.2 shows the change (in per cent) for each year compared with the previous year. Between 2000 and 2012 the number of students grew by 23.3% while the budget increased by 41%. In 2012 the budget rose by 3% compared with 2011, and the number of students increased by 2.2%.

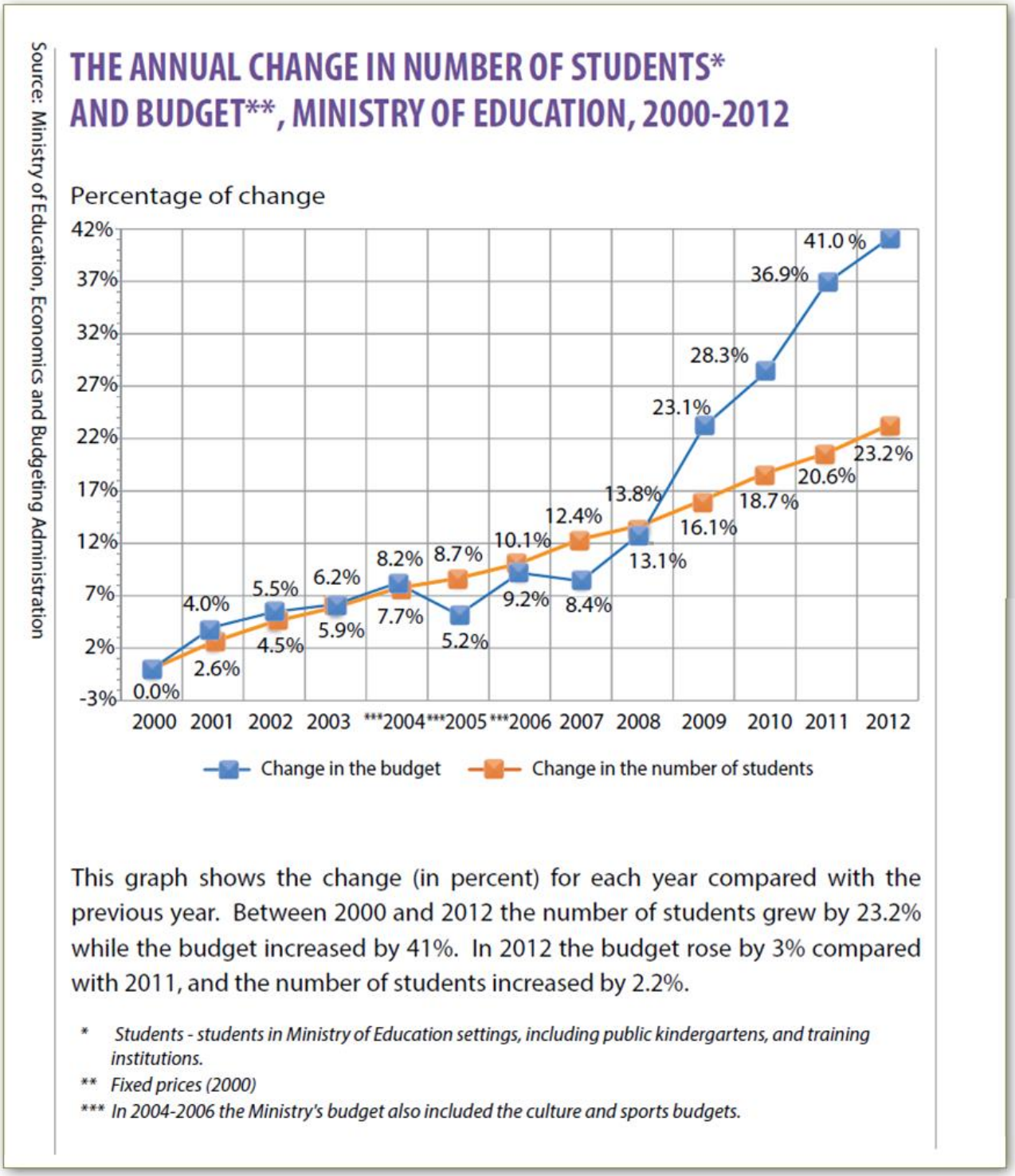
Gross domestic product (GDP) per capita, updated for 2013

Israel's GDP, in constant prices, rose 3.3% in 2013, following a 13.4% increase in 2012, and an increase of 4.6 % in 2011. It should be noted that the GDP is equal to the net value of all goods and services produced in Israel.

Central Bureau for Statistics (CBS) data show that per capita GDP in 2013 increased by 1.4% at constant prices, after rising by 1.5% in 2012, and 2.7% in 2011. Seasonally adjusted GDP growth by quarters shows that in the fourth quarter of 2013, GDP grew by 2.7% in annual terms. This followed an increase of 1.8% in the third quarter, 4.7% in the second quarter, and 2.2% in the first quarter of 2013.

The total resources available to the economy in 2013 increased by 2.4%, following an increase of 3.1% in 2012, while imports of goods and services decreased by 0.3%. Data on the use of resources points to a 3.7% increase in private consumption expenditure, 3.2% in public expenditure, 1.4% investment in fixed assets, and 0.7% in exports of goods and services. CBS data on the use of resources indicates that the real domestic income (GDP plus gains or losses from changes in the terms of foreign trade) increased by 3.6% in 2013, exceeding the increase in GDP by 0.2%, due to the profits arising from the improvement in terms of trade (export prices over import prices rose). This follows a gain of 0.9% of GDP in 2012 and a loss of 1.6% in 2011.

FIGURE 2.2 **COMPARISON OF THE MINISTRY OF EDUCATION'S BUDGET INCREASES RELATIVE TO NUMBER OF STUDENTS, BY YEAR**[24]



[24] Ministry of Education with the OECD, 2013, p. 36

2.3 Employment data

FIGURE 2.3 EMPLOYMENT AND TECHNOLOGICAL EDUCATION IN ISRAEL – COMPARISON OF PERCENTAGE OF STUDENTS IN TECHNOLOGICAL STUDIES AND PERCENTAGE OF EMPLOYEES, BY INDUSTRY[25]

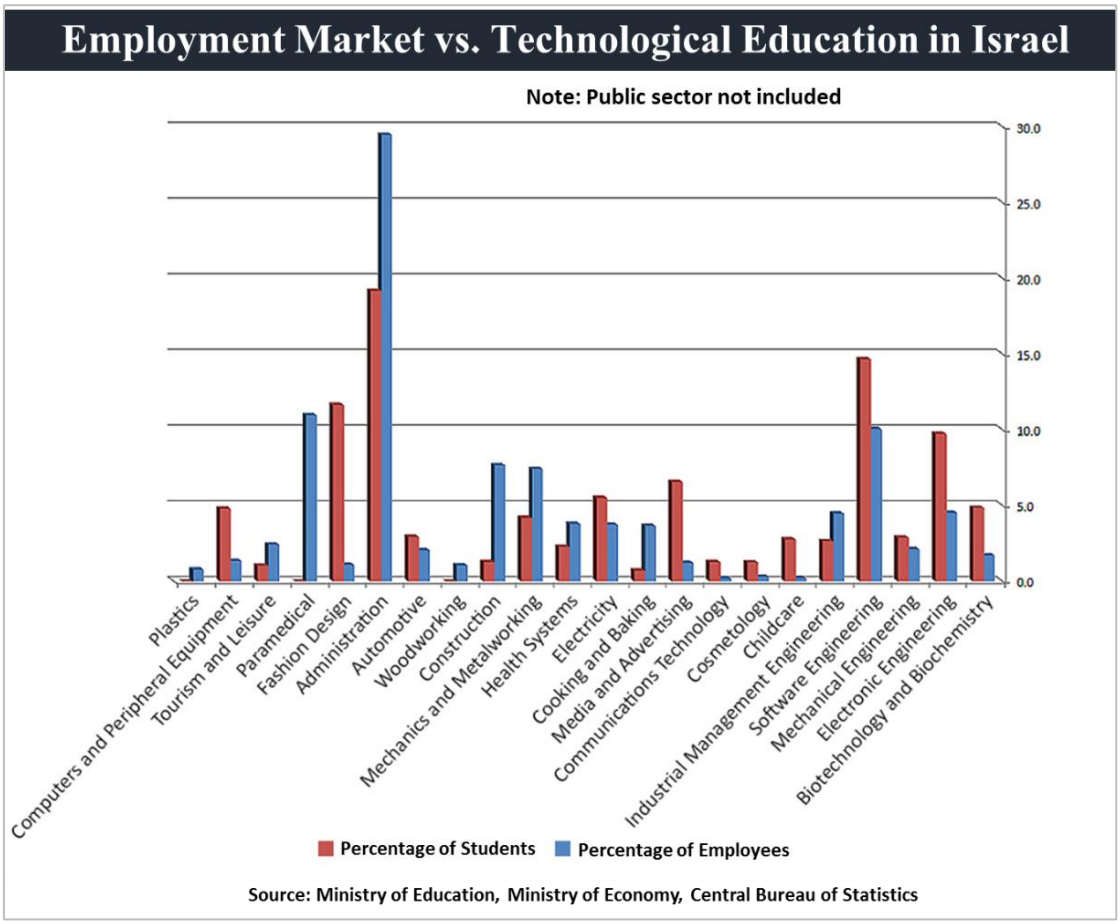


FIGURE 2.3 shows the gap between the rate of employment (market demand) and the rate of study in the different technological subject areas. There is no correlation between supply and demand. For example, in the paramedical field, the rate of employees is high while the number of students receiving training in this area is very low. It is likely that there will be a lack of skilled workers for these jobs in the future. The opposite is true with respect to advertising/media and fashion design, where the number of students is high but the number of employees is low, which might lead to a market glut in the future.

Employment rates increased from 50.5% in 1995 to 54.2% in 2011. The unemployment rate was 6.9% in 1995; it increased to 10.7% in 2003, and dropped to 5.6% in 2011. Employment trends for Jewish men in these years were similar, whereas the employment rate for Arab men dropped from 64.1% in 1995 to 56.5% in 2011.

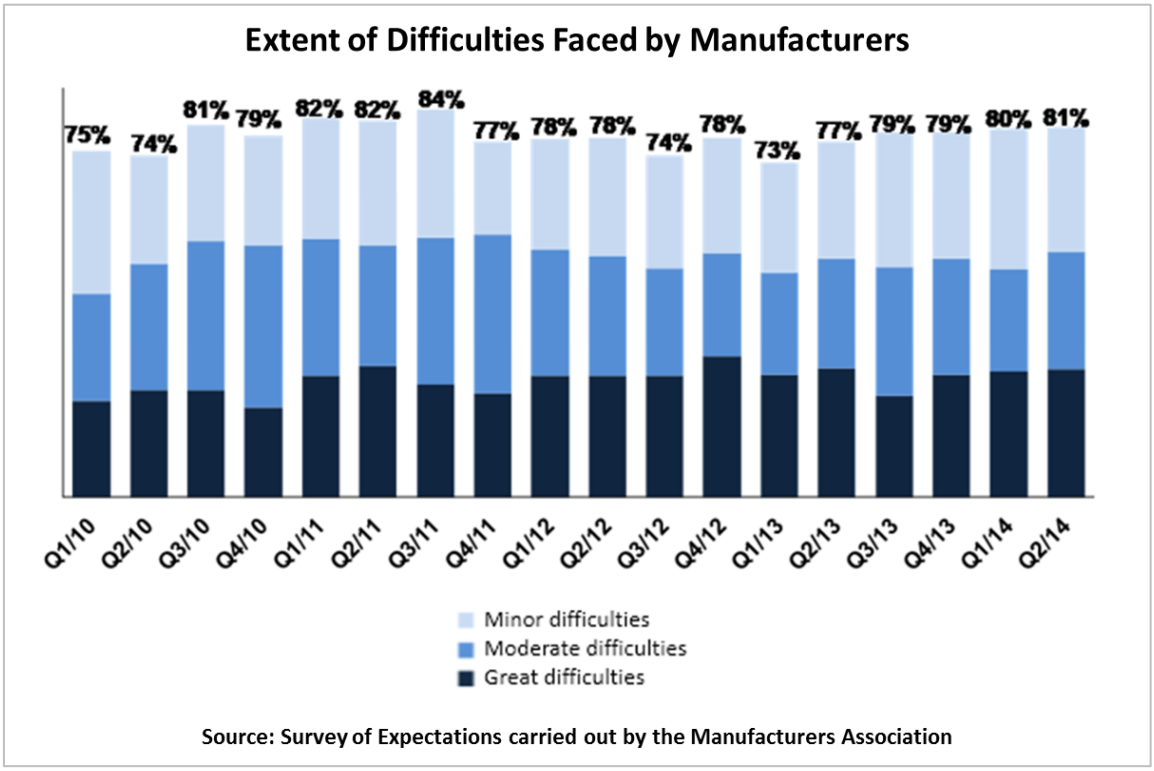
The numbers of women in the labour market has steadily increased over the years, with the highest increase observed among Jewish women: from 47.4% in 1995 to 55.6% in 2011. The employment rate among Arab women is still low compared to the rest of the population: 16.6% in 1995 compared to 20.5% in 2011. The percentage of employees in services increased from 68% in 1995 to 78% in

[25] Presentation by Ministry of Education, Science and Technology Administration.

2011. Conversely, the percentage employed in branches of industry dropped from 32% in 1995 to 22% in 2011[26].

FIGURE 2.4 shows the rate of manufacturers reporting difficulties, according to a survey conducted by the Manufacturers' Association. It is noteworthy that in the period 2010–14, 80% of industrial enterprises required professional personnel.

FIGURE 2.4 EXTENT OF DIFFICULTIES FACED BY MANUFACTURERS (BY QUARTER/YEAR)



Source: Survey of Expectations carried out by the Manufacturers Association

The data indicates that, for at least the last four years, the employment market has been characterised by constant demand for professionalisation and requires consistent updating with regard to technological and other developments. The prominent characteristics of the Israeli economy and the industry that drives the growth of the economy are sophistication and innovation – the Israeli economy is rich in technology and communications, but at the same time suffers from a growing shortage of skilled professionals.

[26] Central Bureau of Statistics (2013), *Report No 6 – The face of Israeli society: Israel where from and where to?*

FIGURE 2.5 shows the unemployment rates broken down by population group and gender for the period 1995 to 2011.

FIGURE 2.5 UNEMPLOYMENT RATES BY POPULATION GROUP AND GENDER, 1995–2011

Note: From 1995 to 2000 the group labelled Arab was defined as non-Jewish.

In 1995, 6.9% of Israel's total population was unemployed. In 2003 the unemployment rate increased to 10.7%. In 2011 the unemployment rate dropped to 5.6%. A similar trend over time was shown for both Arab and Jewish men. In contrast, among women the picture is different: Arab women are one of the most prominent groups with low participation rates in the labour market. However, there are marked fluctuations in the number of unemployed Arab women over the years, from 8.5% in 1995, up to 11.4% in 2003, followed by a gradual decrease to 5.5% in 2011[27].

[27] Central Bureau of Statistics (2013), *Report No 6 – The face of Israeli society: Israel where from and where to?*, p. 55.

TABLE 2.2 **EMPLOYMENT BY ECONOMIC SECTOR, 2010 VS 2012**

	2010		2012		Change
	No. employed (in thousands)	Percentage	No. employed (in thousands)	Percentage	Percentage
Total	2 938.2		3 359		
Agriculture	47.8	1.6	51.5	1.5	-0.1
Industry (mining and manufacturing)	416.7	14.2	425	12.6	-1.5
Electricity and water	20.3	0.7	19.4	0.6	-0.1
Construction	157.4	5.4	150	4.5	-0.9
Wholesale commerce and repairs	388.5	13.2	407	12.1	-1.1
Hospitality and dining	134.7	4.6	145	4.3	-0.3
Transportation, storage and communications	191.2	6.5	208	6.2	-0.3
Banking, insurance and other financial institutions	116.1	4.0	116	3.5	-0.5
Business services	429.2	14.6	451	13.4	-1.2
Public administration	134.6	4.6	343	10.2	5.6
Education	367.5	12.5	417	12.4	-0.1
Health and welfare services	303.7	10.3	329	9.8	-0.5
Community services, social, personal and other	147.2	5.0	162	4.8	-0.2
Services for the home, by private individuals	55.3	1.9	60.8	1.8	-0.1
Foreign organisations and entities		0.0	1.5	0.04	0.04
Unknown		0.0	73.7	2.2	2.2

Source: Central Bureau of Statistics, Statistical Abstract of Israel 2013[28]

TABLE 2.2 breaks down the percentage of those in employment by economic sectors. The absolute number of employees increased from 2.94 million to 3.36 million people – an increase of more than 14%. At the same time, new categories were added: 'Foreign organisations and entities', with 0.04%, and 'unknown' with 2.2%. According to additional data (not shown), an average of 86.2% of those in work were salaried employees. The data show that there was a decrease in the rate of employment in most industries. The sectors showing the greatest falls were Industry (-1.5%), Services (-1.2%), Wholesale commerce and repairs (-1.1%), and Construction (-0.9%). At the same time, there was a significant increase in the scope for employment in the field of public administration, which rose by 5.6%.

[28] Since 2012 the data take in all sectors of the workforce (including compulsory and commissioned military service) and are based on monthly manpower surveys.

Constant demand for professionalisation

According to the Manufacturers Association of Israel (MAI)[29], the current employment market is characterised by a constant demand for specialisation, requiring continuous updates in technological and other developments. The dominant characteristics of Israeli industry which drive economic growth are its sophistication and innovation; however, this is set alongside a constant shortage of skilled quality professionals. We are witnessing a trend towards a 'life span' of technological generations, and a workforce which faces significant changes in work processes and the requisite knowledge and skills to perform their jobs. The emergence of new professions, economic sectors and industries, such as water management or alternative energy, necessitate the development of new and updated curricula. Increasing competition in both the local and global markets, and the growth of globalisation require the acquisition of additional skills, such as knowledge of and sensitivity to cultural differences and expertise in foreign languages (English in particular), as well as more collaboration between staff members and a strengthening of the multi-disciplinary nature of product development, in cooperation with people in different positions and with varying sub-specialisations.

Increase in employment

Data from the first quarterly employment report published by the OECD in 2014 indicate that the increase in employment in Israel, approximately 13%, was the **highest of all OECD countries**, far exceeding the OECD average of around 2% (Pilot, 2014). The report compared employment rates from 2010 and the first quarter of 2014, according to seasonally adjusted data. The employment rate is defined as the ratio of the number of employees (workers) relative to the number of citizens of working age. The data also show that the employment rate is particularly high among adults (55–64%) – 10% above the OECD average. In addition, the employment rate among women in Israel is 6.5 percentage points higher than the OECD average[30]. The data are particularly encouraging considering that in 2010 Israel had one of the lowest employment rankings, about 5 percentage points below the OECD average. Employment statistics form an important parameter that describes the ratio of working-age citizens who want to work, find a job and are actually in employment.

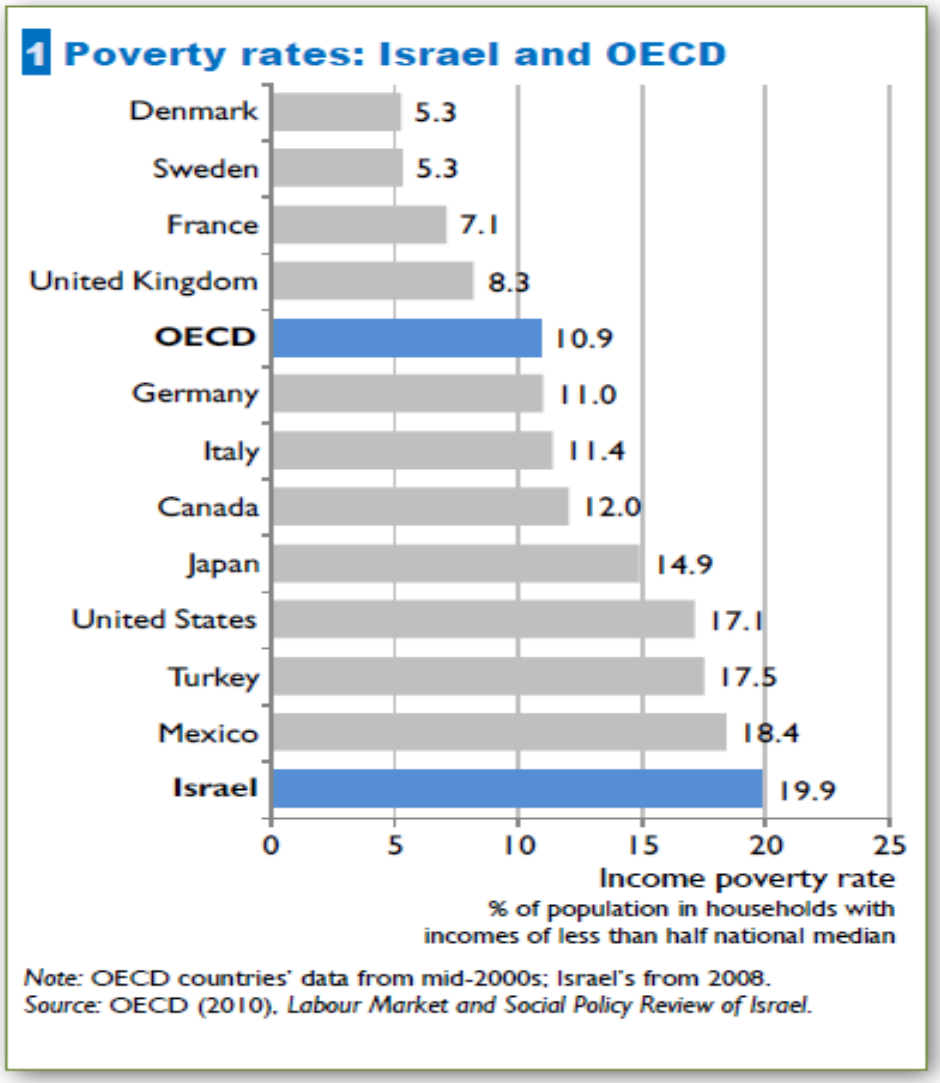
2.4 Poverty and social exclusion

In the last decade, poverty rates in Israel have been higher than in the EU, both in general and among population groups at risk of poverty: children, the elderly and women. In most EU countries, the proportion of children living in households without a breadwinner in 2011 increased compared to 2001, while in Israel, the percentage dropped from 11.6% in 2001 to 8.4% in 2011.

[29] Gil Regev, MAI Representative, July 2014.

[30] The increase in employment is due in part to changes in the measurement method used by CBS in early 2012, which could be expected to increase employment rates, e.g., by including commissioned army personnel (citizens of working age who are working). The increase is partly due to a growth in part-time jobs with lower wages, especially among women. The change also reflects the inclusion of ultra-Orthodox and Arab sectors whose employment rate has risen gradually since 2003.

FIGURE 2.6 **POVERTY RATES: ISRAEL AND OECD**



OECD (2010 report)[31] data on poverty show that:

- Some 30% of Israel's population was at risk of poverty in 2009 in comparison with 26% in 2001. The portion of the population at risk in Israel is significantly higher than for countries in the European Union.
- The rate of poverty among Israel's children was 29%, the highest of all OECD countries. The main factors contributing to this finding are the high rate of poverty among households with three or more children; there are a greater portion of such households in Israel than in OECD countries.

Israel: a divided society (OECD, 2012)

The heterogeneity of Israel's population is almost unprecedented in the contemporary western world. Poverty in Israel is distributed very unevenly across the population: two large groups of minorities – ultra-Orthodox Jews and Arabs – together account for about a quarter of Israel's population yet represents more than half of poor families. The main factors behind such high poverty rates include very low employment participation among ultra-Orthodox men and Arab women, discrimination,

[31] OECD (2013), 'Crisis squeezes income and puts pressure on inequality and poverty'. This note as well as all figures and underlying data can be downloaded at www.oecd.org/social/inequality.htm. Data from the OECD Income Distribution Database are available at http://stats.oecd.org/Index.aspx?DataSetCode=IDD

cultural differences and high birth rates. Analysis of the poverty data and its distribution clearly indicate that the lack of suitable employment is one of the main contributing factors.

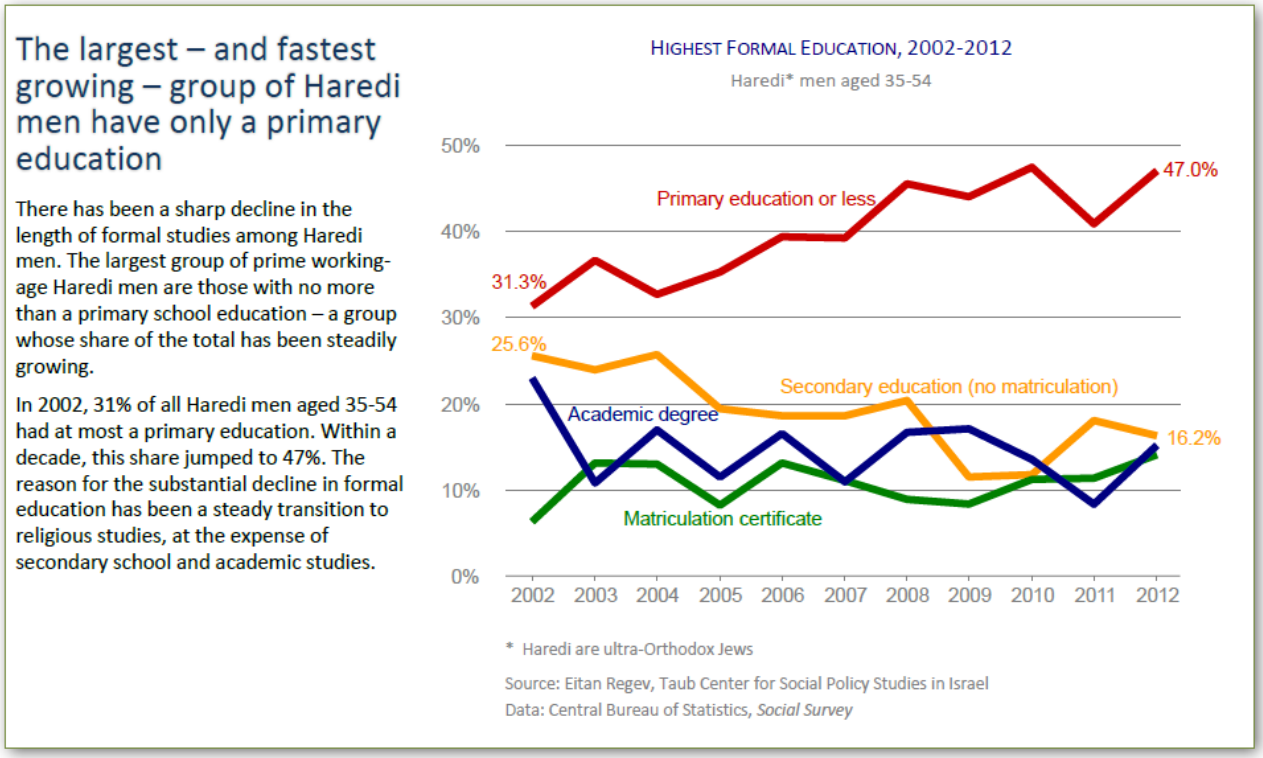
Israel has enjoyed strong economic growth for most of the past two decades. Despite the slowdown in the first decade of the century, and the global financial and economic crisis in 2008–2009, Israel's economic output has grown by at least 4% per year. However, the benefits of economic growth are spread unevenly. Poverty in Israel is more extensive than in any of the 30 OECD countries. According to OECD criteria, nearly one in five Israelis live in poverty, that is, in households with income less than half the national median. This poverty rate is nearly double the average in OECD countries, which is only 11%. Families with large numbers of children are more highly represented among the poor. This means that nearly one in three children in Israel live below the poverty line, compared with the OECD average of only 12%. There is an urgent need for policy to combat the extensive poverty in the country.

Poverty and employment

The high rate of poverty in Israel stems from the fact that many people of working age do not work. Forty per cent of Israelis aged between 15 and 64 do not work, compared with the OECD average of 33%. Sixty per cent of Arab men are employed, but only 20% of Arab women. In contrast, almost half of ultra-Orthodox women have jobs, but only one in four men. The rest of the ultra-Orthodox men are engaged in full-time Torah study. Moreover, Israel has a highly segmented labour market, where Arab and ultra-Orthodox workers usually perform low-wage jobs. Overall, the share of persons with relatively low incomes – two-thirds of the median economy – is, like Canada, Hungary, Korea, Poland, the United Kingdom and the United States, in the 20–25% range. But Arab women and ultra-Orthodox workers earn an average of about 70% of the average wage in the economy as a whole. For Arab men, this figure is only 60%.

Dynamic high-tech industry, which comprises 40% of Israel's exports, offers attractive working conditions, but provides only 7% of jobs. Blue-collar and white-collar workers in established companies or state employees also enjoy good working conditions. But the many workers outside these sectors earn low wages, have few training opportunities and minimal job security – which is especially true for low skilled jobs such agriculture, construction and tourism services.

FIGURE 2.7 **ULTRA-ORTHODOX EDUCATION LEVELS, 2002–12**



Source: Taub Centre, 'A picture of the nation', (undated), p. 22

2.5 Summary: addressing economic and labour market demand

As discussed above, the national expenditure on education in Israel is high relative to OECD countries – 7.4% of GDP – despite the high percentage of young people in Israel and the relatively low percentage of the working-age population who can finance their own education. Public expenditure on education in Israel stands at 5.9% – higher than the OECD average. However, the data show that public expenditure as a proportion of total expenditure on education is relatively low, at approximately 80% (for OECD countries this figure is about 85%). Moreover, a comparison of the average expenditure per pupil fixed at international prices (PPP) shows that the average expenditure per student at all levels of education is lower than the OECD average by 20–40%, with the gap especially high in secondary and higher education.

The heterogeneity of Israel's population is almost unprecedented in the contemporary western world. Poverty in Israel is distributed very unevenly across the population. Two large groups of minorities – ultra-Orthodox Jews and Arabs – together account for about a quarter of Israel's population, yet represent more than half of the poor families in the country. The main factors behind such high poverty rates include low employment participation among ultra-Orthodox men and Arab women, discrimination, cultural differences and high birth rates. Analysis of the poverty data and its distribution clearly indicate that the lack of suitable employment is one of the main contributing factors.

According to MAI, the current employment market is characterised by a constant demand for specialisation, requiring continuous updates in technological and other developments. The dominant characteristics of Israeli industry, and significant factors in driving economy growth, are its sophistication and innovation; but this is tempered by a constant shortage of skilled quality professionals.

Today, in response to the obvious needs of Israeli society, many programmes are in place to enhance the role of technological education professionals in Israel. In recent years, ties between MAI and the

government have grown stronger in an effort to better match the various study tracks to the demands of industry and the employment market. Indeed, data on employment published by the OECD in 2014 showed that the increase in employment in Israel, approximately 13%, was the highest of all OECD countries, far exceeding the OECD average of around 2% (Pilot, 2014). This data is particularly encouraging considering that in 2010 Israel had one of the lowest employment rankings, about 5 percentage points below the OECD average, an important measure that describes the ratio of working-age citizens who want to work, find a job, and are actually in employment work.

3. EFFECTIVENESS AND EFFICIENCY IN ADDRESSING DEMOGRAPHIC, SOCIAL AND INCLUSION DEMANDS

This chapter describes how technological-vocational education addresses social demographic challenges and discusses its effectiveness in the advancement and inclusion of unique socially disadvantaged populations.

The continued population growth in the ultra-Orthodox and Arab sectors has brought about special needs for technology education. VET has focused on these sectors, with programmes such as 'Kol Koreh' for the ultra-Orthodox sector, plans to integrate Arab girls into technology studies, programmes to encourage the Bedouin sector, and programmes for the integration of immigrants. In recent years, new courses of study have been developed for more vulnerable populations, such as the 'Integration of Students in Industry' programme – designed for at-risk youth and the 'Integrating Haredi Students in Technology Education' programme for ultra-Orthodox dropouts. In addition, tracks have been opened that meet the needs of marginalised populations such as 'Computerised communications', 'Registered nurses', and additional tracks in keeping with sectoral needs.

At the same time, there are system-wide plans for supporting these learning tracks, including the establishment of Regional Technology Centres where students engage in practical studies to complement their study of theoretical subjects in the schools. There is a trend towards integrating vocational training within the Ministry of Education, offering students, on the one hand, apprenticeship and work study options, and, on the other hand, education at a high level, consistent with the country's overall education system, so that VET students from at-risk and failing populations will become an integral part of the education system. Government ministries, in conjunction with the MAI, will contact manufacturers and encourage them to provide meaningful mentoring for students on the factory floor. In this context, the Ministry of Education is evaluating mechanisms for allocating funds directly to enterprises to finance industry mentoring, and the Ministry of Economy is considering government incentives for employers in the form of tax breaks and funding for mentors. A programme for greater connectivity between VET and the education system is under evaluation. This programme is planned for implementation in 2014–15.

Today, the Ministry of Education and the Ministry of Economy are investing resources in changing the image of scientific and technological education in Israel, as well as in the development and operation of innovative programmes for various target populations tailored to the needs of the economy and industry. To meet these goals, the Ministry of Education significantly increased the budget of the Science and Technology Administration and allocated resources to a strategic plan for strengthening technological and vocational education. Moreover, in recent years, unique study tracks within the framework of special programmes, such as the 'Technicians and Matriculation' programme and the 'Integration of Students in Industry' programme, have been set up in cooperation with the MAI and the IDF. For some tracks, professional committees have been established which include representatives from industry, the military and the education system, with the purpose of examining existing curricula and adapting them to the needs of the economy, industry and society.

This chapter details the unique solution that the Ministry of Economy provides for students who choose a vocational course and for those who have not found their place in the formal education system. The Ministry of Economy has extensive experience in catering to the needs of students who choose vocational training and a general core curriculum, combined with a paid apprenticeship in the workplace.

The apprenticeship system operated by the Ministry of Economy is similar to the educational, professional and pedagogical systems of apprenticeship and vocational training for young people that exist elsewhere in the world. The combination of study and work contributes to developing manpower reserves, in that the VET system of the Ministry of Economy provides a broad spectrum of 80 professional certifications corresponding to the professional qualifications for adults. Apprenticeship allows optimal utilisation of the two certification systems. The technological maturity gained through apprenticeships, together with the award of a trade certificate, increases employability and serves as the basis for professional development and lifelong learning. The uniqueness of the Ministry of Economy apprenticeship system lies in the practical experience that the student gains in working for an employer, which forms an integral part of the curriculum. This experience enables students to integrate professional work with their subsequent military service, to sit examinations for practical professional qualifications at the highest levels, and even to continue their studies towards technician/practical engineer certification.

3.1 Demographic survey

The State of Israel is located on the south west edge of Asia, east of the Mediterranean Sea. The area of the country is 22 072 sq. km (not including Gaza and Judea and Samaria).

The population of Israel has changed a great deal over the years. These changes were influenced by waves of immigration, birth rates, social trends, and political and other factors. From its inception until the end of 2011, Israel's population has increased nearly tenfold – from 872 700 people in 1948 to about 8 180 000 in May 2014[32]. The population includes 6 165 000 Jews (75.0% of the population), 1 694 000 thousand Arabs (20.7%), with 351 000 others (4.3%)[33].

In 2012, total population growth was 1.9%, similar to the increase in the past decade. In Israel there are 981 men for every 1,000 women. From its inception until the end of 2011, approx. 3.092 million people immigrated to Israel. 30.9% of immigrants were born in Asian and African countries, and 69.1% were born in Europe and America.

The steady increase in population brought with it an increase in population density, which reached 353 persons per sq. km (not including Judea and Samaria) in 2012, compared to 288 people per sq. km in 2000. For the purpose of comparison, in Slovenia, with an area close to that of the State of Israel, the density is 102 persons per sq. km and in Belgium, an area slightly larger than Israel, the density is 368 people per sq. km. Tel Aviv is the most densely populated area in Israel, with an average of 7 658 people per sq. km.

The Israeli population is considered relatively young compared to the population in western countries. In 2012 the percentage of children aged 0–14 in Israel was 28.2%. Israel's population is aging slowly and is still considered young in comparison to other industrialised countries. In 2012 the median age in Israel was 29.6 years. In 2000, the median age was 27.6. A comparison of genders shows a median age of 28.5 for men in 2012 and 30.6 for women. In 2011, the percentage of children under the age of 14 was 28.2%, and the percentage of adults aged 65 or older was 10.3%, compared with the OECD averages of 18.5% and 15%, respectively.

Forecast: By the end of 2035 Israel's population will reach between 10.0 and 12.8 million people, depending on various assumptions about the expected demographic changes. This growth will be moderate, with an average annual increase of 1.7% in 2015 to 1.4% in 2035, and will be accompanied by a continuous increase in the country's elderly population. The population of Israel is in the process of aging, as in most western countries. This process will continue in the future and be reflected in a gradually decreasing percentage of children aged 0-14 from 28.0% in 2010 to 25.9% in 2035,

[32] Population estimates do not include foreign workers residing in Israel.
[33] Others- including Christian non-Arabs and persons whose religion is not designated by the Ministry of Interior.

according to the medium variant). At the same time, the percentage of elderly (aged 65 and over) is expected to gradually increase (from 9.9% in 2010 to 14.6% in 2035)[34].

3.2 Targeted training

Ministry of Education

A number of core programmes have been introduced into schools to support specific populations.

- The **Scientific technological reserve of the State of Israel programme** aims to increase the proportion of outstanding students who complete their education after studying technological subjects at advanced level (electronics, robotics, software engineering and biotechnology), or two science subjects and mathematics at an advanced level. Priority is given to students in Israel's **social and geographic periphery**. The number of schools in this programme was expanded by 30% in 2013–14.

- Another priority of the programme is to bring an increased number of girls into the **Technician and Matriculation programme**. In this programme, students earn a matriculation certificate and a technician's certificate by the end of the 12th grade, focusing on subjects that are relevant to the economy and for which there is a shortage of technicians and practical engineers (electronics, mechanical and electrical engineering and computing). The programme begins in the 9th grade in fields relevant for the military and industry. It was founded on the premise that there is a severe shortage of technicians and practical engineers in fields such as the electricity industry, mechanics, and electronics. Among its advantages are that the student completes high school with both a Technician's and a high school diploma. Students can opt to continue their studies for another six months to become practical engineers. Studies focus on compulsory subjects and the technological field in which the student is specialising. Students study in small groups, and the involvement of industry and the IDF in the project is encouraged. Learning takes place in a dedicated classroom in the 9–12th grades. Students receive support and close supervision, including mentoring in the relative industry.

- In recent years, new courses of study have been developed for weaker learners, such as the **Integration of students in industry programme for youth at risk**. This programme allows students who might not be able to receive a high school diploma to acquire a trade certificate. In this programme the students leave the school once a week to go to workshops and work in factories, where they gain practical knowledge in a real technological environment. This is intended to expand their employment horizons and other post-secondary school options (such as (technician/practical engineering studies). Additional efforts include the 'Integration of ultra-Orthodox student in technology education' programme, which is intended for young Orthodox dropouts[35]; opening tracks that meet the needs of weak populations (such as computerised communications and nursing); and developing pathways that meet the needs of specific sectors (for example, Arabic-speakers, girls, the at-risk and the ultra-Orthodox populations).

- **Long-term plans** to support the above programmes include the establishment of regional technology centres. As of 2013–14, the plan to establish regional centres started to take shape in the north and south of the country. In the 2014/15 school year, a regional technology centre will open in Be'er Sheva – the capital of the Negev, with a total budget of ILS 25 million. An additional regional centre is scheduled to open in the city of Haifa, with a similar budget. These impressive

[34] Central Bureau of Statistics, *Israeli statistics abstract No 64* (2013).

[35] Update for 2013–14: this programme continues to expand. The Ministry of Education will soon appoint a dedicated director for the Ultra-Orthodox Division.

centres are equipped with the best technology. Students will learn the theoretical aspects of technology in school and put them into practice in the centres.

- **Integrating former high-tech employees in teaching technology** in schools. The purpose of this programme is to use the rare human resources of the State of Israel in schools. In order to improve the **image of technological education**, a campaign was conducted throughout the media, highlighting its contribution to expanding individual employment horizons and social welfare, while at the same time offering guidance and training to the students and their parents, and fostering learner support. In 2013–14, the campaign was expanded to encourage the take-up of technological education, and became a national and regional campaign[36]. In addition, each student and graduate of the technological education system must prepare a final project that demonstrates interdisciplinary thinking, creativity, teamwork and self-discipline. In 2013–14, projects were assessed by external examiners at both the 3 unit and 5 unit levels.

Ministry of Economy

- **Accessibility for persons with disabilities:** The Equal Rights for People with Disabilities regulations (adjustment of access to vocational training) are still in the discussion stage, so there are as yet no legal requirements. Nonetheless, the Vocational Training Division has been working for several years to integrate people with disabilities into vocational training, while providing personal and specific solutions, and teaching staff and administrative teams at vocational training centres have undergone in-service training in this area. In addition, within the framework of the Office for the Integration of Staff with Disabilities in the Labour Market, the Ministry of Economy conducts joint training for employers who wish to hire disabled persons, and offers partial funding for employers to make any necessary changes, including adjustments to the minimum wage. The Ministry also operates three support centres that help in enforcing the employment rights of people with disabilities. Moreover, the legislation makes the Ministry of Economy responsible for training those authorised to approve accessibility – four courses for Authorized Accessibility Inspectors[37] take place every year. In addition, the department runs periodic courses for authorised personnel, as required by the regulations.

- **Youth and adult students with learning disabilities**: The Training and Development Division has established a professional pedagogical infrastructure with the support of leading professionals in the field. This infrastructure meets the needs of students with learning disabilities throughout the school year and during tests. Within the framework of the didactic diagnostics centre in each school, students are evaluated and teachers receive support in adapting their teaching methods to meet the needs of the pupils.

- **Non-Jewish sector:** Following the government decision in 2012 to encourage the social integration of Arab girls, a dedicated budget was allocated for this purpose and new classes were opened in new tracks for this group of learners. The Ministry also embarked on a competitive process to open a new vocational school for Arab girls in East Jerusalem in the period 2014–15. Since 2013, 15 employment guidance centres have been set up nationwide to serve non-Jewish populations, in collaboration with JDC-Israel-TEVET: One-Stop Employment Centres (Al-Fanar).These centres aim to provide a one-stop resource for the unemployed, outside the world of work, offering guidance services, employment counselling, vocational training, guidance regarding

[36] See Appendix 5: Activities to improve image and increase enrolment, Science and Technology Administration, 2014.

[37] Within this framework regulations were written and approved for training accessibility inspectors (including written curricula and examinations), a Director of training was appointed, as well as a pedagogical Inspector, institutions were approved to carry out training, and registrars were appointed to register approved services and buildings, infrastructures and environments in accordance with the levels of accessibility specified in the law.

options for higher education, preparation for the world of work, a bridge to potential employers, appropriate job placement and ongoing support. In 2013, 6 000 people made use of these centres, and 3 100 were placed in jobs. The target is to operate 21 guidance centres throughout the country.

- **Ultra-Orthodox sector:** In the last four years, the Ministry of Economy has opened four schools for young people who have dropped out of the ultra-Orthodox yeshiva frameworks. Due to the unique characteristics of the students and the homes they come from, these schools are established as boarding schools. Studies at the school include general core subjects as well as vocational studies and religious studies. The overall framework within the boarding school aims to take a holistic approach to support all the emotional, professional and academic needs of the ultra-Orthodox student with a view to social integration.

  In addition, two **employment guidance centres** were established in the ultra-Orthodox sector in Bnei Brak and Jerusalem, in order to meet the needs for employment and vocational training. There are plans to open 12 more guidance centres in ultra-Orthodox population centres.

  The Ministry of Economy, recently announced a budget of ILS 500 million to be spread over three years, with the aim of driving a significant jump in the employment rates of ultra-Orthodox men[38]. The programme includes setting up occupational guidance centres in Orthodox communities, two of which are already active, vocational training for job seekers, and incentives for employers who employ ultra-Orthodox men for a minimum of 30 months (funding on average 25% of the salary of these workers). This programme should contribute to reducing the gap in the labour market participation rate between the general population and the ultra-Orthodox sector.

- **Ethiopian sector:** This population is characterised by high employment rates and low wages. In 2014-15 the establishment of nine guidance centres will begin, which will operate on the existing infrastructure. Participation of about 4 000 people is expected over a four-year period. These centres will later collaborate with the 'Immigrants Together' programme in the placement of **Ethiopian academics** in positions appropriate to their education and skills.

3.3 Social and demographic factors that shape the need for vet[39]

Growing ultra-Orthodox and Arab populations require special preparation for technology education. VET is placing emphasis on these sectors, with programmes such 'Kol Koreh' for the ultra-Orthodox sector, five-year plans to integrate Arab girls into vocational technology courses, initiatives to encourage the Bedouin sector, and the formulation of plans for the integration of immigrants – a population that usually comes from the former communist countries, and often has a VET orientation, but require help in adapting to the language and industry of Israel.

Responding to the individual requirements and personal aspirations of learners: access, participation and development

Students in Israel want to acquire professions with academic horizons, based on advanced technology, relevant to their life and to the world of media usage, such as cell phones, computers and other devices. Therefore, the curricula for the low-tech occupations and VET also need to be adapted, so that they are based on advanced technologies and conveyed in an innovative way. Educational provision should be structured in such a way that some students are guided towards academia, while others accumulate academic credits in stages – initially as technicians and practical engineers, and after their military service going on to complete bachelors' degrees at colleges and universities.

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[38] 'Ultra-Orthodox graduate of 8200 unit won't find work', *The Marker*, August 2014.

[39] Interview with Dr Ronit Ashkenazy, Deputy-Director General, Head of the Pedagogical Division, AMAL Network.

Update for 2014–15: There is a trend toward integrating vocational training within the Ministry of Education to give students, on the one hand, access to apprenticeships and OJT, and, on the other hand, a high-level education consistent with the overall education system in the country. In this way VET will be seen as not only for dropouts and students who have trouble fitting into conventional education provision, but will become an integral part of the education system. The Ministries of Education and Economy, together with the Manufacturers Association of Israel, will contact manufacturers and encourage them to provide meaningful mentoring for students in the workplace. At the same time, the Ministry of Economy will continue to integrate students into training frameworks that combine theoretical education with paid work in factories, while also providing training and support for the mentors within the factories, giving them the tools for dealing with youth apprentices.

Factory owners say they prefer to give professional training to demobilised soldiers instead of students in the educational system. This is because there is a gap of about five years from the date of graduation and the students' effective entrance into the labour market, and there is no guarantee that students will return to the factory at that time. This is in contrast to the situation in Europe, where students remains in the same plant where they received their professional training.

The Ministry of Education is considering a mechanism whereby government funding would be made directly to factories to support industry mentors. There is also a plan to strength the ties between VET and the education system, which is planned for implementation in 2014–15. The Ministry of Economy is considering potential government incentives for employers in the form of tax breaks and participation in the payment of mentors.

3.4 Socioeconomic demand and integration

The Ministries of Education and Economy are devoting considerable resources to the development of technological education, particularly in Israel's periphery. Every reform that takes place begins in the geographic periphery, in the north and the south of the country. For example, the national ICT plan, which is a lever for the integration of young people from the periphery and disadvantaged populations into industry and advanced technologies, began in the northern and southern districts. ICT tools were provided and large-scale teacher training was carried out to prepare for innovative learning based on advanced technology. There has been a significant increase in the number of ultra-Orthodox employees entering the labour market in this sector following their inclusion in the VET system.

The Ministry of Education and the Ministry of Economy have opened new schools or extensions within existing schools, with learning tracks for ultra-Orthodox boys and girls. These tracks combine religious studies with vocational studies. As a result, ultra-Orthodox students are being integrated into fields such as ICT, auto mechanics and the electricity industry. Ultra-Orthodox girls study a variety of subjects in areas such as design and cosmetics, computer maintenance, graphics and multi-media. Some of the girls have found placements in factories and software companies, which even allow work from home, and are suitable for special groups.

Regarding the Arab sector, thus far, talented Arab girls have studied scientific subjects, leading to their entry into the labour market as teachers only. Beginning in 2012, with the introduction of new programmes, girls have been encouraged to take more practical subjects with wider employment horizons: the Technicians and Matriculation programme, and the electricity, nursing and computerized communications tracks, for example. Following a government decision, the Ministry of Economy opened two new classes in the last two years to train Arab girls in a variety of subjects. A new vocational school opened in November 2014 in East Jerusalem for Arab girls. In general, technological and vocational centres in industrial schools in the Arab sector are thriving and demand is high. Students in the Arab sector most often choose to study in the VET system.

3.5 Activities and evaluation of progress since 2010

The government has launched the New Horizon reform to address some of the issues in the education and training system and to break the correlation between the socioeconomic status of students entering the system and their potential socioeconomic status after graduation. This active government-led reform to put vocational education and training on a statutory basis through legislation is supported by the social partners – both employers and unions – who are both well organised and keen to engage more fully in the vocational education and training system.

These reform programmes contribute to the employment goals in line with government policy and future plans for innovation, change and entrepreneurship. It is apparent that the visions of both the Ministry of Education and the Ministry of Economy assign high priority to technological and vocational education. These two ministries join with leading technology education professionals to pursue the goals of significantly increasing students numbers and raising the knowledge and skills levels of students and employees, within the context of worldwide trends, innovation and the underlying employment crisis, while taking a broad systemic perspective that acknowledges the skills that will be required in future.

The key areas which the reform package focuses on are: a paradigm shift in teaching and learning; the impact of information and communications technology (ICT) and the knowledge economy; teacher professional development and teacher training, with teachers acting as facilitators rather than instructors; shifting power from central authorities (central office, districts and local education authorities) to the school level, towards school empowerment and school-based management; and internal and external quality control. Such initiatives are based on ongoing research and impact assessments, coupled with learning from peers.

Based on the above and the analysis of this report, we would assess the progress towards effective, multi-level participation in VET management and policy making since 2010 as follows:

- **Policy, Score 5:** The government invests extensive thought and resources to meet the needs of both sectors identified as requiring a solution – the Arab and ultra-Orthodox communities – and national programmes have been established for that purpose.
- **Policy implementation, Score 4:** Processes for the development of vocational education among both Arabs and the ultra-Orthodox require a stronger connection with industry.
- **Effectiveness of outcomes:** It would be premature to rate this on a numbered scale. The learning process covers three to four years in high school. We are only now seeing the first signs of integration of these populations into the labour force and the economy.
- **Demographic level:** the Ministries of Education and Economy and other organizations put a lot of effort and money to advance the Arab and the ultra-Orthodox students and bridge the gap between the different communities in the Israeli society. Yet there more to be done with employability of Arab women and Haredim men, and there is an ongoing work.
- **Integrated level:** Making vocational training an integral part of the general education system will help improve its image and consequently contribute to the inclusion of vulnerable populations into both study and the world of work.

The Technical and Vocational Education and Training National Committee (TVET National Committee) was founded in 2010, including representatives from the Ministry of Education, Ministry of Economy, the ORT and AMAL educational networks, MAI, the Federation of Labour, Ta'asiyeda. Working within the framework of the EU GEMM (Governance and Employment) project, it has pioneered five schools in the south, with the aim of mapping technological education to industry needs. It was decided that

the project would start in the south and focus on the mapping of factories and schools in order to evaluate the match between courses of study, content and graduate skills to the needs of the economy and industry in the region. The main theme is 'Skills of the Adult for the Future and their integration in the curricula, in correlation with the needs of the labour market'. The GEMM project aims to create a mechanism that will involve all relevant parties with regard to the employment of young people and their integration into the labour market. The main objective is the creation of a graduate who has skills, flexibility and entrepreneurial ability, and who in the future could 'create' a job for him or herself. The project also deals with aspects of the quality control process and deliverables.

3.6 Summary: addressing demographic, social and inclusion demand

The Ministries of Education and Economy are currently investing in changing the image of scientific-technological education in Israel while also focusing on the development and operation of innovative programmes tailored to the needs of the economy and industry and of specific population groups (for example, ultra-Orthodox and Arab communities and girls). To meet its goals, the Ministry of Education has increased the budget of the Science and Technology Administration and directed substantial resources to the strategic plan for strengthening technological and vocational education (see Appendix 4).

In addition, in recent years, the selection of study subjects within the framework of special programmes, such as the Technicians and Matriculation initiative and the plan for integrating students in industry, has been made in cooperation with MAI and the IDF. Professional committees usually include representatives from industry, the military and the education system. The purpose of these committees is to examine the curricula and adapt them to the current needs of the economy, industry and society.

The Ministry of Economy has invested in vocational curricula to cater for students who have chosen advanced vocational study tracks while experiencing the world of work. In preparation for the upcoming school year, the Ministry of Economy, in cooperation with JDC Israel, developed a special programme to strengthen and empower the graduates of vocational schools under its supervision, and to encourage them to continue their studies towards technician or practical engineer certification at the end of the 12th grade, prior to their military service. This is all part of the Ministries' efforts to adapt the content and tracks in vocational training to the current and future needs of the labour market.

Nevertheless, cultural barriers make it difficult for populations with low labour participation rates and a high incidence of poverty to access vocational training. At the same time, government support for vocational training in the general population has been greatly reduced. Therefore, the government-funded training carried out through the Senior Division for Training at the Ministry of Economy can only focus on a portion of the target population: long-term benefit recipients (particularly recipients of income supplements), the Arab sector, with an emphasis on Arab women, the ultra-Orthodox community, with emphasis on orthodox women, as well as students with disabilities and special needs.

4. INTERNAL EFFICIENCY OF THE VET SYSTEM

This chapter begins with an overview of quality assurance mechanisms and policies, and continues to examine a range of key areas of policy intervention in VET, such as educators and administrators, teaching and learning, and the effectiveness and efficiency of resource use.

Quality is identified as the ability of the education system to give students the best preparation for their employment as adults while responding to the needs of the economy and society The part of the system that concerns standard setting and quality assurance remains highly centralised and operates through the processes and procedures described earlier: national examinations and assessment, curriculum and inspection. A notable gap in effective quality assurance provision for TVET is the lack of a useful system for making labour market information available to education and training planners. Data are collected on the labour market including data on job vacancies and Israel participates, for example, in the international labour market survey. However, although some of this data are used for local or sectoral purposes, there is no formal national mechanism for processing the labour market data to make it accessible to policy makers for the purposes of planning and resourcing education and training.

According to the Ministry of Education, the quality of technological-vocational education refers to the ability of the education system to give students the best preparation for their adult working life while meeting the needs of the economy and society. In addition, quality is determined by the number of different disciplines provided to the student over the years of study. Each student has to complete a final project that incorporates all areas of knowledge learned. Science and technology subjects are taught continuously (and are compulsory) from kindergarten to the end of junior high school.

According to the Ministry of Economy, the quality of vocational education is defined as the applied-practical skills that the student achieves in their studied profession. These skills are determined and updated in relation to the needs of the economy and the employer. The student studies the academic core curriculum while gaining job skills and actual work experience in an apprenticeship position within the relevant industry sector. After graduation and completion of their practical and theoretical examinations, students are eligible for a vocational certificate and a certificate of completion. This track combines theoretical and practical studies alongside paid work experience and relevant experience, and contributes to the integration of the vocational education graduate into the Israeli employment market and economy. Graduates of the system are given the opportunity to advance professionally and to continue their studies towards attaining technician or practical engineering certificates before beginning their military service.

Technological-vocational education networks are the bodies that own and operate the schools in their areas. All the schools – whether run by municipalities, local authorities or private associations – are supervised by the Ministry of Education or the Ministry of Economy. For its part, the Ministry of Education is working to set quality standards for science and technology in schools under its jurisdiction by determining a programme curriculum for all students in the State of Israel, and by having national tests (uniform evaluation). For every course, the use of textbooks by content providers is allowed only with the approval of the Ministry of Education. At the same time, the Ministry of Education is exploring innovative programmes for project-based learning based on alternative forms of assessment. The Ministry of Education requires that teachers have university degrees, with a teaching certificate and a teaching licence, and teachers must commit to taking part in training courses and updating their knowledge. However, due to a shortage of teachers in high-tech professions, teachers with engineering diplomas are also being employed.

The Ministry of Economy has an autonomous pedagogical system that builds and updates curricula in vocational studies from a broader perspective, including programmes of study to acquire a profession and which lead to certification for young people (aged 15–18) and adults (aged 18 and over), in addition to providing training for practical engineers and technicians. A broad vision meets the needs of different age groups and enables the construction of a hierarchy of professional advancement, personal progress, and career development in term of salary throughout the employee's working life. Each student[40] must pass practical and theoretical exams in the subjects being studied as well as successfully negotiating the educational institution's internal testing system, and sometimes they must even submit a final project. These all constitute requirements for a vocational certificate or a government-issued professional certificate, which in some areas are prerequisites for obtaining a licence or authorisation to practice the profession.

Today, the Ministry of Education, Ministry of Economy, and the Manufacturers Association of Israel are working together to increase the involvement of employers in determining the knowledge and skills required of graduates of vocational and technological education. There are professional committees and research projects that address questions of economic and industrial development, human resource requirements, the knowledge, skills and professions which are currently in demand, and the need to develop or upgrade study tracks in line with forecast demand. The needs of the economy and industry in the vicinity of the school are taken into consideration in determining the curricula. Courses are opened or closed in line with a system-wide view of the Israeli economy.

The policies for improving quality and efficiency and setting priorities are updated according to changes both in Israel and in the world market. On average, within the context of continual change and evaluation in each field of study, new ways of thinking lead to reform every decade.

The effects on technological education in Israel will become clearer in the coming years, with the gradual introduction of reforms at all high school grade levels.

4.1 Quality assurance

Mechanisms for ensuring quality at the system level and education providers level

Planning: At the national level, the Science and Technology Administration has its goals and detailed plans. Curricula are designed according to goals and objectives, with specific projects established to achieve these goals, such as the 'Technician and Matriculation' programme, the 'Leap into Industry' project and the scientific-technological reserve initiative. At the regional level, each Ministry of Education district office creates a work plan, from which the plans for schools are derived. With regard to technological education, there is some overlap between regional and national plans, with greater responsibility for implementation placed on the regional level. On the local level, each school creates a detailed annual work plan, which includes goals, measurable objectives and implementation phases. Within the framework of the school work plan, all subjects are addressed, including technological subjects.

Every year the Vocational Training Division of the Ministry of Economy publishes a binder of the plans for Youth and Adult programmes, including all the latest tracks intended for young people and adults in meeting the needs of the market and the relevant populations. The emphasis in youth programmes derives from the annual goals of the Ministry of Economy, such as addressing special populations and populations from the periphery, and allocating resources to new learning issues.

[40] Regardless of whether the student is in the youth apprenticeship programme or an adult training programme.

Representatives of industry and the IDF, employers, professional committees, representatives of school systems, principals, subject matter coordinators and teachers participate in the planning process.

Implementation: The Ministry of Education, through supervisors and trainers, checks the implementation of each project and programme, in collaboration with other stakeholders. For example, the steering committee of each project, such as the 'Technician and Matriculation' programme, includes an MAI representative. These steering committees also include representatives of the large technological networks (ORT and AMAL), education settlement organisation representatives and, sometimes, local government representatives.

The Ministry of Economy implementation processes are led by four central subject matter supervisors, district team coordinators, inspectors and teacher trainers. The process includes system-wide brainstorming sessions with pedagogical representatives from the fields of study, supervisors and inspectors, local representatives, school system officials, the IDF and other government partners.

Assessment: The National Authority for Measurement and Evaluation in Education (NAMEE) is the leading professional body in the field of assessment and evaluation of the education system. NAMEE is engaged in the construction and implementation of assessment and measurement tools throughout the system, including administration of the '*Meitzav*'[41] achievement tests, pedagogical climate questionnaires, international tests and evaluation of national educational projects. Achievement tests and questionnaires address educational activities and operations in order to improve them.

NAMEE operates as a professional, objective and independent body, serving all parties within the education system and beyond. To ensure that NAMEE can fulfil its mission, it was established as an independent inter-governmental authority, with the status of an enhanced support unit at the Ministry of Education, reporting directly to the Minister of Education. In the future NAMEE operations should be anchored in law. Furthermore, matriculation exams are still the main assessment factor; students take matriculation exams in each technological subject studied to measure the knowledge acquired in that field. In some subjects there are also certification exams. The bodies involved in the evaluation of students in technological/vocational education include: NAMEE, the Examinations Division, subject matter supervisors, oral examiners and project evaluators.

In the Ministry of Economy, evaluation is carried out by the Testing Unit which examines each graduate's theoretical knowledge and practical skills as a condition for the award of a vocational certificate. At the same time, there are various other evaluation processes, including feedback and monitoring using different units of measurement, pedagogical evaluation and monitoring based on different measures of success, broken down according to cross-sections of districts, industries, tracks, schools and educational networks. The bodies involved in the evaluation of students in vocational education at the Ministry of Economy include: the Testing Unit, the Measurement and Evaluation Unit, test evaluators and final project evaluators.

Quality assurance is carried out in the Ministry of Education by professional inspectors, and includes overall school supervision, plus the examination and evaluation process carried out at the end of each school year. The process also includes '*Meitzav*' testing, internal midterms and final exams, and, at the end of high school, the matriculation exams and vocational testing. The Ministry of Economy runs a central and district-level system of pedagogical supervision to monitor the training of young people and adults under its jurisdiction. Within this framework, the vocational supervisory body is responsible for approving educational institutions as well as providing recognition, approving teachers and supervising the training process.

[41] A nationwide achievement test for fifth- and eighth-graders examinations.

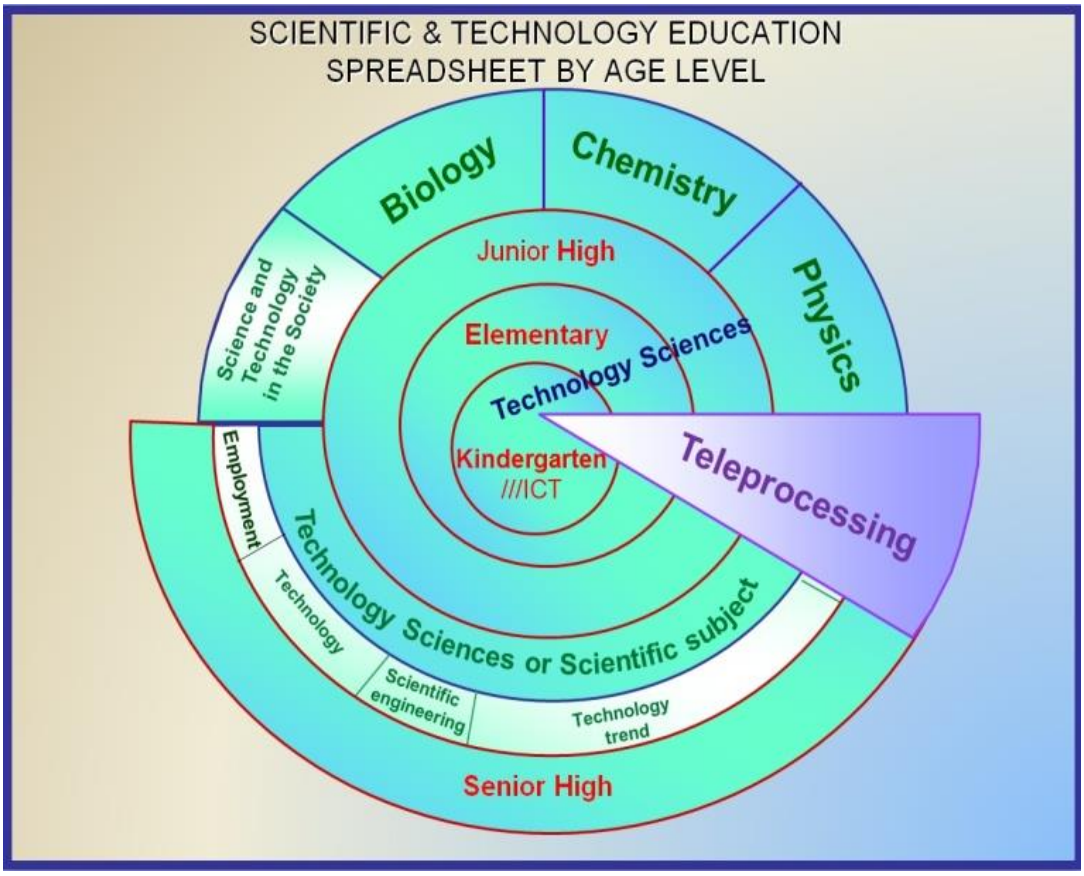
Conclusions: Each reform in the education system is evaluated as it is implemented and then adjusted at the end of each school year. After 10 years, the programme is re-examined and a new reform is formulated. For example, after being tried in the field, the 'Technician and Matriculation' programme received additional hours and the participating schools were changed.

Quality of technological-vocational education – baseline and follow up

According to the Ministry of Education, the quality of vocational-technological education is defined by its ability to give students the best possible preparation for their working life as adults while meeting the needs of the economy and society. It is also measured in relation to the number of different fields of knowledge imparted to the students during their studies. Every student must complete a final project that combines all the fields of knowledge studied. Science and technology are studied on a continuum from kindergarten to the end of junior high school (mandatory studies). Under Ministry of Economy regulations, each student is required to pass theoretical and practical examinations and must also often complete a final project in order to receive their vocational diploma or certification upon graduation.

Given the aspiration to increase the number of students who complete their technological education and are entitled to a matriculation certificate, it was decided to extend the modularity principle that allows each student to accumulate study units in every field of knowledge (from one to five study units) according to personal choice and ability[42]. In addition, students in the technology track who are having difficulty in completing a matriculation certificate can earn a technology certificate that demonstrates their basic knowledge in the field of study. This certificate also allows them to continue their studies with a view to attaining the technician/practical engineer diploma.

FIGURE 4.1 STUDY CONTINUUM – TECHNOLOGICAL EDUCATION



Source: Ministry of Education, Science and Technology Division.

[42] See Appendix 7 – Reform of the structure of study tracks and subject area specialisations.

Starting from high school, technological courses are elective courses. Schools offer a range of tracks and the students choose based on their preferences and their capabilities.

In each track the student must study three different subjects from the 10th to the 12th grade:

- a science (physics, chemistry, biology or science of technology);
- their main vocational/professional subject';
- a field of specialisation.

TABLE 4.1 STRUCTURE OF TECHNOLOGICAL EDUCATION IN THE HIGH SCHOOL

<table>
<tr><td rowspan="3">Option A</td><td colspan="3">Scientific-Technological Thinking 1 unit</td><td>Basics</td><td rowspan="3">Technological Science, Chemistry, Physics, Biology</td></tr>
<tr><td>A. Engineering & Development Systems</td><td>B. Information Systems and Computerised Communications</td><td>C. Economic Systems and Entrepreneurship</td><td rowspan="2"></td></tr>
<tr><td>A. Engineering, Planning & Control</td><td>B. Information Intensive Systems</td><td>C. Industrial Management Systems</td></tr>
<tr><td>Option B</td><td>• Energy and Control Systems
• Mechanical Engineering
• Computerized Manufacturing Systems
• Technological Science
• Electronic and Computer Engineering</td><td>• Biotechnology
• Mechanical Engineering
• Communications Technology
• Computerised Communications Technology
• Control System
• Media and Advertising</td><td>• Business Administration
• Industrial Management Engineering
• Hostelry
• Tourism and Leisure
• Health Systems
• Education
• Construction Engineering & Architecture
• Industrial Design</td><td>Intros
2 units
1 - 5 units</td><td>Trend/Stream</td></tr>
<tr><td>Option C</td><td colspan="3">Studies towards technological diploma or certification; acceptance requirements for post-secondary studies</td><td>1 - 5 units</td><td>Specialization</td></tr>
</table>

Source: Science and Technology Administration, Ministry of Education

Barriers preventing technological vocational education graduates from continuing their education at higher levels

Students may enrol in technician or practical engineer studies if they meet the prerequisites for these courses. The Ministry of Education's admission requirement for these tracks is 14 study units, as follows: seven study units that include three units in mathematics and three in English language; and seven study units for a technological certificate that include three mandatory units in a leading subject. However, this condition forms an obstacle as quite a few students struggle with completing seven theoretical study units. Nonetheless, those who complete their practical engineering studies with a grade of 80% can go on to pursue an academic qualification, provided they hold a full matriculation certificate.

The Ministry of Economy's prerequisites for adults for the technician or practical engineer track is as follows: full matriculation certificate, or partial matriculation certificate with a passing grade in the matriculation examinations certified by the Ministry of Education in mathematics and English (at a level

of at least three units) and in the Hebrew subjects. Students who have studied abroad will be accepted based on confirmation from the Ministry of Education Unit for Certificate Evaluation, following the presentation of documents attesting to the equivalent of a matriculation-level education or post-secondary education, and showing acceptance to higher education in the country of origin, or approval of the Unit for Degree Evaluation with documents equivalent to a bachelor's degree. Students over the age of 35 at the start of their studies are exempt from admission requirements for practical engineering studies. Students over the age of 30 at the start of studies are exempt from admission requirements when continuing their studies towards a bachelor's degree.

With regard to the recognition of the practical engineering qualification, there are those in the Ministry of Education who want to recognise the practical engineering subjects as a legitimate part of the curriculum for a bachelor's degree in engineering. The Ministry of Education is currently working on the formulation of a comprehensive reform that would impact on these studies in the coming years.

4.2 Strengths and weakness in terms of quality and efficiency

The technological-vocational education networks are the implementing bodies and the owners of the schools in their networks. As with schools operated by municipalities, local authorities and voluntary associations or under private ownership, the networks' schools all fall under the supervision of the Ministry of Education or the Ministry of Economy.

The Ministry of Education is acting to establish quality standards for science and technology in the schools under its supervision: setting up a uniform curriculum for all Israeli pupils; holding national examinations (uniform assessment) for each subject; and using only textbooks produced by authorised content providers bearing the Ministry of Education's stamp of approval. A new project in its second year of operation is a digital textbooks pilot.

The Ministry of Economy is taking steps to standardise vocational certification in the training tracks that it operates for young people and adults through curricula, testing plans and uniform evaluation. In addition, the Ministry of Economy is setting forth accreditation processes in cooperation with the IDF, the Ministry of Education and other bodies.

The Ministry of Education is also examining innovative programmes for learning via projects, based on alternative assessment. Project-based learning includes an elective subject at the highest study level (5 units), one mandatory or optional research unit (compulsory in most tracks) and the conversion of two core study units into a research project. In addition, the new reform grants schools autonomy in choosing and internally testing 30% of the subject curricula. In the 2011/12 academic year research and collaborative and reflective education was implemented in 40 fields of knowledge, and this also led to a change in external examinations.

The Ministry of Economy updates its curricula for young people and adults every year, based on the forecasts for market demand in technology training, and accordingly provide certification standards for new subjects, such as green construction, natural gas, alternative energy and drone technology.

The Ministry of Education requires its teachers to hold academic qualifications, a teaching certificate and a teaching licence, and they must take an active part in further training and updating their knowledge. However, owing to the shortage of teachers of technological subjects, those holding practical engineer diplomas are also accepted as teachers.

The Ministry of Education and MAI are acting together to increase the involvement of employers in determining the knowledge and competencies required in technological education graduates. Students in schools under Ministry of Economy supervision are integrated into the workplace within the framework of youth labour and the apprenticeship law.

One factor that hinders the quality of technological education is its public image. Technological education is perceived as being for students who are academically weaker than those pursuing theoretical courses. With a view to changing this situation, the Ministry of Education has embarked on a comprehensive campaign to improve the image of technological education and attract more capable students, promising employment prospects in professions that are in demand in the IDF and the civil employment market.

4.3 Data on budgeting of hours

Allocation of hours for students, Ministry of Education technology track

The hourly budget allocation per student for technological education is higher than for theoretical education. This is mainly due to the requirement to study three elective subjects in technological education (compared with one in theoretical education), as well as the hours taken up with laboratory and practical experience that are required within the framework of final projects in technological education (not applicable for theoretical education). The non-wage monthly expenditure is also higher in technological education than in theoretical education.

According to the Pedagogical Division of the Ministry of Education, the numbers of hours allocated per student in the 10th grade in the various paths for the 2012/13 school year were as follows:

- standard theoretical education – 1.45 hours per student per week;
- scientific theoretical education – 1.51 hours per student per week;
- technological education – 1.84–2.00 hours per student per week (depending on the track).

Ministry of Economy, data on budgeting per student

As a general rule, Ministry of Economy budgets vocational education systems for young people on a per student basis.

For the 2013/14 school year, the hourly allocation per student in the 9–12th grades ranged between 3.2 and 4.8 hours per week, depending on the study path, the age group and the vocational track. However, the maximum number of students is limited, subject to the total budget allocated to all the aforementioned systems.

Under an agreement between the Ministry of Economy and the Treasury, budgeting is carried out based on a calculation of 20 students per class in the 9th and 10th grades, and 18 students per class in the 11th and 12th grades. This calculation is intended to achieve a balance between the expenditure on a class and the budgeted income. This basis of calculation is significant in that a class that is not full may result in a financial loss for the owner of the educational institution, whereas larger classes may produce a financial surplus; such a surplus is mostly used for overheads that are not budgeted for from any other source. It should be noted that the Ministry of Economy limits the maximum number of students per class to 26, on pedagogic grounds.

4.4 Certification of VET providers and programmes

The Ministry of Education and the Ministry of Economy are the main bodies involved in the budgeting of education system in Israel. Both ministries work with the school networks. Schools are overseen by the ministry responsible for their funding and supervision; every year the relevant ministry lays plans and sets standards for each school under its jurisdiction. Professional and pedagogical supervision is

carried out by professional subject matter supervisors who visit the schools. The major education networks support this quality control system[43].

Policy for training VET directors and teachers

The skills required for IVET staff are determined and supervised by the Ministry of Education. Every teacher must hold at least a bachelor's degree in the profession that he teaches, and must have a teaching certificate or teaching licence. A teaching certificate is obtained through college and university programmes. The requirements for a teaching licence are: to teach for a year; to obtain the recommendation of a professional inspector who observed the candidate teaching in the classroom; and completion of the relevant specific courses. Each subject of study in the Ministry of Economy has a unique teacher profile that details the professional requirements in line with the study track and its content. The teacher profiles for core subjects are determined in accordance with the requirements of the Ministry of Education.

Supervision of relevance of training and lifelong professional education

The Ministry of Education and the Ministry of Economy – separately – offer a range of training options for teachers, with guidance from counsellors and implementers, including a long-term plan for professional development and updates. Additionally, there is a programme for 'Teacher Training in Industry'[44]. Training courses are held for teachers throughout the year, organised by the Science and Technology Division inspectors for each track.

Through the Technological Pedagogical Development Department, the Ministry of Economy offers special courses for teachers and professional instructors who teach in schools for young people under its supervision, as well as running teacher training centres in Holon, Karmiel, Ashkelon, Jerusalem and Tamra. In 2013, 416 trainees participated in 14 training activities for teachers and administrative staff. In addition, the Technological Pedagogical Development Department website is updated frequently and includes pedagogical and marketing information on various projects, teacher training and instructional materials.

Teacher training and correlation with areas of instruction

There are currently no unique and clearly defined certification standards for teachers of technology, which makes it difficult to ensure that they remain professionally up to date. In addition, the change in the structure of technological education and the transition to project-based learning necessitate a redefinition of the professionalisation process.

According to a Ministry of Education Presentation (2014), professional development for teachers of technology can be defined as: 210 hours for each seven-year cycle, which all technology teachers will undergo. Professional development will be pursued in parallel with project learning and divided into three stages: 30 hours (Project level A), 60 hours (Project level B) and 90 hours (Project level C, combining community and industry), as well 30 hours continuing education in the subject taught. Each year, approximately 100 experienced engineers and practical engineers will be retrained as teachers, in parallel to early retirement of 50 teachers per year.

There are approximately 4 500 teachers in the technological and vocational education system. If around one-third of these teachers take the first training course in the first year and then this continues in stages, the ministry expects that all technology education teachers will finish the first round within seven years. In the seven-year framework, the ministry further expects that around 15% of new teachers will come from industry.

[43] Israel country report for GEMM, Yonatan Eyal and Yael Hadar, February 2014.

[44] Data from Ta'asiyeda, MAI: in 2011, 67 teachers underwent training in industry; in 2012, presumably as the result of the Oz Le'Tmura reform requiring teachers to give 40 weekly hours in their schools, this number dropped to 27. See Appendix 3: Professional development for teachers in industry.

The main priorities for improving the quality and efficiency of technological education

The Ministry of Education's priorities are determined according to the knowledge and skills required in each subject, as well as the requirements for continuing education diplomas for technicians and practical engineers and for continued academic study. Efficiency is assessed according to the demand for skilled manpower in the economy and industry. With a view to creating a technological educational process of an occupational nature that addresses the needs of industry, the Ministry of Education's stated main priorities are: standardisation of knowledge and the establishment of a certification authority; the development of a computerised learning environment; the creation of subject matter websites for teachers and students, including lesson plans, practice materials and tests; engagement in digital books; professional development and training for teachers; the integration of students into industry – providing training and experience in the latest technology; guidance in final project preparation; and the acquisition of equipment for learning environments.

All technology education activities supervised by the Ministry of Education form an integral part of the National Computerisation Programme, the aim of which is to adapt education to the 21st century.

Update for 2013–2014: this programme continues but the pace of expansion has been limited. In the upcoming school year, 1 600 schools will enter the programme in which students can connect to the educational cloud to access over 8 000 digital lesson plans. Students in an additional 200 schools will learn using personal tablets[45]. The Minister of Education has brought a fresh perspective and an air of revolution in many fields; the effects of this on technological education in Israel will become clearer in the coming years, with the gradual introduction of **reform**[46] at all high school grade levels.

The Ministry of Economy assesses the quality of training in accordance with pre-determined professional measures and adjusts the schools' infrastructure and learning trends to the world of work, taking into account other factors, for instance dropout rates, eligibility rates, professional work placement rates and retention rates, as well as students' satisfaction with training. Responding to surveys and internal reports on implementation, as well as the accompanying research on graduates of the vocational training system carried out by the Division of Administration, Planning and Economic Research, the Training Division works continually to improve the training and accreditation system. At the same time, the Division is in contact with various government agencies such as the Ministry of Transport, Ministry of Tourism and Ministry of Infrastructure, as well as representatives of major employers in Israel, to develop new courses in line with the changing needs of the economy.

4.5 Policies and activities undertaken to improve the quality and efficiency of technological education

Implementation of policy on national and local levels

The policy to improve quality and efficiency and to set priorities is updated and revised in light of the changes in Israel and in the global market. New thinking leads to a reform every decade, on average, accompanied by modification and continuous examination of each study subject.

The reform is led by subject committees whose members include representatives of industry, academia, the Ministry of Economy, IDF, teachers and principals. As part of the objective of increasing the number of 7th and 8th Grade students embarking on science and computer studies in mainstream schools, the Ministry of Education has launched a multi-year project to establish scientific-technological tracks. Furthermore, the Science and Technology Administration is very proud of the success of the Technician and Matriculation programme. In addition, technological education allows

[45] Dr Ofer Rimon in an interview with Walla Technologies, August 2014, http://mag.walla.co.il/item/2780537?page=9

[46] For details on the Oz Le'Tmura reform, see below.

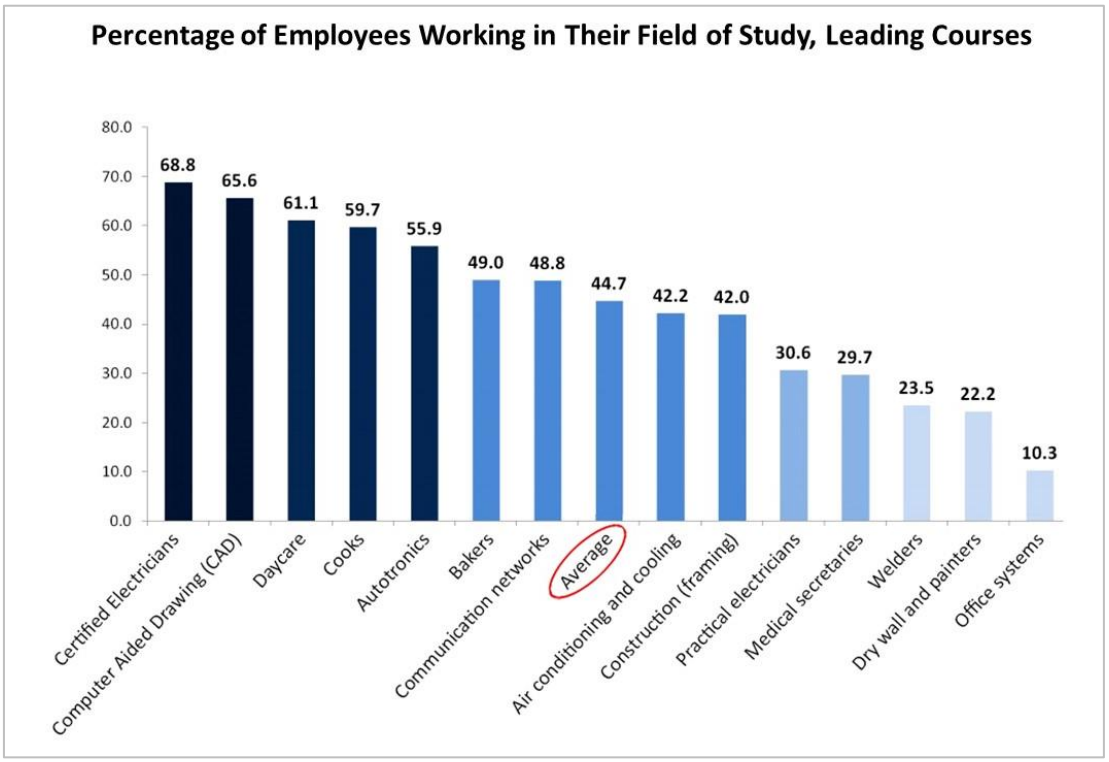
secondary school graduates who have no chance of completing the matriculation certificate to study within the framework of the 'Leap to Industry' programme.

Correlation between the subject of studies and future employment

There are various committees and studies that deal with forecasting the development of the economy and industry. These involve the examination of needs in terms of personnel, knowledge, competences and sought-after professions and identify tracks that need to be developed, upgraded or discontinued based on the forecasts. The needs of the economy and industry in the vicinity of each school are given weight in the composition of the curricula, and, in addition, study tracks are introduced or discontinued according to a systemic view of the country-wide economy.

The various certifications in Israel assist employers in defining the demands of the job, and help the employee apply for a suitable position. For details on the structure of technological certification in Israel, see Appendix 8.

FIGURE 4.2 EMPLOYMENT STATUS OF GRADUATES OF VOCATIONAL TRAINING DAY TRACKS ABOUT TWO YEARS AFTER THE END OF THE COURSE



Source: Ministry of Economy, 2013 data, see report: www.moital.gov.il/NR/rdonlyres/911617CD-19AF-4E4A-8DB9-1206233177B1/0/bogrimyom2011.pdf

Efficiency of use of budget resources

Two main entities participate in the financing and budgeting process: the government and the educational service providers. There is a significant lack of budget for infrastructure and equipment. The majority of this budget comes from the providers. Another part comes from manufacturers and the IDF when schools operate on their premises. There are no legal provisions that establish specific measures or institutional incentives to support the funding of IVET and the parties involved.

The budget is allocated by the government. The budget per student is calculated according to the curriculum. The total funding for each class is determined by the number of students multiplied by the budget per student. Determining the number of classes and subject areas is derived from a process involving the school, the educational network, and the district and national offices. The process is driven by an annual work plan submitted by the school each year for the following year. The school

has a board of directors that includes representatives from the Ministry of Economy, the relevant education network and the relevant local authority. The schools are owned by the educational networks. The budget is transferred directly from the government ministries.

4.6 Courage to Change (*Oz Le'Tmura*) reform – organising the working day

In the past, the working week was generally taken to correspond to the weekly working hours of a teacher with a full-time teaching position, defined as 24 hours a week. Most of these hours were frontal hours, with teachers who prepare students for external matriculation exams including 2.5 hours for that purpose. Teachers were required to be present at the school only when they were teaching classes or for staff meetings. In the last two years, gradual implementation of the reform has entirely changed their teachers' working day. Their working week is now defined as 40 hours a week, like other employees in the country. The teachers must come to school in the morning and clock-in, even if they do not have a class to teach at that time. Six hours were added for individual teachers to work with students in small groups, and 10 hours support teaching for meetings with parents and checking tests and homework assignments.

The salaries of the teachers who joined the reform increased significantly (although hourly wages declined slightly). A new model for evaluating teaching staff has been introduced, which will be used for determining promotion, differential pay and dismissal criteria. This radical change, which was led jointly by the Teachers Association and the Ministry of Education, has led to changes in schools' structure. Rooms and work areas are being built or allocated to teachers who had previously worked from home when not actually teaching. Implementation of the reform is expected to be completed by the 2015 school year.

4.7 Study content

There is a paid committee for each subject which includes representatives of academia, MAI, labour unions, relevant government ministries, IDF (optional), and teachers from the field. With regard to quality assurance, the committee defers to the curricula and didactics. The committee is also responsible for writing the vocational exams. It should be noted that 30% of curriculum content[47] is determined by the school, subject to the approval of the Ministry. The National Authority for Measurement and Evaluation in Education builds and manages the measurement tools for assessing student achievement and the instructions that accompany them.

4.8 Innovation, timeliness and relevance of curricula

In vocational-technological education, science and technology based tracks and subjects are updated and developed on a regular basis at the initiative of the Ministry of Education. In addition, the technology education networks (ORT, AMAL and AMIT) operate pedagogical development and training centres, aimed at promoting educational innovation, the application of updated pedagogical and technological methods, and the acquisition of independent learning skills in an online environment. These development centres conduct professional training for teachers in educational technology, in addition to the in-service training currently provided by the Ministry of Education. These centres serve as providers of content, licensed by the Ministry of Education, and offer, among other things, curricula, online learning materials and environments for their schools and the education system in general.

[47] *The new reform in matriculation examinations, with implementation starting in 2014–15*., see chapter A.

Different specialisations are integrated into various technological tracks under the supervision of the Ministry of Education, according to the needs of the economy; for example, autotronics is a new track that addresses developments in the transportation sector and the need for mechanics with advanced knowledge in diagnostics and computing. This track is now in the advanced stages of curriculum development. The development of courses and programmes is carried out in two ways. Firstly, the Ministry of Education and Ministry of Economy finance various development bodies (such as AMAL, ORT Israel and the Centre for Technology Education) to develop curriculum and learning materials, working in parallel with the Curricula Division of the Ministry of Education. Secondly, the Ministry of Economy's Learning Programmes Unit monitors changes in the labour market, assesses their impact on academic programmes and updates them accordingly. For example, in the past two years, the Ministry of Economy integrated the new tracks: 'energy efficiency', autotronics, certified electrician and machining. In addition, a curriculum was completed for accounting administration, office systems management and automated warehouse management, in response to the current requirements of industry.

4.9 Operation and evaluation of progress

In order to enhance the reforming interventions in the VET system, the following measures have been proposed[48]:

- an employers' survey designed to identify future trends in the labour market and to create a balance between the number of students, the tracks, and the needs of the IDF and industry;
- structural reform of technological education into a leaner structure, moving from 35 specialties to 20 generic subjects, with each area having a variety of certification exams;
- revising the level A subject choices so that all scientific knowledge learned will be relevant to the profession studied, and adapting level choices so that students will acquire relevant soft skills (for example, teamwork, entrepreneurship and use of information technologies (IT));
- updating the leading track subjects, in keeping with changing industry needs;
- updating specialisations to enable students to gain experience in a project-based environment and attain professional qualifications;
- adding new tracks, for example paramedical professions, automotive occupations, and building, woodworking, and plastics trades;
- adapting six tracks to the new structure (choice A, choice B and choice C), and opening 1–2 new tracks. The reform in structure will be completed within three years.

[48] Data from the Ministry of Education, Science and Technology Administration, 2014.

4.10 Summary

The following is a mapping of the system's strengths and weakness, opportunities for growth and obstacles to change, according to the SWOT model (ETF, 2014).

Strengths

- The VET system is marked by innovation and vibrancy in technology – education is based on science.
- It is prepared to adapt to the current and future needs of the economy.
- It shows openness to new ideas and a willingness to cooperate with other bodies.
- There are assertive and interesting curricula for science and technology engineering students (including science subjects, specialisations and projects).
- The system incorporates employment mobility, being sensitive to the needs of the economy and society. Diplomas and professional experience often allow seamless integration into the labour market for those who had difficulty prior to entering this system, as well for those who come from disadvantaged populations.
- Technological education (especially vocational education) better facilitates social and economic mobility than non-technological, non-professional education.
- The system displays operational flexibility with respect to differences between students.
- Technology education teachers create a personal connection with the students. Teachers have the ability to provide varied responses depending on the needs of their students.
- Learning in technological and vocational education takes place in small classes, allowing a more personal, friendlier learning environment.
- A wide range of programmes is offered.

Weaknesses

- VET has a poor image.
- Parents do not generally encourage their students to pursue a vocational education.
- The number of study hours is high (40–50 hours per week).
- There is a critical shortage of high-quality teaching personnel due to salary competition, range of employment options, the status of industrial employment, and the presence of other possible employers (at each level in the world of work). Sometimes schools are unable to open a new programme due to the lack of teachers. This problem is more widespread in vocational education.
- There is no framework for training teachers in technological-vocational education.
- VET is not effectively marketed to the public. Its advantages are not advertised and there are no public relations efforts in this area.
- There is no structured mechanism for forecasting future needs.
- Some workshops do not meet basic vocational standards.

- Changes in industry make it difficult for technological and vocational education to stay up to date.
- Industry is not sufficiently involved.
- There is an absence of legislation to support technological and vocational education.
- A high degree of financial investment is required for establishing workshops that meet current standards, and for updating existing workshops to meet the changing needs of the employment market.

Opportunities

- This is the era of science and technology; therefore, more students can be expected to opt for technological and vocational education.
- Technological and vocational education provides higher paying employment opportunities.
- Technological and vocational education addresses the needs of diverse population groups (on different levels).
- The public climate favours technological and vocational education. The general atmosphere encourages students to choose technological studies, for which there is high demand in academic circles and the employment market. There is an opportunity to develop these subjects in school.
- Technological and vocational education offers opportunities for mobility and the inclusion of special groups, primarily Arabs and ultra-Orthodox Jews.

Threats

- Lack of social dialogue might reduce the effectiveness of technological and vocational education.
- Policies depend on specific supporters who have the mandate to control current policy; therefore, any change in the power structure might also affect policy.
- The expected reform in the matriculation exams (including the cancellation of many of them) could endanger the external professional certificates that students receive. In the absence of the standardised matriculation examinations, it will be difficult for other government agencies to provide professional certificates to graduates in technological and vocational studies.
- There is a lack of financial resources for education, especially in the vocational education system.

5. GOVERNANCE AND POLICY PRACTICES IN THE VET SYSTEM

This chapter analyses the governance and policies of the VET system presented in the previous sections of this report and identifies the policies adopted at the national, regional, local and provider levels.

The TVET system has some strongly centralised elements. In particular, national examinations and assessments, the curriculum and text books, and the school inspection system all fall under the central control of the two main ministries that are engaged in TVET provision. On the other hand, intermediate stakeholders and training providers are both entitled and encouraged to undertake initiatives, not least in the field of teaching and learning. This means that both in the framework of regulations and in practice, the education networks, local authorities and training providers possess a significant element of decentralised authority. It can be argued that the centralised provisions mentioned above serve to provide a quality framework for the TVET system as a whole, in which partners can take a significant amount of responsibility for good performance and change (ETF, 2014).

Nevertheless, the evidence is that equity and the improvement of opportunities for disadvantaged groups pose major challenges. In an ethnically and religiously diverse society, young and female Arabs experience serious disadvantage in the labour market, while orthodox Jewish groups (particularly males) are marginalised. What is more, Israel is an ageing society with a pressing issue to resolve: how to provide younger people with the skills they need to replace older people in the labour market and with the knowledge required to take on new kinds of jobs in an economy that is among the most innovative in the world.

TVET governance is fragmented, even though most provision is made in the public sector. The Ministry of Education and the Ministry of Economy maintain, manage and finance two different, distinct and parallel systems of TVET. There is no formal mechanism or requirement to coordinate the work of the two ministries, and the result is that they provide separate systems with no hierarchical relationship. Each of the ministries operates through its own district offices.

Education networks are a particular feature in the organisation and management of groups of schools across the country. About 40% of vocational students are enrolled in programmes in schools managed by the largest networks (ORT and AMAL). Both these networks are prominently engaged with the ministries in discussions about and arrangements for the governance, management and reform of TVET, and both undertake considerable initiatives addressing such issues as how the curriculum is taught, the continuing training of teachers and funding arrangements, thus contributing to an innovative culture across the field of education and training.

The local authorities also have a significant role in TVET organisation. They own the schools that come under the jurisdiction of the Ministry of Education and have some funding responsibilities.

TVET providers (the schools have come under both the ministries, including the apprenticeship arrangements made by the Ministry of Economy) are required to conform to the regulatory framework covering examinations and tests, inspection and curriculum. Even so, 20% of the curriculum is at the discretion of the school/provider, and in other respects schools are both permitted and encouraged to engage in initiatives and take an innovative approaches to teaching and learning. Except in apprenticeships, little use is made of work-based learning.

Employers also have a positive and innovative role in this area. The Manufacturers Association of Israel (MAI) is a prominent participant in a wide range of TVET policy development, implementation and reform. In addition to significant and frequent informal contacts, the MAI is recognised by the

government as the representative organisation of all the industrial sectors in the Israeli economy. It is often called on by government to engage in training questions. It has built up its own organisation to handle (to some extent) TVET issues, and has a considerable presence in national forums. The trade union federation (Histadrut) is currently less active.

A matter that has received considerable attention is the ad hoc, if extensive, nature of the collaboration between the ministries, the MAI and the other stakeholders. The MAI has proposed, with the support of the union side and the education networks, that a public council to promote VET should be established. In their view this should have a significant role in defining strategy and policy, and in developing plans for advancing VET, promoting research on VET, and ensuring employers' active involvement. The government supports this initiative.

There are three main sources for financing TVET provided by the Ministry of Education: the government, the local authorities and the providing networks. Based on established formula, the Ministry allocates finance to different localities and schools via the districts. Local authorities, who have to make provision for infrastructure and equipment, can add to the national allocations. In addition, the provider networks have independent sources of finance and they may contribute funding to their schools directly or in a variety of other ways, for example through teacher training or introducing particular initiatives. In the case of the Ministry of Economy, the main sources of finance are the government and the providing networks. TVET provision provided by the Ministry of Economy is more closely tied to the labour market and employment, including apprenticeship schemes. Here the education networks and also larger employers contribute towards the costs, often through schools that are operated on their premises.

Some 20% of financing for education across the whole system comes from private households, but this is more significant in higher education than in TVET. The Ministry of Education approves specified programmes and financial resources to promote TVET among specific target populations, namely ultra-Orthodox Jews, Bedouins and Arab girls. Though operating separately, both the main ministries use a similar formula for allocating resources to providers, and each ministry manages its own budget. Funding is distributed to TVET providers through a per capita budget system that allocates various funds based on the estimated cost of providing different programmes. The budget per student is calculated according to the tariff for the curriculum of the specified programme. The total budget per class is determined by the number of students multiplied by the budget per student. In addition, funding is allocated for new initiatives and for projects that meet identified special needs.

5.1 Challenges being addressed or planned to be addressed in the near future

Interviews were conducted with different high level policy makers responsible for the management of the TVET system in Israel at the national, regional, local and provider levels.

Ministry of Education and Ministry of Economy[49]

At the national level: The bodies mandated to participate in the management of the VET in Israel and set policy are the government ministries: the Ministry of Economy and the Ministry of Education. Professional training for persons aged 18+ is primarily supervised by the Ministry of Economy. Successful graduates are awarded diplomas, professional certificates and/or licences to engage in the profession studied (where applicable). In addition, training is operated and certificates are granted by other government agencies in relevant subject areas, including the Ministry of Tourism, the Ministry of Health, the Ministry of Transport, the Ministry of Defence and the Israel Defence Forces.

[49] Responses of Gershon Cohen, Director, Technological Education, Ministry of Education; and Nurit Birger, Acting Director, Apprenticeship and Youth, Ministry of Economy.

At the regional level: Israel is a small country, and there is no zoning. The VET training and qualification and training system offer equal opportunities, regardless of religion, race or sex.

At the provider level: Technological education networks participate in VET.

Mechanisms for coordinating between the various entities across levels of government

The mechanisms for coordination are in fact under the control of government ministries, namely, the Ministry of Economy and the Ministry of Education, who work opposite the educational provider, that is, the education networks.

Professional/subject committees are the main mechanisms for coordination between the different entities. Each committee consists of the Chairman, a professor in the relevant engineering field, the Committee Coordinator, and the Ministry of Education Inspector for the subject, as well as representatives of the IDF, the MAI and the relevant industry profession, as well as a school principal, subject matter coordinator and two teachers. There is no parental involvement in this committee. Each technological education subject has a professional committee. There are approximately 19 such committees.

5.2 Defining the vision and strategy

Overall responsibility for formulating the medium- to long-term distribution strategy in relation to the VET system, together with its implementation and monitoring of progress, is summarised in **TABLE 5.1**.

TABLE 5.1 DISTRIBUTION OF RESPONSIBILITIES

Operation and decision-making method of responsible parties	Attaining objectives	Implementation	Supervision
Who bears overall responsibility? Who is responsible for implementation Who is consulted? Who is (only) informed?	Ministry of Education and Ministry of Economy Ministry of Education and Ministry of Economy Consultation with members of the professional committees and central economic entities in the economy and military	Ministry of Education and Ministry of Economy	Internal inspectors of the Ministry of Education and Ministry of Economy supervise implementation
Complete unilateral autonomy following consultation (mandatory) Consultation with whom?	Objectives are determined after consultation, because the external bodies, such as unions or government agencies, may be responsible for granting certification/ licences or various companies such as Microsoft or Cisco which grant certification in the computing field	Regular consultation to coordinate, to update the knowledge base, and to perform ongoing examination of the professional qualifications required	Government ministries

5.3 Effectiveness and efficiency in addressing economic and labour market demand

Ministry of Economy and the Ministry of Education

In Israel, the CBS conducts an annual survey of employers; it maps the needs of the economy with respect to industry sectors and regions. The Ministries of Education and Economy open or close tracks based on trends and according to the plans of the State of Israel. The supervision TVET in Israel is highly centralised, and is carried out primarily from the top down. Nevertheless, the needs of the field are taken into consideration as they arise. Israel equips its graduates with a wide range of skills, enabling them to update their knowledge base through short courses after entering the workforce and throughout their professional careers.

5.4 Effectiveness and efficiency in addressing demographic, social and inclusion demand

Ministry of Education

The Ministry of Education gives a great deal of thought to the social integration of at-risk populations, and has a separate division (the Division of Social Services) responsible for addressing the needs of these sections of the community. The Ministry of Education collaborates with the Ministry of Social Affairs, initiates projects with the Ministry of Economy, and works closely with the National Insurance Institute on projects for vulnerable young people, in coordination with industry and the IDF vocational training system.

Ministry of Economy

The Ministry of Economy provides a solution for students who choose a vocational study track. In addition, the Ministry invests resources in the social integration of students who have been unable to find their place in the formal education system (under the aegis of the Ministry of Education) and have dropped out. The vocational route provides another advancement opportunity for youth who have experienced setbacks.

The Ministry provides assistance to students through the Centre for Learning Disabilities, which performs assessment and provides professional solutions, while operating an adjustments system that allows students to make the most of their abilities while in school. The Ministry also provides a broad therapeutic framework, including a psychologist in each school, extensive counsellor hours, and therapeutic projects aimed at strengthening young people's resilience, personal empowerment and self-esteem – all of which serves to integrate socially isolated young people.

The Ministry also operates vocational schools for ultra-Orthodox youth, including boarding facilities. In addition, it is implementing the recommendations of the Trachtenberg Committee for the social integration of Arab girls through academic and vocational training. Since 2012, new classrooms and educational facilities have been opened for Arab girls in the Negev and in the north. In addition, a vocational school for girls is scheduled to open in East Jerusalem in 2014-15.

5.5 Internal quality and efficiency of VET systems

The division of responsibilities in the process of setting quality standards in VET and supervision is shown in **TABLE 5.2**.

TABLE 5.2 **DISTRIBUTION OF RESPONSIBILITIES FOR QUALITY STANDARDS**

Division of responsibility for quality standards	Responsibility	Responsible for implementation	Monitoring and evaluation
Quality standard: Acceptable learning environment Quality standard: Acceptable learning results Quality standard: Instruction content for provider accreditation	Ministry of Education and Ministry of Economy Ministry of Education and Ministry of Economy No standards	Ministry of Education and Ministry of Economy	Ministry of Education, Ministry of Economy, and Measurement and Evaluation Authority

Learning environment standard: There are equipment standards for each track which are updated once a year. These standards detail the exact specification of the equipment required, as well as the conditions for its location and safety in the relevant laboratories and workshops.

Quality standards for learning outcomes: In Israel standardised matriculation and professional certification exams are administered. There are conversion tables based on to the different professional classifications of the accreditation bodies.

Provider accreditation standard: There are no such standards for the Ministry of Education – only minimum thresholds for the Ministry of Economy.

TABLE 5.3 **MODE OF DECISION MAKING WHEN SETTING QUALITY STANDARDS**

Decision making – defining quality standards	Unilateral	Required consultations	If consultation, with whom
Quality standards: Acceptable learning environment Quality: Acceptable learning results Quality: Instruction Standards: Provider accreditation	Not unilateral Not unilateral Not unilateral No standards	Consultation is required for definition of the various standards	Ministry of Education, Ministry of Economy, and Measurement and Evaluation Authority

TABLE 5.4 **RESPONSIBILITY FOR CURRICULUM CONTENT AND TEACHING**

Decision making – defining teaching standards	Responsibility	Required consultations	If consultation, with whom
Curricula content and how the content is taught	Ministry of Education and Ministry of Economy are responsible for curricula	Consultation is required	Ministry of Education, Ministry of Economy, and Measurement and Evaluation Authority

In terms of **VET budget** formulation and distribution of the financial burden across three levels of government and various economic entities: Who is responsible for budget allocation and how is it carried out?

First of all, there is no legislation regarding the VET budget and fiscal burden-sharing. Funding allocations are made based on the tuition structure, adapted to take into consideration curriculum and practical experience requirements for the acquisition of skills in each specialisation and trade. The structure takes into account not only theoretical studies but also work experience, including health and safety requirements for each area. The allocation of budgets for technological education in Israel is the responsibility of the Ministry of Education, the Ministry of Finance, and the Ministry of Economy.

5.6 Evaluation of progress since 2010

Ministry of Education

The Ministry of Education currently envisages no obstacles to VET provision. Backed by strong encouragement from the state, a comprehensive strategic plan has been designed to encourage technological education, with high costs and a special budget allocation. In addition, industry, trade unions and industrialists are also contributing to encouraging and strengthening VET. It scores itself at level 5 in its policy/efforts towards effective, multi-level participation in TVET management and policy making since 2010.

The three main priorities are:

- national and international professional certifications, including legislative aspects;
- adapting study subjects to meet current and future needs of the workplace;
- adapting curricula and learning materials to current and future technologies.

Examples of positive experiences:

- the Technicians and Matriculation programme at the end of 12th grade;
- integration of students into industry.

Ministry of Economy

The Ministry of Economy scores itself at level 5 in its policy/efforts towards effective, multi-level participation in TVET management and policy making since 2010. Key priorities for improvement:

- quality professional teacher training – using a combination of ‘Meisters’, practical engineers for teaching, and veteran professionals from industry and the IDF;
- adapting and updating curricula to meet the changing needs of industry and the IDF;
- allocating resources for the construction and equipping of schools.

Examples of positive experiences:

- the establishment of special professional track for ultra-Orthodox youth;
- opening schools for the ultra-Orthodox population;
- the implementation of the government decision to open schools and classes in new subjects/tracks for Arab girls;
- opening new tracks in schools attached to factories;

- implementing changes in the budgeting system;
- reducing the dropout rate through early detection of students in danger of dropping out and implementing a preventive programme;
- expansion of the therapeutic framework to identify youth presenting a suicide risk or in danger of dropping out, and implementing a preventive programme;
- developing a toolkit to identify children presenting a suicide risk and providing professional treatment.

Ministry of Education

There is a lack of government incentives in the form of tax breaks for industrialists to encourage the establishment of youth apprenticeship. There is also little motivation among the general public and employers to advance vocational training in factories as, unlike in Europe, 18-year-olds disappear from the labour market and return only after a few years. Unfortunately, there has been no change regarding this issue since 2010 – collaboration with industry depends on local initiatives, and is not regulated by legislation.

> In Israel, the orderly combination of professional education and industry is almost non-existent; instead it relies mainly on local initiatives. I would like to see more intensive and orderly cooperation. I would like to see Israeli manufacturers take greater responsibility, particularly with respect to practical experience. It would be better if more people from industry participated in technology education on the one hand, and more students joined industry during their studies, on the other. We lack the mechanisms for coordination between the Ministry of Education and industry that would lead to greater responsibility on the part of industrialists for practical experience. Today, we have 18 technology tracks monitored by the Ministry of Education. I call on all industrial trade unions to step forward and say 'I want to raise the gauntlet for a specific track'. When someone comes to us, he will discover a willingness to take far-reaching measures.
>
> *Dr Ofer Rimon, Director, Science and Technology, Ministry of Education*

Ministry of Economy

As part of the training provision for adults aged 18 and over, a great deal of effort is being devoted to the choice of specialised subjects in collaboration with employers. However, the majority of employers and manufacturers in particular, have not yet internalised the importance of cooperation with institutions of vocational training, and avoid long-term commitments to education. It is thus difficult to find manufacturers who want to collaborate. Usually, cooperation is seen by individual employers as a way of meeting ad-hoc demands, and is almost always contingent on government funding.

On the other hand, cultural barriers make it difficult for key populations with a low level of participation in the workforce and a high poverty rate to access vocational training.

At the same time, there has been a substantial reduction in government support for vocational training of the unemployed who have no skills or whose skills that are not in demand. Therefore, government training funded through the Training Division, can benefit only a very small part of the target population: long-term recipients of benefits (particularly welfare benefits); the Arab population, with an emphasis on women; ultra-Orthodox Jews, again particularly women; and people with disabilities.

In addition, there is no correlation between the needs of employers and the type of work that people want to do. For example, the need for production workers in labour-intensive industries, such as construction and agriculture meets little response, because these industries offer low wages and suffer from a negative image, and employers have the option of hiring unskilled foreign workers.

There are still difficulties in relation to training teachers in the vocational subjects. This is a question not only of budget, but also policy, and therefore there is a need to change the policy for the

accreditation of teachers in technological education. We currently do not have the pedagogical tools to equip expert instructors with certification so they can teach in subject areas where a university degree is generally not relevant. As a minimum measure, practical engineers should be accepted into teacher certification tracks. Policy enacted in the last decade dictates that a teacher will not be employed without a bachelor's degree in the subject that he teaches. As a result we are facing a shortage of teachers in **applied subjects**. There is an urgent need to advance a 'qualified instructor' track for professionals in the subjects that they teach.

Furthermore, the area of vocational education runs the risk of continuing to operate under a system of governance in which social dialogue is somewhat limited and dependent on particular advocates, that is, it is personalised rather than being systematic. Shortages of teachers and funding also threaten to undermine the success of TVET governance and reform.

Coordination between the major stakeholders should be improved through the establishment of a coordinating council or committee, with a remit to consider and make recommendations on strategic as well as operational issues. Dialogue and partnership with social partners, and in particular with employers, should be placed on a more formal and systematic basis. All stakeholders should maintain a key focus on combating the major identified problems of inequality and disadvantage that particularly affect young people, women and minorities in the population.

The Manufacturers Association and the trade union confederation should consider how they can each strengthen their capacity and organisational ability to handle TVET issues at all levels and through all stages of the policy process. The Ministry of Education and the Ministry of Economy should actively engage local authorities, social partners and other community organisations in local initiatives and networks that help to both meet local labour market skills needs and support the employability of disadvantaged groups.

As a matter of urgency, an appropriate organisation should undertake the kinds of skills and labour market needs analysis that TVET planners and managers require to plan effectively, reviewing the available range of methodologies for skills identification and anticipation. This should result in recommendations for an improved labour market information system that could be constructed mainly on the basis of data that is already available in the country.

APPENDICES

Appendix 1: Number of youth in training programmes by study track and economic sector, 2013–14

TRAINING ACTIVITIES FOR YOUNG PEOPLE BY STUDY TRACK, 2013–14

Track	No. of students	No. of girls	Total no. of activities
Industrial youth	6,364	1171	374
Industrial youth for speakers of Arabic	5,560	921	280
Continuing education	180	20	13
Adolescents	159	44	9
Two-year adolescents	171	18	10
Project 'Girl'	148	148	9
Recognised support – Ministry of Education	358	166	25
Recognised support – Youth Sponsorship	3		1
Special projects	77	23	6
Total	13,020	2,511	727

TRAINING ACTIVITIES FOR YOUNG PEOPLE BY ECONOMIC SECTOR, 2013–14

Economic sector	No. of students	No. of girls	Total no. of activities
Computers	865	75	47
Printing, photography and production	520	207	34
Cosmetology	1,062	790	63
Administration	892	596	58
Caregivers	188	179	11
Metal/machinery	1,729	106	98
Automotive	3,466	60	179
Hospitality management	512	118	32
Electricity and electronics	1,991	67	109
Fashion and textiles	43	26	2
Woodwork/carpentry	182		9
Paramedical	130	33	9
Other	1,403	247	74
Jewish studies	26		1
Preparatory course	12	7	1
Total	13,020	2,511	727

Appendix 2: In-service training by Pedagogical-Technological Development Department, by track, 2012

Teachers of the following subjects participated in in-service training given by the Pedagogical-Technological Development Department in 2012:

- Early childhood care – 84 hours
- Metalworking/mechanics – 112 hours
- Mechanics and electricity – 84 hours
- Automotive electricity and electronics – 16 hours
- Air conditioning/cooling – 16 hours
- Construction – 28 hours
- Cosmetology – 108 hours
- Woodworking/carpentry – 21 hours
- Graphics – 8 hours
- Pattern making and sewing – 8 hours
- Administration – 56 hours
- Baking – 28 hours
- Hospitality management/hospitality – 28 hours.

An average of 22 teachers participated in each course. The participants do not pay for the courses. A training committee meets once a year to review all of the requests received by the professional supervisors. The committee discusses each application for training and approves/does not approve the execution and the number of hours.

Although this training centres on technological education and most of the courses are intended for teachers of the specified subjects, the committee is careful to deliver courses in core subjects and dedicates time to addressing the problems of students with ADHD, strategies for teaching students with learning disabilities, improving methods of instruction for teachers in all subjects, courses on 'Assessment and Measurement ', the construction of tests, indicators, and the like.

Source: Iris Eden, Coordinator of Training Programmes, Department of Pedagogical and Technological Development, Division for the Training and Development of Human Resources, Ministry of Economy

Appendix 3: Professional development for teachers in industry

The leading teachers of technological education are exposed to current Israeli industry, to working processes and to the most advanced technologies in a wide variety of disciplines. Exposure to industry incorporates both lectures and practical experience, and provides the teachers with theoretical knowledge and with competencies in a variety of disciplines. The purpose of such professional development is to deepen the teachers' grasp of sophisticated technological innovations, and reduce the gap between the present and future needs of industry and the discipline-based curriculum.

All the meetings take place at industrial plants throughout Israel. The lecturers include managing directors in industry and leading engineers in technological fields. The courses cover 120 hours, a total of 15 meetings – plus 40 hours of project guidance by professionals at the plants and a professional supervisor.

The number of teachers taking part in 2012 was 27, compared with 67 in 2011. The downward trend may be due to the launch of the *Oz Le-Tmura* reform, which requires teachers to spend 40 hours a week in their schools, so that their opportunities to attend external courses are limited.

Subjects: The electricity sector in Israel, tour of production units, visit to an electric laboratory and working with a synchronisation simulator and mains generators, and a tour of the Caesarea switching unit; the nature of industry, machining, from ordering to supply, leadership in education, tour of production department, five-axis computerised machining, what is a logistics centre, automation and control, green cooling systems, miniature electronic circuits, introduction to flash memories, electronic systems control, research and development, and engineering; tour of electronics and electro-optics labs robots in industry, clean room optical models, VPRO group 2 tour, leading semiconductor manufacturers and WAFER production processes and automation; how a jet engine works, tour the assembly division, engine assembly and renovation, quality assurance, engine parts production, casting; the electricity industry – a general survey, presentation of the FGD installation and the supervision and control activity in the chemical lab, renewable energies, innovation in technology; the importance of robotics and automation, from idea to production, marketing and customer requirements, the interaction between the Electric Company and the marine environment and a tour of the biology lab, aspects of environmental protection, maintenance of installations in industry, electricity panels and standards, computerisation of electric systems, tour of plant and labs, the smart home, O.E.E. quality indices, yield and efficiency, the quality system, safety, and analytical methods in industry.

Source: Ta'asiyeda (the Educational Branch of the Manufacturers Association of Israel)

Appendix 4: Strategic plan for strengthening technological education

The strategic plans of the Ministry of Education include the Education Technology Strategic Plan which is brought to schools with the approval of the Israeli government: The vision of strengthening technological education is to expand and adapt it to the 21st century so that it will be an attractive alternative to academic education and will provide quality manpower to meet the challenges of industry. The plan for strengthening scientific and technological education was established after years of declining budget allocations for education technology. In the last four years, the current Minister of Education has steered the decision to change the trend.

The objectives are: to address the education of students who want to integrate more technology and experiential learning during their studies; to create advanced study tracks that incorporate completion of the matriculation certificate, preparing students for integration into industry; and to extend and adapt technological education in keeping with the needs of industry.

The strategic programme for strengthening technological education includes the following programmes.

- 'Leap into Industry' – a programme that provides employment prospects and integration capability for those students for whom in the past the system could find no solutions. The programme incorporates one day per week in industry.
- 'Technician and Matriculation'– a programme run in cooperation with the Manufacturers Association and the technological education networks. The programme takes students to the end of 12th Grade for a technician's diploma in professions that are in demand in the economy (electronics, machines and computers), together with a matriculation certificate.
- Establishment of regional technology centres in the north and the south of the country – a measure aimed at increasing the number of technological education students who have access to a significant level of hands-on learning.
- A mechanism for coordination with the IDF – a mechanism designed to adapt the scope and the relevance of technological education to the IDF's changing needs.
- Empowering robotics – exposure to the field of robotics in all age groups in order to encourage a high level of thinking and as a door to the world of technology.
- Retraining those leaving the high-tech field for technological education together with the cooperation of the Ministry of Treasury – gradual retraining of staff from industry to technological education as part of a programme to promote knowledge-based industries.
- Incorporating the ultra-Orthodox sector into technological education.

Source: Ministry of Education, Science and Technology Administration, see
http://cms.education.gov.il/EducationCMS/Units/MadaTech/tochnit_astrategit
http://cms.education.gov.il/educationcms/units/madatech/hinucmadatech/odot/chizuk_chinuchtechnology.htm

Appendix 5: Activities to improve image and increase enrolment

- **National campaign in conjunction with industrialists**, every year in February-March. It targets 8th-grade students to expose them to the technicians' and practical engineers' tracks as early as the 9th grade; 9th-grade students who are considering the field of study in high school; and 12th-grade students who are considering the option of staying in school and completing technician and practical engineering studies.
- **Activities in the realm of non-formal education**, in the early stages of education (pre-school, elementary and intermediate schools), designed to expose students to the world of work and Israeli industry by visiting factories and through visits and lectures by industrialists in schools and kindergartens.
- **Encouraging practical experience**, with an emphasis on practical experience in mechanical building systems and/or automated ones (such as Lego Robotics), in the early years of education, within formal and non-formal education frameworks.
- **Producing marketing and explanatory material** for the junior high schools in advance of students' transition to the high school and for the high schools in advance of the transition to higher education; development of a professional guidance system that does not rely only on school counsellors, and is aided, to the fullest extent possible, by work integration centres. to the extent that uses a combination of work centres.

Source: Presentation by Ministry of Education, Science and Technology Administration, 2014

Appendix 6: Technicians and Matriculation programme

Rationale

- Today approximately half of school graduates complete the matriculation certificate.
- Some of those who complete the matriculation certificate do not have the option of continuing on to academic studies.
- There is a lack of skilled workers in industry and the Israel Defence Forces (IDF), especially technicians and practical engineers.

Objectives

- To advance motivated students to maximise their abilities in technology and industrial subjects.
- To increase the number of students who complete school prepared for life and employment, ready to create and contribute, both as individuals and as members of society.
- To enable students to complete the matriculation certificate and the technician's certificate, paving the way for them to join the workforce and/or continue their studies.
- To create a technological reserve for the IDF.
- To expose students to what is happening in industry and generate awareness of and interest in selecting subject of studies and future employment.
- To establish long-term continuity between industry and graduates of the programme for professional advancement and integration following their military service.
- To provide students in the programme with support from industry, the IDF and ORT, and assist schools in maximising the number of students who successfully complete the programme.
- Provide tools to enable the establishment of the programme and make it a permanent fixture in schools.

Target population

The target population is ninth-grade students in the second level grouping in mathematics and students at a level suited for partial matriculation or reinforced ('Mabar') study tracks.

Advantages of the programme

- Relatively small groups of students
- Good teachers
- Industry involvement in the programme
- IDF involvement in the programme
- A dedicated, separate class, learning together from the 9th to the 12th grade.

Methodology and practices

- Appointment of a school coordinator to be responsible for: curricula, monitoring students' progress, determining ways to help and support students, and ongoing contact with industry and the IDF.

- At the end of the 8th grade, the school will recruit between 25 (minimum) and 33 (maximum) students for this unique class.
- In the 9th grade, students in the class will receive reinforced study hours in these subjects: English, mathematics, language and science.
- In the 10th and 11th grade, most students will complete their matriculation exams.
- 12 and 13th class will teach students for technicians.
- Each school will choose a factory in conjunction with ORT Headquarters and the Manufacturers Association.

To implement the programme, the schools will take the following steps:

- make the programme a priority;
- assign the best teachers to this class;
- appoint a suitable homeroom teacher to this class;
- carefully select suitable students for the programme.

Appendix 7: Reform of the structure of study tracks and subject area specialisations

Starting in 2005, Israel implemented a reform in the structure of studies, dividing them into sub-tracks (specialisations), depending on the subject matter and the required levels.

There has always been a great deal of heterogeneity in the curriculum and the level of student achievement, both in the academic track and the technological track, but the redistribution under the reform makes it possible to distinguish between different types of trends and examine them in terms of the students' achievements.

In the academic track, studies were divided into sub-tracks, the largest of these is the theoretical-scientific track. This track is designed for students who choose to study physics, chemistry or biology at the 5-unit level. These students are considered to have high potential for a matriculation certificate that meets the entrance requirements for higher education.

In the technological track, studies were divided into three main groups:

- engineering subjects,
- technology subjects,
- occupational subjects.

Engineering subjects include trends such as electronics, mechatronics, software, biotechnology, and more. Students who pursue engineering studies are considered to have the potential for a matriculation certificate that meets the entrance requirements for higher education.

The reform was first implemented on 10th graders in the 2004/05 school year, with the target of completing their matriculation and graduating from high school in 2007.

In the 2010/11 school year, 14% of 12th-grade students majored in the theoretical-scientific sub-track within the Academic track; 12% studied in the engineering sub-track, 14% in the technology sub-track, and 9% in the occupational study sub-tracks within the Technological track.

Source: Central Bureau of Statistics, Report No 6 – The face of Israeli society: Israel where from and where to? October 2013, p. 124

Appendix 8: Statistical data

TRP14.01a POPULATION BY SEX (000)

	2006	2007	2008	2009	2010	2011	2012
Population (total)	7 053.7	7 180.1	7 308.8	7 485.6	7 623.6	7 765.8	7 910.5
Population, female (% of total)	50.59	50.57	50.55	50.56	50.53	50.51	50.49

Source: CBS (data received)

TRP14.02 ANNUAL POPULATION GROWTH (%)

	2006	2007	2008	2009	2010	2011	2012
Total	1.77	1.79	1.79	2.42	1.84	1.87	1.86

Source: CBS (data received)

TRP14.03 DEPENDENCY RATES (%)

	2006	2007	2008	2009	2010	2011	2012
Total (0–14 and 65+)	61.9	61.8	61.6	60.5	60.9	61.6	62.5
Young (0–14)	45.9	45.9	45.9	44.7	45.0	45.4	45.7
Old (65+)	16.0	15.9	15.7	15.7	15.9	16.2	16.7

Source: CBS (data received)

TRP14.04 POPULATION BY AGE GROUP (%)

	2006	2007	2008	2009	2010	2011	2012
Total	100	100	100	100	100	100	100
Population 0–14 (% of total)	28.3	28.4	28.4	27.9	28.0	28.1	28.2
Population 15–64 (% of total)	61.8	61.8	61.9	62.3	62.2	61.9	61.6
Population 65+ (% of total)	9.9	9.8	9.7	9.8	9.9	10.0	10.3

Source: CBS (data received)

TRP14.05 LIFE EXPECTANCY BY SEX (YEARS)

	Men	Women
2006	78.7	82.5
2007	78.7	82.4
2008	79.0	83.0
2009	79.6	83.3
2010	79.7	83.6
2011	79.9	83.6
2012	79.9	83.6

Source: CBS – demography department data

TRP14.06 NET MIGRATION

2007*	2012**
273 635	-75 985

(*) Data are five-year estimates (for the period between 1 July 2005 and 30 June 2010).
(**) Data are five-year estimates (for the period between 1 July 2010 and 30 June 2015).
Source: World Bank, World Development Indicators database

TRP14.11 SOCIAL BURDEN BY EDUCATION LEVEL* (15+)

Level of education	2006	2007	2008	2009	2010	2011	2012	2013
Total	0.87	0.83	0.81	0.82	0.8	0.79	0.62	0.61
No schooling + pre-primary education	10.42	10.08	8.81	9.17	8.29	7.67	6.05	6.66
Primary education or first stage of basic education	2.9	2.89	2.76	2.82	2.86	2.93	2.49	2.38
Lower secondary or second stage of basic education	2.53	2.48	2.53	2.7	2.51	2.55	2.42	2.37
Upper secondary education	0.78	0.76	0.75	0.75	0.75	0.74	0.47	0.48
First stage of tertiary education (not leading directly to an advanced research qualification)	0.33	0.32	0.32	0.32	0.31	0.32	0.27	0.28
Second stage of tertiary education (leading to an advanced research qualification)	0.29	0.29	0.3	0.4	0.31	0.3	0.32	0.37
Level not stated	0.61	0.57	0.54	0.64	0.84	0.9	0.74	0.77

(*) The social burden is the ratio between the number of inactive and the number of employed people. Values higher than 1 mean that the number of inactive people exceed the employed population.

Source: CBS (data received)

TRP14.14 GDP PER CAPITA (PPP, CURRENT INTERNATIONAL $)

2006	2007	2008	2009	2010	2011	2012	2013
24 785.3	26 753.2	26 899.3	27 215.1	28 599.7	30 169.3	31 363.5	32 308.6

Source: CBS (data received)

TRP14.15 GDP BY SECTOR (VALUE ADDED, % OF GDP)

Missing data

TPR14.17 GLOBAL COMPETITIVE INDEX

	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Score	5.26	5.20	4.97	4.80	4.91	5.07	5.02	4.94
Rank	14	17	23	27	24	22	26	27
Rank out of	148	131	134	133	139	142	144	148

Note: Scores range from 1 to 7

Source: World Economic Forum, data platform

TPR14.19 SMALL BUSINESS ACT ENTREPRENEURIAL LEARNING (EL) INDEX

2008
3.3

Note: This indicator is comparable only within the same region, for the same year.

Source: OECD, Small and Medium-Sized Enterprises (SME) Policy Index

TRP14.20 POVERTY HEADCOUNT RATIO AT $2 A DAY (PPP) (% OF POPULATION)

Missing data

TRP14.21 GINI INDEX

2005	2006	2007	2008	2009	2010	2011	2012
0.387	0.390	0.382	0.384	0.389	0.384	0.378	0.377

Source: CBS (data received)

TRP14.22 FOREIGN DIRECT INVESTMENT (NET INFLOWS, % OF GDP)

2006	2007	2008	2009	2010	2011	2012	2013
10.13	5.03	5.10	2.16	2.37	3.52	3.13	4.05

Source: CBS (data received)

TRP14.24 EMPLOYMENT BY OCCUPATIONS AND SEX (15+)

	Total	Male	Female	Total	Male	Female	Total	Male	Female
	2006			2007			2008		
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Academic professionals	14.07	13.47	14.77	14.13	13.62	14.72	14.45	14.29	14.63
Associate professionals and technicians	15.81	12.14	20.06	15.91	12.15	20.26	15.37	11.82	19.45
Managers	6.14	8.15	3.82	6.57	8.62	4.02	6.84	8.77	4.63
Clerical workers	16.03	7.52	25.86	16.07	7.71	25.40	16.14	7.64	25.90
Agents, sales workers and service workers	20.21	16.93	23.99	20.35	17.23	23.96	20.57	17.18	24.45
Skilled agricultural workers	1.30	2.20	0.26	1.22	2.05	0.27	1.30	2.16	0.31
Manufacturing, construction and other workers	18.35	30.66	4.13	18.23	30.51	4.05	18.06	30.27	4.06
Unskilled workers	8.10	8.94	7.12	7.53	7.88	7.12	7.27	7.87	6.57
	2009			2010			2011		
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Academic professionals	14.45	14.17	14.76	15.21	15.20	15.22	15.03	14.95	15.12
Associate professionals and technicians	15.75	12.21	19.71	15.19	11.79	18.96	16.01	12.78	19.62
Managers	6.63	8.83	4.16	6.98	8.91	4.83	7.14	8.90	5.18
Clerical workers	16.36	7.66	26.10	16.39	7.85	25.86	16.07	7.42	25.73
Agents, sales workers and service workers	20.74	17.36	24.52	20.49	17.03	24.33	20.67	17.24	24.49
Skilled agricultural workers	1.30	2.19	0.30	1.20	1.97	0.36	1.13	1.97	0.19
Manufacturing, construction and other workers	17.02	28.94	3.66	16.79	29.00	3.26	16.48	28.63	2.92
Unskilled workers	7.76	8.64	6.78	7.74	8.26	7.17	7.47	8.11	6.75
	2012								
Total	**100**	**100**	**100**						
Academic professionals	14.90	14.60	15.10						
Associate professionals and technicians	16.30	12.80	20.10						
Managers	8.70	11.60	5.60						
Clerical workers	15.70	7.60	24.50						
Agents, sales workers and service workers	20.40	16.60	24.70						
Skilled agricultural workers	1.10	1.90	0.30						
Manufacturing, construction and other workers	15.00	26.10	2.80						
Unskilled workers	7.90	8.80	6.90						

Note: 2012 data refer to the entire labour force (including compulsory or permanent military service) and based on the monthly labour force survey.
Source: CBS labour and wages data

TRP14.25b EMPLOYMENT BY MAIN SECTOR AND SEX (15+)

Economic activities	Total	Male	Female	Total	Male	Female	Total	Male	Female
	2006			2007			2008		
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Agriculture	1.77	2.76	0.61	1.63	2.52	0.59	1.74	2.66	0.67
Industry	34.91	31.58	10.27	35.59	31.93	10.77	35.61	31.40	10.91
Services	63.25	65.55	89.10	62.73	65.50	88.59	62.59	65.86	88.36
	2009			2010			2011		
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Agriculture	1.68	2.58	0.67	1.64	2.42	0.77	1.43	2.19	0.58
Industry	33.98	30.06	9.92	33.75	30.00	9.71	33.74	29.77	9.54
Services	64.26	67.28	89.34	64.54	67.49	89.46	64.75	67.92	89.84
	2012								
Total	**100**	**100**	**100**						
Agriculture	1.57	2.37	0.66						
Industry	30.47	39.93	19.83						
Services	67.91	57.65	79.47						

Note: 2012 data refer to the entire labour force (including compulsory or permanent military service) and based on the monthly labour force survey.
Source: ETF calculations on CBS labour and wages data

TRP14.26b EMPLOYMENT BY STATUS IN EMPLOYMENT AND SEX (15+)

Status in employment	Total	Male	Female	Total	Male	Female	Total	Male	Female
	2006			2007			2008		
Total	100	100	100	100	100	100	100	100	99
Unpaid family members	0.3	0.1	0.5	0.2	0.1	0.4	0.2	0.1	0.3
Kibbutz members	1.1	1.1	1.1	1.1	1.0	1.1	0.9	0.9	
Employers and cooperative members	4.2	6.5	1.5	4.3	6.5	1.7	4.5	6.9	1.7
Self-employed	7.6	9.4	5.5	7.2	9.0	5.1	7.0	8.9	5.0
Employees	86.9	82.9	91.4	87.3	83.5	91.8	87.3	83.3	92.0
	2009			2010			2011		
Total	100	100	100	100	100	100	100	100	100
Unpaid family members	0.2	0.1	0.3	0.2	0.1	0.3	0.2	0.1	0.2
Kibbutz members	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.5
Employers and cooperative members	4.6	7.2	1.7	4.3	6.7	1.5	4.3	6.6	1.7
Self-employed	7.4	9.1	5.5	7.7	9.6	5.7	7.6	9.2	5.9
Employees	87.1	83.0	91.8	87.2	83.0	92.0	87.4	83.5	91.7
	2012								
Total	100	100	100						
Unpaid family members	0.1	0.1	0.2						
Kibbutz members	0.8	0.9	0.8						
Employers and cooperative members	4.0	6.3	1.6						
Self-employed	7.7	9.0	6.1						
Employees	87.3	83.8	91.3						

Source: ETF calculations on CBS labour and wages data

TRP14.30a EMPLOYMENT RATES BY SEX AND EDUCATION LEVEL (15+)

Level of education	Total	Male	Female	Total	Male	Female	Total	Male	Female
	2006			2007			2008		
Total	**51.1**	**56.3**	**46.1**	**52.4**	**57.7**	**47.3**	**53.2**	**58.5**	**48.2**
No schooling + pre-primary education	8.5	14.9	5.7	8.9	16.8	5.6	10.1	16.1	7.5
Primary education or first stage of basic education	24.6	37.8	11.5	24.6	37.5	11.8	25.7	40.0	12.2
Lower secondary or second stage of basic education	27.1	34.1	18.0	27.6	34.8	18.4	27.5	34.7	18.3
Upper secondary education	52.7	57.8	47.6	53.8	58.7	48.6	54.9	59.6	50.0
First stage of tertiary education (not leading directly to an advanced research qualification)	72.6	76.0	69.9	73.3	77.2	70.2	73.5	77.3	70.5
Second stage of tertiary education (leading to an advanced research qualification)	75.2	75.4	74.9	75 .3	75.8	74.5	75.1	76.7	72.2
Level not stated	60.0	61.0	59.1	61.4	66.0	57.4	62.9	68.0	58.7
	2009			2010			2011		
Total	**52.6**	**57.1**	**48.4**	**53.5**	**58.0**	**49.3**	**54.2**	**58.9**	**49.7**
No schooling + pre-primary education	9.7	18.2	6.4	10.6	16.3	8.4	11.4	18.3	8.4
Primary education or first stage of basic education	25.3	38.8	12.4	25.0	37.9	12.9	24.9	37.4	13.1
Lower secondary or second stage of basic education	26.1	32.7	17.7	27.5	34.3	18.7	27.4	34.4	18.6
Upper secondary education	54.1	57.7	50.3	54.6	58.0	50.9	55.2	59.4	50.8
First stage of tertiary education (not leading directly to an advanced research qualification)	72.8	76.0	70.2	73.6	77.4	70.7	73.5	77.1	70.5
Second stage of tertiary education (leading to an advanced research qualification)	69.8	70.7	68.0	75.1	77.0	71.6	75.6	73.1	80.4
Level not stated	59.0	63.7	54.6	52.0	51.9	52.1	52.2	55.8	50.1
	2012								
Total	**59.2**	**64.6**	**54.1**						
No schooling + pre-primary education	13.9	23.4	9.9						
Primary education or first stage of basic education	27.5	40.4	14.9						
Lower secondary or second stage of basic education	28.0	34.8	19.7						
Upper secondary education	64.1	69.1	58.7						
First stage of tertiary education (not leading directly to an advanced research qualification)	75.7	80.2	72.2						
Second stage of tertiary education (leading to an advanced research qualification)	74.5	74.7	74.1						
Level not stated	56.1	59.0	54.2						

Source: CBS (data received)

TRP14.30b EMPLOYMENT RATES BY SEX (20–64)

	2006	2007	2008	2009[1]	2010	2011	2012[2]	2013
Total	64.84	66.49	67.38	66.54	67.51	68.30	72.53	73.13
Males	69.83	71.68	72.46	70.54	71.45	72.38	77.73	78.18
Female	59.97	61.45	62.44	62.62	63.66	64.30	67.46	68.21

Notes:

(1) a Update of the definition of the civilian labour force characteristics; **b** Transition to the 2008 population census estimates. See explanations at: www.cbs.gov.il/publications11/1460/pdf/intro05_e.pdf.

(2) a Transition to a monthly labour force survey ; **b** Changes in the definitions of labour force characteristics (including compulsory and permanent military service into labour force). See explanations at: www.cbs.gov.il/publications/labour_survey04/labour_force_survey/answer_question_e_2012.pdf

Source: CBS (data received)

TRP14.31 UNEMPLOYMENT RATES BY SEX AND EDUCATION LEVEL (15+)

Level of education	Total	Male	Female	Total	Male	Female	Total	Male	Female
	2006			2007			2008		
Total	**8.38**	**7.88**	**8.95**	**7.29**	**6.76**	**7.90**	**6.08**	**5.74**	**6.48**
No schooling + pre-primary education	22.88	25.14	20.13	17.06	16.11	18.20	8.49	8.27	8.68
Primary education or first stage of basic education	14.83	13.79	18.04	15.28	14.32	18.12	11.09	10.64	12.48
Lower secondary or second stage of basic education	13.97	12.17	18.09	12.77	10.97	16.79	10.08	9.56	11.31
Upper secondary education	10.42	8.73	12.42	8.75	7.41	10.38	7.16	5.85	8.71
First stage of tertiary education (not leading directly to an advanced research qualification)	4.57	4.44	4.69	4.00	3.48	4.45	3.89	3.83	3.95
Second stage of tertiary education (leading to an advanced research qualification)	3.39	2.34	5.14	3.14	1.90	5.25	2.87	2.13	4.22
Level not stated	5.11	5.36	4.86	4.99	4.15	5.84	4.31	4.24	4.38
	2009			2010			2011		
Total	**7.54**	**7.55**	**7.54**	**6.64**	**6.76**	**6.50**	**5.60**	**5.59**	**5.62**
No schooling + pre-primary education	13.89	12.99	14.88	10.57	13.92	7.82	7.65	9.32	6.01
Primary education or first stage of basic education	11.49	11.58	11.20	11.76	11.64	12.06	8.38	9.07	6.46
Lower secondary or second stage of basic education	11.82	11.02	13.66	10.86	11.04	10.41	8.68	8.67	8.69
Upper secondary education	8.98	8.57	9.46	7.88	7.56	8.26	6.62	6.30	7.00
First stage of tertiary education (not leading directly to an advanced research qualification)	5.23	5.03	5.39	4.39	4.11	4.63	4.11	3.76	4.42
Second stage of tertiary education (leading to an advanced research qualification)	3.34	2.76	4.44	2.22	2.50	1.70	2.24	2.69	1.43
Level not stated	5.22	6.28	4.05	7.32	11.23	4.27	1.71	1.81	1.64
	2012								
Total	**6.85**	**6.75**	**6.96**						
No schooling + pre-primary education	11.38	11.69	11.07						
Primary education or first stage of basic education	12.52	13.28	10.45						
Lower secondary or second stage of basic education	13.76	13.29	14.76						
Upper secondary education	7.85	7.11	8.79						
First stage of tertiary education (not leading directly to an advanced research qualification)	4.37	3.99	4.71						
Second stage of tertiary education (leading to an advanced research qualification)	2.62	2.81	2.30						
Level not stated	4.16	6.40	2.62						

Source: CBS (data received)

TRP14.32 YOUTH UNEMPLOYMENT RATES (18–24) BY SEX

	2006	2007	2008	2009	2010	2011	2012
Total	17.5	15.1	12.4	14.2	12.6	10.9	10.8
Male	16.8	13.9	11.5	15.1	13.4	11.3	10.0
Female	18.2	16.2	13.3	13.3	11.9	10.7	11.8

Source: CBS labour and wages data

TRP14.35 EXPENDITURE ON ACTIVE LABOUR MARKET POLICIES (ALMPs) AS PERCENTAGE OF GDP (ILS MILLION)

	2006	2007	2008	2009	2010	2011
Active labour market programmes	1 178.0	1 173.6	1 081.7	1 179.7	1 193.9	1 185.2
GDP	648 227.8	686 511.9	723 561.6	766 273.1	813 021.5	870 210.0
As % of GDP	0.2	0.2	0.1	0.2	0.1	0.1

Source: CBS economics department

TRP14.36 PERCENTAGE OF REGISTERED UNEMPLOYED COVERED BY ALMPs

Missing data

TRP14.37 NUMBER OF VACANCIES BY SECTOR

	2010	2011	2012
Manufacturing and water supply	7 637	7 949	7 087
Construction	5 824	10 829	10 348
Wholesale and retail trade	7 840	9 187	8 376
Accommodation services and restaurants	5 687	6 930	6 719
Transports, storage and communication	4 149	4 650	3 569
Banking, insurance and other financial institutions	1 656	1 785	1 223
Real estate, renting and business activities	12 722	14 625	16 061
Education	1 359	1 901	2 071
Health services and welfare and social work	4 851	4 984	6 278
Community, social and personal and other services	1 849	2 288	2 709

	2013
Mining and quarrying, manufacturing	6 425
Electricity, gas, water supply, waste management	742
Construction	7 123
Wholesale and retail trade	8 902
Transportation and storage, postal and courier activities	2 806
Accommodation services and restaurants	8 184
Information and communication	5 588
Financial and insurance activities	1 616
Real estate, professional, scientific and technical activities, administrative activities	10 904
Education	1 701
Human health and social work activities	6 097
Arts, entertainment and recreation, other service activities	3 050

Source: CBS (data received)

TRP14.38 NUMBER OF REGISTERED UNEMPLOYED

Missing data

TRP14.39 NUMBER OF VACANCIES PER REGISTERED UNEMPLOYED

Missing data

TRP14.40 JOB PLACEMENT RATE (OF REGISTERED UNEMPLOYED)

Missing data

TRP14.41a NUMBER OF FIRST JOBSEEKERS AS A PROPORTION OF THE TOTAL (REGISTERED) UNEMPLOYED (15+)

Missing data

TRP14.41 NUMBER OF LONG-TERM* UNEMPLOYED AS PROPORTION OF THE TOTAL UNEMPLOYED, BY SEX AND EDUCATION LEVEL (15+)

	2006	2007	2008	2009	2010	2011	2012
Total	57.70	54.32	52.82	53.88	53.19	50.64	44.39
Male	60.30	55.62	52.96	55.94	57.48	54.05	45.88
Female	55.10	53.02	52.49	51.56	48.23	46.77	42.76

(*) Long term: more than 14 months.

Source: CBS labour and wages data

TRP14.44 EDUCATIONAL ATTAINMENT OF POPULATION BY SEX (15+)

Level of education	Total	Male	Female	Total	Male	Female	Total	Male	Female
	2006			2007			2008		
No schooling + pre-primary education	2.97	1.86	4.02	2.72	1.62	3.76	2.58	1.59	3.53
Primary education or first stage of basic education	12.26	12.51	12.02	11.38	11.58	11.19	10.87	10.87	10.87
Lower secondary or second stage of basic education	13.29	15.42	11.27	13.04	14.98	11.20	13.31	15.32	11.40
Upper secondary education	0.86	1.12	0.62	0.93	1.22	0.66	0.87	1.14	0.61
First stage of tertiary education (not leading directly to an advanced research qualification)	38.13	39.31	37.01	38.86	40.58	37.22	39.09	40.52	37.73
Second stage of tertiary education (leading to an advanced research qualification)	31.54	28.84	34.10	32.14	29.12	35.01	32.54	29.87	35.08
Level not stated	0.96	0.95	0.96	0.93	0.90	0.95	0.73	0.68	0.78
	2009			2010			2011		
No schooling + pre-primary education	2.57	1.48	3.60	2.58	1.49	3.61	2.47	1.54	3.36
Primary education or first stage of basic education	10.81	10.84	10.78	10.42	10.33	10.51	10.03	9.97	10.09
Lower secondary or second stage of basic education	12.89	14.87	11.01	12.82	14.87	10.86	12.48	14.36	10.69
Upper secondary education	0.89	1.19	0.61	0.86	1.13	0.60	0.87	1.17	0.58
First stage of tertiary education (not leading directly to an advanced research qualification)	38.68	40.51	36.95	38.91	41.01	36.92	38.87	40.51	37.30
Second stage of tertiary education (leading to an advanced research qualification)	33.34	30.31	36.21	34.01	30.82	37.04	34.99	32.23	37.62
Level not stated	0.82	0.81	0.84	0.41	0.35	0.46	0.29	0.22	0.35
	2012								
No schooling + pre-primary education	2.58	1.57	3.54						
Primary education or first stage of basic education	9.44	9.57	9.31						
Lower secondary or second stage of basic education	11.89	13.32	10.53						
Upper secondary education	1.11	1.41	0.83						
First stage of tertiary education (not leading directly to an advanced research qualification)	39.56	42.26	36.99						
Second stage of tertiary education (leading to an advanced research qualification)	35.03	31.57	38.33						
Level not stated	0.39	0.30	0.47						

Source: CBS (data received)

TRP14.46 TERTIARY EDUCATIONAL ATTAINMENT OF POPULATION AGED 30–34

	2006	2007	2008	2009	2010	2011	2012
Total	46.81	46.39	47.41	49.38	50.64	52.43	50.73

Source: CBS (data received)

TRP14.47 ADULT LITERACY RATES (15+) BY SEX

	2006	2007	2008	2009	2010	2011	2012
Total	97.25	97.48	97.61	97.66	97.65	97.77	97.45
Male	98.37	98.58	98.60	98.75	98.76	98.74	98.45
Female	96.19	96.43	96.67	96.61	96.59	96.85	96.49

Source: CBS (data received)

TRP14.51 PARTICIPATION IN VET BY THE FIELD OF STUDY (%)

Missing data

TRP14.55 EARLY SCHOOL LEAVERS

	2013
Total	8.1
Male	10.7
Female	5.5

Source: CBS (data received)

TRP14.57a TOTAL NUMBER OF VET STUDENTS COMPARED TO THE TOTAL NUMBER OF PUPILS AND STUDENTS BY LEVEL AND SEX

		Total	Female	Total	Female	Total	Female	Total	Female	Total	Female
		2006		2007		2008		2009		2010	
Pre-primary (ISCED 0)	All	36 1810	176 025	394 034	190 528	397 062	193 475	428 286	214 333	402 536	194 614
Primary (ISCED 1)	All	736 255	359 754	757 809	370 364	769 328	375 598	786 094	383 599	807 424	393 923
Lower secondary (ISCED 2)	All	320 402	157 387	322 460	158 269	324 601	159 766	327 872	161 471	366 934	180 740
	General	320 402	157 387	322 460	158 269	324 601	159 766	327 872	161 471	364 538	179 470
	VET	m.d.	m.d.	m.d.	m.d.	m.d.	m.d.	m.d.	m.d.	2 396	1 270
Share of VET		m.d.	m.d.	m.d.	m.d.	m.d.	m.d.	m.d.	m.d.	0.65	0.70
Upper secondary (ISCED 3)	All	359 264	174 233	362 018	176 556	362 176	178 018	366 005	180 231	341 406	168 203
	General	235 764	121 359	239 277	123 604	237 334	123 664	236 809	122 848	211 013	109 456
	VET	123 500	52 874	122 741	52 952	124 842	54 354	129 196	57 383	130 393	58 747
Share of VET		34.38	30.35	33.90	29.99	34.47	30.53	35.30	31.84	38.19	34.93
Post-secondary (ISCED 4)	All	11575	5285	11501	5237	11383	5126	12924	5461	13052	5454
Tertiary (ISCED 5A+B)	All	300 299	165 604	317 136	177 354	315 090	175 507	332 435	185 398	349 832	194 696
Tertiary (ISCED 5A)	General	245 843	135 790	258 529	144 959	258 223	143 835	269 103	150 787	281 705	159 079
Tertiary (ISCED 5B)	VET	54 456	29 814	58 607	32 395	56 867	31 672	63 332	34 611	68 127	35 617
Share of VET		18.13	18.00	18.48	18.27	18.05	18.05	19.05	18.67	19.47	18.29
Tertiary (ISCED 6)	All	9 715	5 098	9 972	5 293	10 156	5 355	10 272	5 426	10 546	5 558
		2011		2012							
Pre-primary (ISCED 0)	All	437 271	212 337	440 456	214 336						
Primary (ISCED 1)	All	821 481	400 921	842 079	411 028						
Lower secondary (ISCED 2)	All	376 594	184 260	384 523	188 339						
	General	372 028	182 591	379 746	186 386						
	VET	4 566	1 669	4 777	1 953						
Share of VET		1.21	0.91	1.24	1.0369599						
Upper secondary (ISCED 3)	All	343 322	169 476	348 578	171 952						
	General	211 279	108 326	212 270	107 973						
	VET	132 043	61 150	136 308	63 979						
Share of VET		38.46	36.08	39.10	37.21						
Post-secondary (ISCED 4)	All	13828	5521	14215	5553						
Tertiary (ISCED 5A+B)	All	355 075	199 103	368 567	206 099						
Tertiary (ISCED 5A)	General	289 688	163 832	293 995	167 145						
Tertiary (ISCED 5B)	VET	65 387	35 271	74 572	38 954						
Share of VET		18.41	17.71	20.23	18.90						
Tertiary (ISCED 6)	All	10 590	5 548	10 615	5 567						

Note: m.d. = missing data. Source: 2006–10: UIS-UNESCO, last accessed 1 April 2014; 2011–12: CBS (data received)

TRP14.68a LOW ACHIEVERS IN PISA PERFORMANCE

	2006	2009	2012
Science	36.1	33.1	28.9
Mathematics	42.0	39.4	33.5
Reading	38.9	26.6	23.6

Note: Data show the percentage of students with score 1 or below.
Source: OECD, PISA study

TRP14.68b & 14.68c PERFORMANCE IN PIRLS AND TIMSS

	2006	2007	2011
Performance in PIRLS (4th grade)	512.0	n/a	541.0
Performance in TIMSS – mathematics (8th grade)	n/a	463.0	516.0
Performance in TIMSS – science (4th grade)	n/a	468.0	516.0

Note: n/a = not applicable (Israel does not participate in the survey).
Source: TIMMS and PIRLS International Agency Centre (www.iea.nl/)

TRP14.86 PUBLIC EXPENDITURE ON EDUCATION AS % OF GDP

	2006	2007	2008	2009	2010	2011	2012
% of GDP	7.90	7.90	8.00	8.00	8.00	8.10	8.10

Source: CBS Education

TRP14.87 PUBLIC EXPENDITURE ON EDUCATION AS % OF TOTAL GOVERNMENT EXPENDITURE

	2007	2008	2009	2010	2011
% of total government expenditure	14.5	14.6	14.3	15.8	16.0

Source: CBS (data received)

TRP14.89 PROPORTION OF PUBLIC EXPENDITURE ON VET

	2008		2009	
	ILS million	%	ILS million	%
Public expenditure on VET	5 534	10.37	5 418	9.76
Total public expenditure on education	53 343	100.00	55 536	100.00

Notes: VET expenditure appears in secondary educational institutions only; VET includes vocational, nautical and agricultural institutions.
Source: CBS, economy department

ADD. 1 LIFELONG LEARNING BY SEX (25–64)

	2006	2007	2008	2009	2010	2011	2012	2013
Total	7.0	7.1	7.5	8.2	8.2	7.5	9.7	9.5
Male	7.8	8.1	8.5	8.9	8.9	8.2	11.5	10.9
Female	6.2	6.2	6.5	7.5	7.5	6.8	8.0	8.1

Note: Data refer to present participation in education and do not include non-formal learning.
Source: CBS (data received)

ADD.2A NEETs RATE

	2013					
	15–24			15–29		
	Male	Female	Total	Male	Female	Total
Total	14.6	16.8	15.7	14.0	19.2	16.6

Source: CBS, labour force survey; data received by country

ADD.2B NEETs RATE BY EDUCATION LEVEL

	2013					
	15–24			15–29		
	Male	Female	Total	Male	Female	Total
Total	14.6	16.8	15.7	14.0	19.2	16.6
ISCED 0-2	10.8	11.0	10.9	13.3	15.6	14.3
ISCED 3-4	17.7	20.5	19.1	15.3	22.4	18.6
ISCED 5-6	11.5	18.2	15.8		15.9	13.6

Source: CBS, labour force survey; data received by country

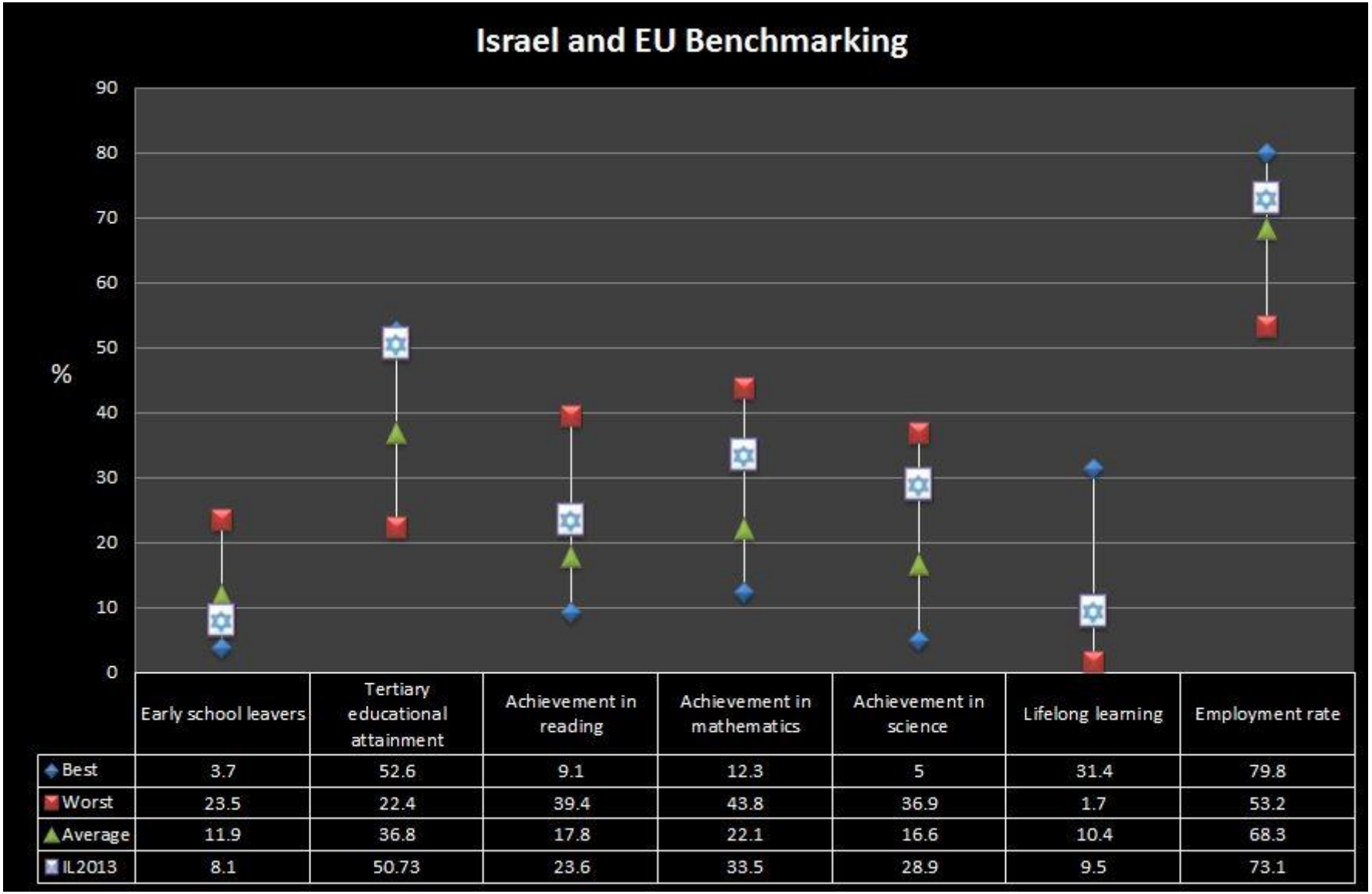
ADD.3 DROPOUT RATES IN UPPER SECONDARY, GENERAL AND VET, BY GENDER

	2010/11		
	Total	Male	Female
Total dropout rates, 12th grade	2.6	3.6	1.7
General orientation	2.4	3.3	1.6
VET	3.0	4.1	1.8

ISRAEL AND EU BENCHMARKING

TRP14 code	Indicator and definition		IL 2013	EU-28 2013		
				Average	Best	Worst
TRP14.55	Early school leavers (EU2020 headline target)	% of 18–24 with at most lower secondary education and not in further education or training	8.1	11.9	3.7	23.5
TRP14.46	Tertiary educational attainment (ET2020 headline target)	% of 30–34 who have successfully completed university or university-like education	50.73 (12)	36.8	52.6	22.4
TRP14.68	Achievement in reading, maths and science (ET2020 target), 2012	% of pupils with low performance in the **reading** scale (level 1 or below)	23.6	17.8	9.1	39.4
		% of pupils with low performance in the **mathematics** scale (level 1 or below)	33.5	22.1	12.3	43.8
		% of pupils with low performance in the **science** scale (level 1 or below)	28.9	16.6	5.0	36.9
ADD.1	Lifelong learning (ET2020 target)	% of 25–64 participating in education and training	9.5	10.4	31.4	1.7
TRP14.30b	Employment rate (20–64) (EU2020 headline target)		73.1	68.3	79.8	53.2

Sources: CSB (data received); OECD, PISA results



	Early school leavers	Tertiary educational attainment	Achievement in reading	Achievement in mathematics	Achievement in science	Lifelong learning	Employment rate
Best	3.7	52.6	9.1	12.3	5	31.4	79.8
Worst	23.5	22.4	39.4	43.8	36.9	1.7	53.2
Average	11.9	36.8	17.8	22.1	16.6	10.4	68.3
IL2013	8.1	50.73	23.6	33.5	28.9	9.5	73.1

ABBREVIATIONS

CBS	Central Bureau for Statistics
CVET	Continuing vocational education and training
ETF	European Training Foundation
GDP	Gross domestic product
ICT	Information and communications technology
IDF	Israel Defence Forces
ILS	New Israeli shekel
ISCED	International Standard Classification of Education
IT	Information technologies
IVET	Initial vocational education and training
JDC	Joint Distribution Committee
MAI	Manufacturers Association of Israel
NAMEE	National Authority for Measurement and Evaluation in Education
NITTS	National Institute for Training in Technology and Science
OECD	Organisation for Economic Cooperation and Development
TVET	Technological and vocational education and training
VET	Vocational education and training

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Interviews

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