TORINO PROCESS 2016-17

ISRAEL

Ministry of Education

Ministry of Economy

TORINO PROCESS 2016–17 ISRAEL

National Committee Members

Dr Florence Azran, Ministry of Education
Nurit Birger, Ministry of Economy
D. Tal Lotan Manufacturers Association of Israel
Sofi Artzev, Haim Portnoy, Central Bureau of Statistics
Michael Cohavy, Histadrut - National Labour Organization
Dr Eli Eisenberg, ORT Israel network
Dr Ronit Ashkenazy, AMAL network
Refaella Ballas, AMAL network
Sagi Ben Bassat, ORT Israel network

Authors: Refaella Ballas, AMAL network, Sagi Ben Bassat, ORT Israel network

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1. EXECUTIVE SUMMARY

1.1 Introduction

As the Israeli Torino Process enters its seventh year and fourth report, we note distinct progress in several areas. A national committee representing all stakeholders now meets regularly to discuss TVET issues. The 2016 TPR finds TVET in Israel highly regarded by decision makers. Although the Ministry of Education (MoE) wishes to have all Israeli students under its wings, including those of the vocational schools supervised by the Ministry of Economy (MOEC), this issue has not yet been settled. As for now, the MOEC schools are being moved as is[1] to the Ministry of Labour, Welfare and Social Services. The great change since the 2014 report is the formulation of a new accreditation system for technology students, which translates the MoE structure into a recognized 3-year accreditation programme. As part of a strategic, economic and social assessment submitted to the government, and following its resolution from June 2015, an inter-ministerial team was established to streamline and align accreditation for the different training systems. This comprehensive National Qualifications Framework (NQF) will facilitate transitions between vocational, technological and academic studies. In the new format, all national certificates and accreditations given by Israel's TVET systems will be ranked and made accessible to the public via the Prime Minister's Office. The team has now drafted its final recommendations, including reforms in the training of technicians and practical engineers.

The World Economic Report, 2016, looks into the Israeli government's explicit goal to position Israel at the core of the knowledge economy by investing in education and training, which is essential to innovation and economic growth. This case study of Israel information and communications technology (ICT) sector highlights the important role of the government in the emergence of Israel as a power house of high-tech in ICT, by laying the foundations for private industry to support innovation, and through substantial investment in building the much-needed human capital resource. The role of the government in advancing the economy of the state of Israel provides an excellent showcase for how a well thought-out and efficient government intervention contributed to the establishment of Israel's capability in ICT. As result, the comprehensive public policies and funding have brought a paradigm shift in technological and vocational education and training in Israel[2].

Israel brand as "start-up nation" is remarkable on a global scale. However, to maintain this status, Israel must continue to emphasize TVET nationwide and enhance its prestige. It must encourage top students to realize their potential in technology and engineering, not only in academe. It must also attract girls to study science and technology (helping them overcome wage discrimination in the future[3]), and enable appropriate TVET accreditation for socially vulnerable populations.

The 2016 Torino Process Report submitted herewith is more focused on data analysis and recommendations, according to the changes that have taken place since TPR 2014, and relates to the framework of questions received. We hope it will be a major factor in determining future policies.

Refaella Ballas and Sagi Ben-Bassat

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1 There is no change in the professional rankings and there are still two VET systems working concurrently.

2 Getz, Daphne; Goldberg, Itzhak, World Development Report 2016- "Digital Dividends- Best Practices and Lessons Learned in ICT Sector Innovation: A Case Study of Israel", Background Paper

3 The existence of significant wage gaps between men and women at the same level of proficiency is a part of the findings of OECD's PIAAC survey held in Israel.

1.2 Findings

A. OVERVIEW OF VET AND VISION FOR VET

Vision

In the last two years, we have witnessed a major change in the approach of the MoE, which is now ready to invest in vocational education, including retention of dropouts, who need vocational accreditation rather than matriculation.

The MoE's new Accreditation Dept. – The major change since the 2014 report is the creation of a new system of accreditation for students in technology education that translates the structure of technology studies into recognized accreditation in a three-year model.[4] This new system will be flexible and allow advancement and transition through the different levels of accreditation.[5]

Accreditation[6] - As part of the strategic, economic and social assessment made by The National Economic Council, and as part of a government resolution from June 2015[7], an inter-ministerial team has been established[8] to improve the accreditation system (IMAST[9]) for the different training systems and facilitate the transition of students, soldiers and other vocational, technological and academic training systems. According to this vision, a comprehensive mechanism will form the national Israeli accreditation system (NQF), the transition between academic, vocational and technological courses will be facilitated, and all national TVET certificates and accreditations will be ranked and made transparently accessible to the public. The team has now drafted its final recommendations, including a reform of TVET for technicians and practical engineers.

Consolidation versus division - The government debate over the transfer of about 60 vocational schools run by the MOEC to the supervision of the MoE was recently cancelled. This transfer was supposed to include far-reaching changes in management as well as in teaching staff, and end the existence of two parallel TVET systems. However, in August 2016, a decision was made to move some of the MOEC's authorities to the Ministry of Labour, Welfare and Social Services, including supervision of the vocational schools, which will continue to function as. Note that in the last two years, eight vocational schools owned by the technology education networks moved from the supervision of the MOEC to the supervision of the MoE, but the future trend of consolidation versus division is still unclear.

Legislation

There has been a distinct lack of any recent educational and economic legislation. MK Prof. Manuel Trachtenberg[10] recently launched an initiative to form a technological education council to reform the technology education system and adapt it to the changing needs of Israel's economy and industry.

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

Overview of economic and labour market factors that shape the demand for skills

One of the main identifiable factors is the massive penetration of computers and automation into the workplace. Following advances in ICT and the ability to rapidly process huge amounts of data, new areas of work are now at high risk. Studies indicate three elements that affect that risk level: "social intelligence", "creativity" and

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4 Starting with students who were in 10th grade in September 2015, and who will receive their certification in September 2018.

5 See specification in section D.9 and in Annex 1.

6 According to UNESCO, "accreditation" refers to validating the fact that programmes, materials or establishments under private or public supervision, meet statutory standards. According to CEDEFOP, accreditation of an education programme or training is a process of quality assurance, so the accreditation of such a programme is granted after making sure that it meets the standards determined by the professional body or by relevant legislation.

7 Government resolution no. 147 of 28.6.2015, related to "cultivating and utilizing human capital".

8 The team is led by the Prime Minister's Office and includes representatives of the MoE, the MOEC, the IDF, and the MAI.

9 IMAST – **I**nter-**M**inisterial **A**ccreditation **S**ystem Team

10 30.3.2016 Amendment to Technicians and Practical Engineers Law

"perception".[11] The more these components are needed for a job, the less likely the worker is to be replaced by a machine. About 40% of the jobs in Israel are at high risk of computerisation within the next two decades.[12] Indeed, in the last two decades a 9% decrease has been recorded in the relative ratio of high-risk work hours out of the economy's total work hours. Moreover, one can detect growth in the available jobs in the market, especially in technological areas. The ratio between low workforce productivity and long working hours is a significant challenge for Israel's labour market.

Solutions for identifying demand for skills

Israel has a partial system for collecting data about the current gap between supply and demand. The Central Bureau of Statistics (CBS) has surveys of unfilled jobs; the MOEC has surveys of occupational needs, and employers' organizations run surveys, such as the MAI surveys of expectations and HR needs. Nevertheless, there are no national mechanisms to define long-term needs, vocations or skills. In June 2016, the results of the OECD PIAAC survey[13] for different populations between the ages of 16 and 65 were published, showing that Israel falls below the OECD average in the three areas of proficiency examined: literacy, numeracy and problem solving in a technological environment.

Solutions for matching skills supply with demand

The reorganization necessary for a changing labour market should include extending the use of vocational training tools and focusing them on the relevant characteristics of those who have dropped out in order to prepare them for the future labour market; ongoing updating of existing curricula; forming a government body that will be in charge and work with training institutions, academic institutes, schools etc. The Labour Federation recommends creating internship positions for limited periods in industry as an effective solution that would bridge between labour market needs and workers' training. In order to find a holistic solution to creating a training format that is updated on-line, the MOEC has formed a pedagogical council representing the main actors in the economy, to shape a practical VET policy.

Access to work through better transition

Israel's labour market is relatively sophisticated, with technology platforms that allow matching between VET graduates and potential employers. However, due to lack of dialogue and feedback, graduates do not always get the relevant tools, which would allow them access to professionally appropriate positions. According to the Labour Federation, there are no established VET mechanisms in Israel to handle the transition from unemployment to employment, and the state does not provide sufficient tools to that end. The GEMM Report[14] findings show this as well. The result is a gap between labour market demand and the VET system's ability to provide an appropriate response.

Access to work through business creation and self-employment

Israel's "start-up nation" character requires cultivation of entrepreneurship, particularly business entrepreneurship, in order to preserve this status. "Entrepreneurship as a key competence" does not yet exist in systemic training programmes and is not a part of the required courses at school. Nevertheless, VET suppliers, especially the large technological education networks, ORT Israel and AMAL, are pioneers in developing entrepreneurial programmes, study spaces and entrepreneurship centres, as part of innovative moves designed to provide young people with skills necessary for their integration into the industry of tomorrow.

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[11] See study graph in Annex 2.

[12] One can see this also in the chapter "Jobs at risk": the computerization trends in the Israeli labour market from the Taub Center Annual Report, presenting a 2015-2016 socioeconomic status report for Israel, relative to other countries and to the past.

[13] OECD 2016 reports on Israel on PISA and PIAAC Results 2016.OECD Skills Studies, Skills Matter: Further results from the survey of adult skills.

[14] ETF, Israel GEMM 2016 "Working in Partnership to better match skills offer and demand in the South of Israel" Dr. Roby Nathanson

C. EFFECTIVENESS AND EFFICIENCY IN ADDRESSING DEMOGRAPHIC, SOCIAL AND INCLUSION DEMAND

Overview of sociodemographic factors that shape demand for VET provision

At the heart of the social agenda is the integration of people with disabilities and special needs into the labour market. For that purpose, equal rights regulations for disabled people were recently legislated (making VET accessible for the disabled), and will be effective as of January 2017. In July 2016, a historic bill was passed, compelling Israel's public institutions to hire people with disabilities at a rate of 5% of their workforce, thus putting Israel on the same level as Europe and the USA.

The CVET administered and funded by MoEC covers only a small proportion of the target population: including those on long-term benefits, Arabs, ultra-Orthodox individuals (especially women) and people with disabilities. As well as continuing to support ongoing programmes, the ministry has also begun to invest in a number of innovative educational programmes aimed at increasing opportunities for special needs students and promoting a greater focus on mathematics at secondary level e.g. girls; weak learners; youth at risk; the non-Jewish sector and Ultra-Orthodox Jewish sector. MoEC has opened four schools for ultra-Orthodox youth and nine guidance centres to serve the Ethiopian sector: MoEC also provides programmes for people with disabilities, and youth with learning disabilities or mental health issues. The educational networks ORT Israel and AMAL manage schools and provide programmes for the Arab, Ultra-Orthodox and Bedouin sector, and run education and training courses for the integration of immigrants.

Since 2000, Haredi women's participation in the labour market has climbed by 30%. 75% of them now have jobs, in line with the country's overall female population. According to the 2015 survey by the Israel Democracy Institute think-tank, Haredi women are becoming increasingly qualified and their role inside their communities is evolving. A significant number of high tech companies have chosen to hire Haredi man and women encouraged by generous state subsidies as an incentive for ultra-Orthodox to join the labour force and not rely on welfare. In addition, Haredi workers are prepared to accept lower-than-average wages as a trade-off for being given working conditions suited to their lifestyle.

The newly launched Equal Opportunity Programme (February 2016) for special needs children will see NIS 945 million invested in providing greater accessibility in schools and classrooms to accommodate diverse special needs, including cognitive disabilities. Particular emphasis will be placed on mathematics and science to support national efforts to retain Israel's reputation as the start-up nation and as a leading force in the world of high-tech. In the words of the Minister of Education, "The future of the State of Israel depends on the development of quality human capital." Other objectives of the recently launched initiative include boosting written Hebrew skills and introducing Arabic as a required subject from preschool through Grade 12. A marked increase in demand from students for matriculation (Bagrut) studies in Arabic has led Ministry of Education (approved in Knesset in August 2016) to pass the law on learning Arabic from grade 1-12. This new government program will see Arabic language classes made compulsory in Israel's schools, starting from the fifth grade. In 2016, it started as a pilot initiative in 170 public and religious-public schools in northern Israel. The new law requests also the revision of curricula. The change is expected to draw dozens of Arabic teachers into the school system. Other key reforms launched this year include an extension to preschool education and getting more high school students to take the five-point math matriculation exam.

To sum up, despite the ambitious government and employers' programmes and initiatives, and recent achievements and developments, Israeli government is aware that TVET is still an area where more investment is needed to meet the current needs of labour market through skills. In the quoted Israeli reports, different policy assessment reports including the discussions among the skills related institutions' Policy platforms, a common consensus has been reached that TVET could play a big role in combating unemployment, especially among certain minority groups, such as the Haredi and Arab Communities.

Access, participation, progression

A significant step taken in order to increase VET's appeal among the youth is the use of publicity and marketing. Every year the MoE and the MOEC lead an enrolment campaign, stressing the advantages of the TVET over

academic education. The MoE has launched a campaign emphasizing the new accreditation system[15] and encouraging youth to enrol in technology education study tracks, which will grant them a matriculation certificate as well as vocational accreditation. The MOEC, on the other hand, is emphasizing the apprenticeship system as a good alternative, since it allows the apprentice to combine core studies with theoretical and practical vocational studies, and experience paid work in the industry.

In addition, the welfare authorities have short-term training courses for youth at risk to help them integrate into the labour market. The MAI is involved in several programmes aiming to attract students to choose technological subjects in upper secondary classes.

As to transitioning from VET to higher education, VET students who attain a technological certificate can proceed to technician and practical engineering studies. Graduates can also complete engineering studies in special frameworks (Pa'amei Atidim), and in colleges of engineering, but there are no such continuations in universities. As a rule, mobility between VET and academia is low.

Regarding vulnerable subgroups excluded from the labour market, the MOEC data show that the two most occupationally vulnerable subgroups are ultra-orthodox Jews (especially men) and Arabs (especially women). Besides these two, there are additional subgroups with a relatively low employment rate: single parents, Ethiopian Jews and people with disabilities. There are job guidance centres for the different groups, and the Vouchers Programme, in which the M. Econ subsidizes vocational training courses, has been extended.

Delivering to socioeconomic and inclusion demands and objectives

With regard to providing solutions to economically, socially and politically disadvantaged groups, the MOEC's VET system is very successful in providing learning opportunities to the Arabic-speaking sector and to the periphery. Vocational schools in the Arabic-speaking sector provide a very good opportunity for their graduates to be integrated into industry.[16] The MOEC also helps new immigrants through special preparatory classes. The Adult Training Department, together with the Ministry of Immigration and Absorption, holds vocational courses for immigrants from France and the Ukraine, and provides – through youth training - vocational training in autotronics to Ethiopian immigrants. Regarding youth in the periphery, two out of the five government training centres are located in the northern region, which thus gets more input than other regions in relation to its population size. The preparatory programme is one of the common ways to narrow existing gaps between the normative population and the underprivileged groups in society. The MAI and the IDF have formed a strategic plan to train and integrate soldiers into working in the industry (mainly ultra-orthodox and minority soldiers) after their discharge from the army.

In February 2016 the largest ever government plan to advance economic development in the Arab sector was approved, allocating approximately NIS 15 billion for the development of Arab society and closing socio-economic gaps between Jews and Arab in Israel .The Authority for Economic Development of the Arab Sector, Government of Israel, provides the most current updates on the government's investments and approach to these issues, the latest assessments of recent progress and challenges ahead, and discusses existing programs as well as future government plans in this area. In particular, government and civil society programs aim to develop industrial zones and parks; enhance access to housing, public transportation, adequate child-care options and higher education; increase employment opportunities including vocational and professional training, support for high-tech careers, job creation and equal employment policies; ensure access to government tenders and contracts; and more [17].

[15] See expansion in section D.9

[16] In this context, the RAMA report dated April 2016 provides data, which can testify to the insufficient supply of adequate learning frameworks for Arabic speakers, especially in the south of Israel. Possibly a greater supply of similar vocational frameworks would help decrease the number of students who drop out before upper secondary school.

[17] Read more about employment-related efforts in the Task Force briefing paper: Arab Citizen Employment in Israel, Critical Concern and Great Potential http://www.iataskforce.org/resources/view/1394

D. INTERNAL EFFICIENCY OF THE VET SYSTEM

Teaching and learning

There is a tremendous lack of TVET teachers as well as expert instructors, because the TVET requires mostly licensed engineers with industrial experience, but working in industry pays better than teaching. The government does not offer incentives to engineers and experts who turn to teaching, as teachers in Israel earn a uniform salary related not to their expertise, but rather to their degree and years of seniority. Upon entering the Reform for Meaningful Learning18, the MoE prepared a layout of in-service courses in order to train teachers to teach in innovative ways and published a directive requiring all the technology education teachers to take a 210-hour training programme on PBL over seven years. In addition, the MoE works closely with industry, academia and the IDF. Teachers and students are exposed to industries relevant to their fields through a project that integrates the students into industry (practical training while still at school). In recent years, online learning has penetrated all fields of study with great intensity. Teachers have been trained for this and the ministry inspectors' websites are at their disposal with online study materials. This process started with great momentum mainly in the technology education networks, and from there it trickled through to the rest of the education system. Several network schools have even started teaching interdisciplinary clusters compatible with the world of industry, where teams from different areas of technology work together. As of 2016, the MOEC is also promoting alternative assessment and the creation of a model for PBL teaching and assessment.

Learning conditions

Israeli education spending as a share of GDP is relatively high in comparison to other OECD countries, which is currently 7.9% of GDP (2014). Despite this increase, the evidence shows that it is still not large enough to cope with the growing demand for the technological/vocational education. The key focus of the reform package is on paradigm shift of teaching and learnings, the impact of knowledge economy and ICT impact, teacher professional development and teacher training as a facilitator rather than instructor shifting the power from central authorities (central office, districts and local education authorities) to the school level, towards school empowerment and school based management, internal and external quality control. The recent efforts take into account worldwide trends, innovation and the underlying employment crisis in a broad systemic approach that also envisages future skills needs. All is based on ongoing research and impact assessment. The MoE has also set up two very advanced regional technology centres: one in Haifa in the north and the other in Beer Sheba in the south. These centres have the best equipment and teaching staff. They provide practical training for all students of the relevant study courses in the region, and serve as a bridge between the schools and industry. The technology education networks invest in building learning spaces and entrepreneurship centres in schoolyards[19] and advanced computerized labs, and introducing innovative technologies into teaching, such as Google tools, iPads, 3D printers, laser cutting and equipment that allows for maker spaces. They also create enrichment facilities. The government does not offer industry incentives to find job openings for students, unlike the German government, which runs a dual education system. Moreover, the employment period is limited: immediately after school graduation, most students join the army, and there is no telling if after their discharge they will return to the factory. However, recently there has been a tendency in the MoE to start integrating a work-based learning programme as a part of a meaningful learning experience (not for pay). This involves integrating students into industry for all study tracks and levels of study. Different models from around the world are being examined, with a view to implementation into the Israeli education system.

In the MOEC schools, on the other hand, there is integral work-based learning, but a better connection between the work world and the teaching and learning world is required. At present most subjects taught are low-tech, and the possibility of work-based learning in high-tech fields, which form the major part of Israel's profitable industry, is still lacking. One should also note that in high-tech industries and in start-ups, there is not yet any work-based study programme.

[18] About three years ago, see TPR 2014

[19] For example, AMAL's entrepreneurship centers won the ETF award for being inspiring centers and role models of collaboration between education, community and industry.

Quality assurance

Knowledge creation-orientated mechanisms exist mainly in the ministries, which are responsible for qualifications, the curriculum and exams. MoE has specialist committees for professions. Academic representatives, MAI, the relevant trade union, other ministries and teachers' representatives also serve on these committees. They are responsible for quality assurance for the curricula and for developing curriculum requirements. The National Authority for Measurement and Evaluation in Education (NAMEE) creates and administers assessment of student achievement, pedagogy and the school matriculation exam. The ministries and MAI are working to get employers more involved in deciding the knowledge and competencies TVET should foster. However, the mechanisms for doing this have not yet been worked out.

The MoE requires every teacher by law to have at least a bachelor degree and a teaching diploma. In vocational education there are exceptions, mostly due to the irrelevance of an academic degree compared to the need for actual work experience. Still, one can sense the difficulty in recruiting teachers with both employment experience and teaching skills. In recent years a career retraining course has been opened for engineers who wish to become teachers, and next year several such courses for young practical engineers (outstanding 14th grade graduates) and Meister courses (experienced practical engineers) will be opened. The MoE has a unit that deals with evaluation and assessment of the entire system, RAMA20 , and a choice of suppliers who provide training programmes and continuing education that meet pedagogical, professional and legal standards. The MOEC is undergoing a process of evaluation and feedback of the adult and youth training programmes, through satisfaction surveys for graduates of the budgeted training centres, through professional supervision, and evaluation and assessment processes through reports, identifying lapses or exaggerated successes, and analysing data from all the vocational units. The large technological education networks have their own developed independent layouts of training programmes and in-service courses.

Learning outcomes

All MoE students are tested, assessed and evaluated in external national and general matriculation exams, for academic subjects as well as for technological/vocational and practical ones. All these are professionally directed and supervised by the Chief Inspectors and advisory committees of the specific discipline. The exams evaluate students' knowledge and the quality of their work. Evaluation of MOEC students' achievements is performed in three models: a theoretical exam, a practical exam including the manufacturing of a product, and a combined final project. ORT Israel and AMAL, have their own ongoing pedagogical-organizational monitoring systems. In addition to raising eligibility rates for the matriculation certificate, its quality is also emphasized, as is the number of students who major in science and technology.

In addition to the vocational accreditation system in the MOEC, a new Accreditation Dept. has been opened in the MoE, to create a thorough and methodical accreditation system for students of technology. In accordance with this worldview, a flexible accreditation system will be established; allowing advancement and transition through the different accreditation hierarchies (see subject specifications in Annex 1). This new system translates the technology school structure into a recognized accreditation program, in a three-year model starting from 10th grade.[21]

The Israeli Knesset launched an initiative in 2016 to establish a Technological Education Council to reform the technology education system and adapt it to the changing needs of Israel's economy and industry. This is the result of the enhanced cooperation of the ministries in charge of skills, which are now ready to invest in vocational education, including retention of dropouts, who need vocational accreditation rather than matriculation. As stated above the government is acting on these challenges particularly related to qualification recognition: i) lack of legal frameworks and non-existence of procedures to actually entitle and enable foreign qualified professionals/workers to get their qualifications recognised; ii) lack of employers' understanding of foreign qualifications and low awareness of the existence of recognition services where these exist (with the exception of those companies that have highly professionalised international recruitment services); and iii) lack

[20] RAMA – the National Authority for Evaluation and Assessment in Education

[21] 10th grade students who started the school year in September 2015 will be the first ones to get this new accreditation in September 2018.

of an established structure that would support exchange of information about vocational qualifications in view of their recognition. This explains the efforts made by different ministries/institutions and coordinated by Prime Minister's Office. Israeli Department for Evaluation of Foreign Academic Degrees (DEFAD) at the Ministry of Education (MoE), Ministry of Economy and Industry, other departments of Ministry of Education, members and experts from the Israel TVET Committee including Employers' organisations and trade union which have participated in a number of peer learning events, workshops, training programmes organised by the European Commission and European Training Foundation (ETF). Within the reporting period, the Israeli counterparts have been exposed to the ongoing developments into the European Qualification Framework (EQF) and the referencing of the EU Member States and other ETF partner countries NQFs.

E. GOVERNANCE AND POLICY PRACTICES IN THE VET SYSTEM

TVET governance is centralised, with some functions devolved. Ministries centrally control all school curriculum and textbooks, national assessments and exams for matriculation, and the inspection system. This is meant as a public guarantee of quality, irrespective of the type of school. In other significant respects, the local authorities, provider networks and the TVET providers themselves have considerable management flexibility and autonomy. Provision of VET is mainly state-provided and state-regulated by the Ministry of Education (MoE) and the Ministry of Economy and Industry (MoECC). Under MoE, VET covers two separate paths: (1) technological-scientific education and (2) vocational (occupational) education. Study tracks in the technological-scientific path are: a) engineering studies for learners who will continue to university; b) technology studies for learners who will continue to technician / practical engineer programmes in school / technical college; and c) occupational studies for learners who will enter the job market directly.

VET is mainly state-provided and state-regulated by the Ministry of Education (MoE) and the Ministry of Economy and Industry (MoEC). VET, initial training before entering the labour market is provided in state-run public schools / colleges and privately owned managed schools run by technological-education networks and supervised by the key ministries. Some continuing vocational education and training (CVET) and some continuous training (CVT) for adults after joining the labour force, is state-funded by the MoEC, including training for jobseekers and employer-led training for adults whom they wish to integrate into their work force. MoE supervises some CVET offers for adults at their own expense. The government, local authorities and the education networks provide the main sources of funding for MoE governed VET provision. While no training taxes are levied on employers, the Manufacturers' Association of Israel (MAI) and its members contribute directly to particular initiatives and through the provision of facilities, while the MoEC apprenticeship scheme is heavily subsidised in kind by the private sector funded by the government. The Israeli Defence Forces (IDF) contribute to funding where schools operate on their premises.

Under MoEC the VET tracks are: a) apprenticeships; b) pre-VET and IVET provision for specific youth populations in education network schools; and c) frameworks for certified technicians and practical engineers through the National Institute for Training in Technology and Science (NITTS).

Update on governance arrangements

The present situation of divided management of the TVET schools has focused the government debate over the transfer of about 60 vocational schools run by the Ministry of Economy and Industry (MoEC) to the supervision of the Ministry of Education (MoE). However, this transfer, which was supposed to include far-reaching changes in management as well as in teaching staff, and end the existence of two parallel TVET systems, was cancelled and in August 2016, a decision was made to move some of the MoEC's authorities to the Ministry of Labour, Welfare and Social Services (MLWSS), including supervision of these 60 vocational schools.

This means that, despite the MoE's wish to have all Israeli students under its wing, including those of the vocational schools supervised by the MOEC, there is no change whatsoever in the vocational rankings and there are still two VET systems working in parallel.

Assessment of governance arrangements

In Israel, most of the responsibility for TVET lies within the MoE, the second largest ministry in the country after the Ministry of Defence (MoD), with the biggest budgets. It is up to the MoE to make sure that the effectiveness and relevance of all TVET courses are maximized according to the economy's needs. Nevertheless, the MOEC

is still highly involved through its Vocational Training Dept. The IMAST has recently recommended forming a steering committee that would maximize the mutual recognition between the secondary school TVET systems, and combine the relevant information systems of both ministries.

As a rule, the opening of TVET courses in secondary and comprehensive schools in all sectors is coordinated with and approved by the local authorities and the owners of the schools according to the needs of the city, the region and local industry. Local authorities have recently introduced a new means, the tender method. The original idea was to increase competition among VET suppliers and thereby improve the quality of education. But several problems have led to an opposite result: the criteria in the tenders were not set by the state, but by each local authority; decision makers took into account political and other considerations that don't necessarily promote the best supplier; winning a tender is often followed by appeals from other suppliers, even though the cause for the appeal may be merely procedural.

1.3 Conclusions and recommendations

This section presents recommendations to decision makers and is based on operative decisions and recommendations from several reports we relied upon such as the Taub report, The CBS data, OECD reports, and the GEMM report, the IMAST report on transition among TVET systems, the RAMA report and the recommendations of the Vocational Training Dept. of the MOEC. The recommendations are arranged according to the order of the sections in the report. The agreed recommendation and the priorities identified for the upcoming period with more concrete implementation actions are as follows:

1. National agenda should focus on strategic and legal framework for the state to set the socio political framework in making TVET more attractive and inclusive to help reduce early leaving and promoting further learning among those at risk (e.g. diverse ethnic and religious groups of the population);

2. Enhancement of long-term policies through effective investment, enhanced strategic partnership and increased cooperation to further promote and imbed the innovation and excellence in TVET, as well as to strengthen permeable and flexible pathways. Develop a policy framework coupled with financial support to boost the existing dialogue and cooperation with social partners and other relevant stakeholders and various central and local competent institutions, including universities for raising quality and attractiveness of accessible and inclusive TVET;

3. Increase budget for TVET financing at national level and by looking for and further encouraging and/ or incentivise innovation in teaching and learning, and other aspects of local activity like engaging with industry and forming partnerships coupled with financial incentives, such as tax exemptions, for contributions to TVET. Promoting and financing apprenticeship by involving employers' organisations, companies and TVET providers as well as further stimulating innovation and entrepreneurship by introducing "entrepreneurship as a key competence" at all levels;

4. In order to address the TVET supply and labour market demand mismatch, to replace the ad hoc feedback mechanisms in Israel with national/regional skills foresight and forecasting mechanism by establishing a sophisticated model that will facilitate the allocation of workers to open positions and by creating a framework in which business representatives take an active part in training both in the schools and in the workplace;

5. Establishment of the Israeli National Qualification Framework for internal mobility and recognition of qualification, a framework governed by common principles: learning outcomes, agreed descriptors and levels, but allowing sectoral autonomy between higher education and TVET.

6. Joint institutional efforts to enhance the visibility of TVET and to highlight the breakthroughs on preparing today's youth to integrate into the ever-changing global economy and society, importance of entrepreneurship education and training as an integral feature of 21st century vocational training.

A. VET OVERVIEW AND VISION

Overview of VET in the socioeconomic context

Investing in research and development in traditional industries: the GEMM report recommends allocating half of the government's expenditure on R&D given to universities and to promoting industrial technologies (about 3 billion shekels), to traditional industries with a higher growth potential. In addition, regional R&D centres should be established in order to provide more support to small businesses and the self-employed, which together constitute 60% of the workforce.

Opening new schools adjacent to factories: Opening new schools in this model, with the collaboration of leading employers, and considers this an attractive model, which provides the best response to both the youth and to industry. The model provides a path of life-long learning.

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

Creating a special function for contact with employers: Producing a new platform for budgeted VET, which will include partial privatization of the five government training centres, where the government will still run the centres, but the teaching services will be centrally purchased. The MOEC recommends putting together a R&D unit to assess the compatibility of training with current and future HR market needs.

Strategies for narrowing gaps by enhancing productivity: Implementing advanced production methods and increasing physical and human assets, which will lead to a growth in marginal workforce productivity and a rise in average wage and standard of living.[22]

Examining options for practical engineers to transition to academic studies: The Council of Higher Education should re-examine the levels of exemption universities can grant practical engineers who wish to study for a B.Tech degree, and the level of exemption (non-academic) technology colleges can grant practical engineers who wish to enrol for continuing education. One should also look into the possibility of forming specific collaborations between technology and academic colleges for a B.Tech degree. Moreover, vocational transition channels for a B.Tech degree in technology teaching (B.Ed.Tech) should be made available for practical engineers.

Updating curricula and skills acquired for occupations at high risk of automation: Since occupations with low risk of automation require skills such as creativity, social intelligence, complex perception and negotiation abilities, all known as "soft skills"[23]**,** we recommend making them an integral part of the curriculum that is evaluated via alternative assessment. We also recommend introducing "entrepreneurship as a key competence" as a mandatory course. In addition, given Israel's scores in the OECD's large-scale international skills survey, we recommend investing in reading literacy (only about 37% of the respondents in Israel were located in the upper levels of reading comprehension, including comprehending long or complex texts and making appropriate inferences, compared with a 46% average in OECD countries).

Creating short-term internships in industry: The Labour Federation recommends expanding on-the-job short-term VET as an effective solution to bridge between labour market needs and employee training.

C. EFFECTIVENESS AND EFFICIENCY IN ADDRESSING DEMOGRAPHIC, SOCIAL AND INCLUSION DEMAND

Despite the ambitious government and employers' programmes and initiatives, and recent achievements and developments, Israeli government is aware that TVET is still an area where more investment is needed to meet the current needs of labour market through skills. In the quoted Israeli reports, different policy assessment reports including the discussions among the skills related institutions' Policy platforms, it has been reached a

[22] In this context, studies indicate no direct correlation between workforce productivity and number of work hours. In Israel, the number of work hours is above average, but workforce productivity is low. We recommend reducing the number of work hours.

[23] "Soft skills" are divided into two major categories: practical skills (e.g. language, computers, social networks, mathematical abilities and basic financial skills), and emotional/social skills (i.e. writing a CV, preparing for job interviews, teamwork, interpersonal and life skills).

common consensus that TVET could play a big role in combating unemployment, especially among certain minority groups, such as the Haredi and Arab communities.

Image enhancement: Establishing high quality internationally recognized accreditation system for the TVET system to enhance its image. To make it more attractive, schools should visible modernity by using modern training tools; they should invest in branding, and pay a yearly grant to workers in traditional industries (like grants given to recently discharged soldiers who work for a short term in 'preferred jobs').

Increasing the number of students from populations with low employment rates (Arabs and ultra-orthodox Jews) in the post-secondary TVET programmes, in view of the great inherent potential of these training programmes in terms of promoting integration into the labour market, driving growth and narrowing social gaps.

Establishing a mutual **fund** for the employers' associations, the trade unions and the government, which will promote TVET according to labour market trends. It recommends **strengthening cooperation between the private sector and the trade unions** and enhancing the integration of graduates into industry, so that they benefit from in-service courses parallel to working, as established in the collective agreements of the various trade unions.

Attracting girls to science and technology studies: Since studies show that the occupational horizon of women in all sectors is more vulnerable than that of men, we recommend encouraging girls to select science and technology study tracks, which will allow them to develop long-term careers in professions needed in industry.

D. INTERNAL EFFICIENCY OF THE VET SYSTEM

The state should offer financial incentives to industry to integrate students into the workplace and encourage "work-based learning" in technology education. The possibility of "work-based learning" is also needed in the high-tech professions, which constitute the major part of the profitable industry in Israel. In high-tech industries and in start-ups such a programme does yet not exist, and should be developed. The state should also offer attractive financial incentives to engineers and industry experts to teach in such programmes.

Students should be encouraged to use opportunities to complete their matriculation certificate and acquire post-secondary technology education. The team working on the improved accreditation system recommends that both ministries work together to maximize such opportunities and has proposed a detailed plan of action (see section D.13).

Monitoring ongoing information: Conducting periodic surveys among TVET graduates to document their study specialisations vs. their actual jobs. The IDF should also be included in the survey, being a large organization that serves industry as a stimulus for professional development and experience.

Establishing the NQF: All the reports we surveyed recommend establishing a framework for mapping and grading all national TVET certificates, making them accessible to the public. The NQF will make clear to training institutes and employers, the certificates' value, their importance for continuing studies and their potential for transition between vocational, technological and academic studies. The reports recommend collaboration between academic institutions and the IDF, in everything that concerns army training programmes and their recognition for the purpose of technology studies or a vocational certificate. This includes promoting academic and inter-ministerial collaboration in IDF theoretical training programmes, completing their recognition for purposes of a vocational certificate, and forming guidelines for recognition of army training programmes for the purpose of technology studies.

E. GOVERNANCE AND POLICY PRACTICES

Development assessment

TVET governance development is targeted. While some elements of the system, like exams and assessments, the curriculum, textbooks and inspection are under central control, other stakeholders can run their own initiatives. Therefore, education networks, local authorities and training providers have significant decentralised authority. Governance is fragmented at central level, with MoE and MoEc managing and financing two different systems. Local authorities have a significant role in TVET organisation as owners of MoE schools. Employers

also have a positive role, through MAI's prominent part in developing TVET policy, as well as implementation and reform. Government often calls on it to engage in training issues, it has built up its own organisation to deal with TVET, and it has a considerable presence on national forums. Histadrut is less active. In addition, while collaboration between ministries, MAI and other stakeholders is extensive, it is also ad hoc.

Ongoing work in policy development

Management of VET provider networks is seen in education networks' mediation between national and local levels of provision, and between public and private stakeholders. This brings flexibility and innovation to TVET governance. However, there are doubts about whether regulations covering different stakeholders' activities are fit for purpose, and a review could help resolve them.

Bridging the mismatch between supply and demand: Creating a three-pronged feedback mechanism: regular updating of new information and data concerning the labour market; including representatives of business and industry sectors in decision-making regarding the opening or closing of courses and designing curricula in existing ones; strengthening cooperation with the business sector; constructing a sophisticated model to promote the assigning of workers to available jobs and creating a training framework within the schools themselves and in the workplace, so that the business sector's representatives can be actively involved.

2. RESPONSES TO ANALYTICAL FRAMEWORK QUESTIONS

A. Overview of VET and vision for VET

Vision and progress

A.1 Israel is an OECD high-income country with a population of 8.4 million people. Over 90% of the population lives in urban areas. Some 75% of the population is Jewish and most of the remaining 25% is Arab (about 20%). With high life expectancy and low infant mortality rates, continued population growth is expected, but with a shift towards an ageing population.

Even though the economy is expected to grow 2.8% in 2016, external risks from geopolitical factors and a slow recovery in global demand weigh on the country's economic outlook. In recent years, the labour market has experienced positive developments, such as reduced unemployment and rising labour force participation rates. A favourable financial environment also contributes to making Israel a powerhouse of innovation. The national unemployment rate was relatively low (5.3%), in 2015, the labour force participation rate for the working age population was 72.2%, and the youth unemployment rate (15-24) only 9.3%. (Central Bureau of Statistics [CBS], June 2016). The gap between highest and lowest incomes continues to widen.

Youth have a relatively easy transition from education to the labour market. The proportion of Israeli youth (15-29) not in employment, education or training (NEET) was approximately 14% in 2015, very close to the OECD average. Israeli NEETs are more likely than their OECD counterparts to be inactive, rather than actively searching for a job. This is particularly true of the youngest NEETs: more than 4 out of 5 teenage NEETs are inactive. This group includes many early school leavers (70% in 2015) whose future career prospects may be quite limited[24].

The recently published analysis "A Picture of the Nation- Israel's Society and Economy in Figures" (Taub Center 2016), suggests this is due to a range of underlying factors. Despite the relatively good employment rates, many Israelis face economic challenges: many Israeli households across sectors and income levels have difficulty covering their monthly expenditures. One of the biggest challenges is poverty, as one in five Israeli households and one in three Israeli children live below the poverty line. This is coupled with the lack of sufficient human capital due to poor basic education in general and for ultra-Orthodox men (who resist secular education or training of any kind) and Arab Israeli students in particular.

A.2 **Updates and developments since 2014:**

In the past two years, we have witnessed a change in the approach of the Ministry of Education (MoE) – mainly because of the growing recognition that vocational education is essential to the needs of industry and high-tech. The MoE is now ready to invest in TVET, including an attempt to retain dropout youth, as they need vocational accreditation rather than matriculation.

The MoE's new Accreditation Dept. - The major change evident in the 2014 report is the establishment of a new system of accreditation for students in technology education that translates the structure of the studies into recognized certification in a three-year model.[25] The technological-vocational track aspires to enable every graduate to have a meaningful certificate of value in the labour market or for continued studies towards higher certification, diplomas for technicians and practical engineers and academic engineering studies. To match this view, a new flexible system of certification is being arranged to enable advancement from one level to the next.[26]The MoE is working to maximize recognition of students in TVET tracks by relevant government offices and non-state actors. Establishing this department is compatible with the need to improve the accreditation system for TVET graduates in Israel.

[24] Education at a Glance 2016: OECD Indicators © OECD 2016

[25] Starting with students who were in 10th grade in September 2015, and who will receive their certification in September 2018.

[26] See details in section D9 and in Annex 1.

Accreditation Committee:[27] In 2015, as part of its policy on promoting employability, internal mobility and equal opportunities for all sectors of Israeli society, the Israeli government issued resolution No. 147, on June 28, 2015. [28] The resolution formalises the establishment of an inter-ministerial committee to work on the above-mentioned challenges. One of the many outcomes of the work was the urgent need to improve the recognition and validation of formal, non-formal and informal education in Israel with the ultimate aim of establishing an Israeli NQF that caters to the needs and context of Israel. The policy note outlines the positive aspect as well as benefits an Israeli NQF framework will bring to Israeli citizens' mobility both horizontally and vertically, enabling them access to all levels of education and labour market integration .For the moment, the NQF process is seen as a tool to kick-start or speed up processes, bringing stakeholders together, building a common understanding and working towards agreed solutions, which will also affect VET reform in Israel. Thus, it was decided to set up an inter-ministerial team (IMAST) to "improve the system of accreditation between the different training systems in order to improve the mobility of students, students and soldiers as they move from the education system into the IDF and later into other systems, including vocational, technological and academic education. This is to be done while examining the possibility of transferring information between systems, including a legal examination". According to the new vision, it was decided to establish an integrating mechanism and a set of national certificates for Israel by streamlining and aligning the accreditation system (NQF), promoting transitions between vocational, technological and academic paths, ranking all national certificates and making them accessible to the public, all under the supervision of the Prime Minister's Office. The team has made its final recommendations, including the recommendation for a reform in the training of technicians and practical engineers.

Unification vs. division – The government recently cancelled a debate on transferring all vocational schools overseen by the MOEC to the hands of the MoE. This would have meant bringing 12,000 students over to the MoE within two years, effecting far-reaching changes both in management and in probably teaching staff. Gaps in certification as well as large gaps in pedagogy would have to be dealt with, including the issue of work experience while studying, and a change in legislation to enable students to work. This would mean the end of two parallel TVET systems - one under the MOEC with 60 high schools (some 12,000 students) and the other under the MoE with 900 high schools (some 150,000 students). In this context, we should mention the RAMA report of April 2016,29 showing that when taking into account the particular characteristics of the MOEC students, only one third of the students with these characteristics in the MoE are eligible for a matriculation certificate as opposed to half of the students under the MOEC who are eligible for a vocational certificate. We note here the essential differences between a matriculation certificate and a vocational certificate, in terms of both the path of study and its requirements and in terms of the occupational horizon, these certificates afford in adult life. In August 2016, it was decided to transfer some of the powers of the MOEC to the Ministry of Labour, Welfare and Social Services, including the vocational schools. As of the time of writing this report, for the coming school year (Sept. 2016) the industrial schools will open in exactly the same format (with no change in the vocational rankings), but under the supervision of the Ministry of Labour, Welfare and Social Services. We note that in the past two years, some of the vocational schools owned by the technology education networks have moved over to the supervision of the MoE. There is still no clarity regarding the future trend of unification versus division.

A.3 **Overview of the significant development in VET**: The Ministries of Education and Economy have put TVET on the public agenda. They launched a media campaign about 5-point (advanced) mathematics studies and about high- and low-tech industries. In addition, the percentage of students in VET has risen to almost 40% in upper secondary. In the 2015 school year, the MoE launched a strategic plan to

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27 According to UNESCO, 'accreditation' refers to the validation of programmes, materials or institutions under either public or private supervision as meeting legislated standards. According to CEDEFOP, accreditation of an education or training programme is a process of quality assurance so that the status of recognition of the examined programme meets the standards set by the professional body or by relevant legislation.

28 Government resolution no. 147 dated 28.6.2015 on "cultivating and actualization of human capital".

29 RAMA report from April 2016: http://cms.education.gov.il/NR/rdonlyres/D7898839-5B4A-4D69-8A00-F3E04FF23FA9/210717/Schools_Mikzoa_Report1.pdf

strengthen technology education in Israel, adding ILS 70, 000,000 a year to the budget for science and technology education. Furthermore, a directive was issued by the General Director of the MoE with precise guidelines for implementation of the plan as part of the 'meaningful learning' reform. However, as mentioned above, the big change is the establishment of a new accreditation system for technology education students. Furthermore, certain key processes were launched in the past year in the MOEC to change and improve the functioning of its VET Dept. in order to adapt it to current market needs. The work plans for 2016 were first drafted through a bottom-up process of the department's district offices together with all the VET stakeholders - employers, employment services, various associations and pedagogical entities. The organizational structure of department's units and HR were examined. This led to a comprehensive internal report that recommended a change in the structure of the department and an increase in its size. In the past year the key "factory class" track was updated with several changes aimed to make it more accessible to employers, for example, enabling a group of employers or employers' associations to open a class together. In 2016, the Manufacturers Association (MAI) programme entitled Student Experience in Industry was run in 200 classes in a range of disciplines among all levels of students, and not, as in the past, only with youth at risk. This led to a strengthening and expansion of practical experience in industry as an integral part of the curriculum.

A.4 Change stimuli**:** The MOEC points to the OECD Conference and mainly the recommendations of its report as a significant factor in motivating the change. In addition, the need for change arose following meetings with employers and associations at district and national levels. This trend is also mentioned by the MAI. They claim that the state's investments in technology-oriented education, academic studies and vocational training derive, among other things, from two challenges and obstacles to Israel's industry and economy: an acute shortage of skilled workers in Israeli industry.[30] The shortage of workers seriously damages the competitiveness of Israeli industry. The assumption is that the shortage will get worse, as large numbers of highly skilled workers (many of them former immigrants from the FSU who integrated successfully into Israeli industry) start retiring. Since the productivity of Israel's industry and economy are significantly low by international standards (in traditional industries about 40% of the average for similar industries in OECD countries, and the product per work hour in Israel is lower by some 23% than the OECD average[31]) the need to improve productivity has become a national goal of the first order. Improving Israeli competitiveness involves investments and the introduction of advanced technologies that require technologically well-informed work force, with advanced skills and talents as needed in the 21st century labour market. Technology education (practical engineering and technician studies) and up-to-date vocational training are the main routes to increased productivity, alongside investment in equipment, innovation and lowering regulations. Indeed, according to the MOEC, the change is coordinated with the Treasury, which also sees this as a high priority and is ready to invest in new programmes such as apprenticeship training. The actors responsible for implementing the integrated vision are the department heads of the MoE's Administration for ICT, Science & Technology and the MOEC's VET Department.

Below is a table relating to the scheduling and budgets required to implement the change.

[30] Systematically and consistently since 2010, 80% of the industrialists have been reporting difficulties in hiring skilled workers and about one-third of them report a serious difficulty in finding workers – see the three previous Torino Reports.

[31] Work productivity in Israel and in developed countries and the factors affecting it, Eliezer Schwartz and Ami Tzadik, August, 2015

Scheduling and budgets required to promote and implement TVET in Israel

Incremental budget required for the coming school year (in millions of shekels)					
Item		2016	2017	2018	2019
Integrating students into industry	Numbers	235 classes, 4,300 students	470 classes, 8,600 students	705 classes, 12,900 students	940 classes, 17,200 students
	Incremental budget		24	48	72
Accreditation	Numbers		200 classes, 5,000 students	400 classes, 10,000 students	600 classes, 15,000 students
	Incremental budget		10	20	30
Regional technology centres	Numbers	Setup of three (3) regional technology centres over the next two years			
	Incremental budget		30	30	5
Teacher training	Numbers	1 course	5 courses	5 courses	5 courses
	Incremental budget		8	12	12
Transfer of school from the MOEC	Numbers	8 school	To be examined vis-à-vis the networks		
Total			72	110	119

Source: MoE presentation. TVET in Israel: Plan for 214-2024

Legislation

A.5 In recent years, there has been a noticeable lack of educational and economic legislation, given market failures and large gaps in numbers and standards of vocational HR. Since there is, yet, no overall legislative framework requiring the state to intervene as a regulator, the entire future of TVET infrastructures and frameworks depends on changing political considerations, budget constraints and tactical decision-making that frequently changes. MK Prof. Manuel Trachtenberg[32] recently launched a new initiative to form a Technology Education Council to reform the technology education system and adapt it to the changing needs of Israel's economy and industry. His bill seeks to expand the powers of the Council for Technicians and Practical Engineers, to add powers in areas such as definition of degrees, connecting the sequence of training, budgeting and qualifying colleges, multi-year planning of the whole technology education budget, establishing integrative coordination between the various entities, including academic studies and the MoD. The MAI supports the bill in principle and recommends it be implemented, seeing it as a springboard for reform in technology education.

B. Effectiveness and efficiency in addressing economic and labour market demand

Overview of economic and labour market factors that shape demand for skills

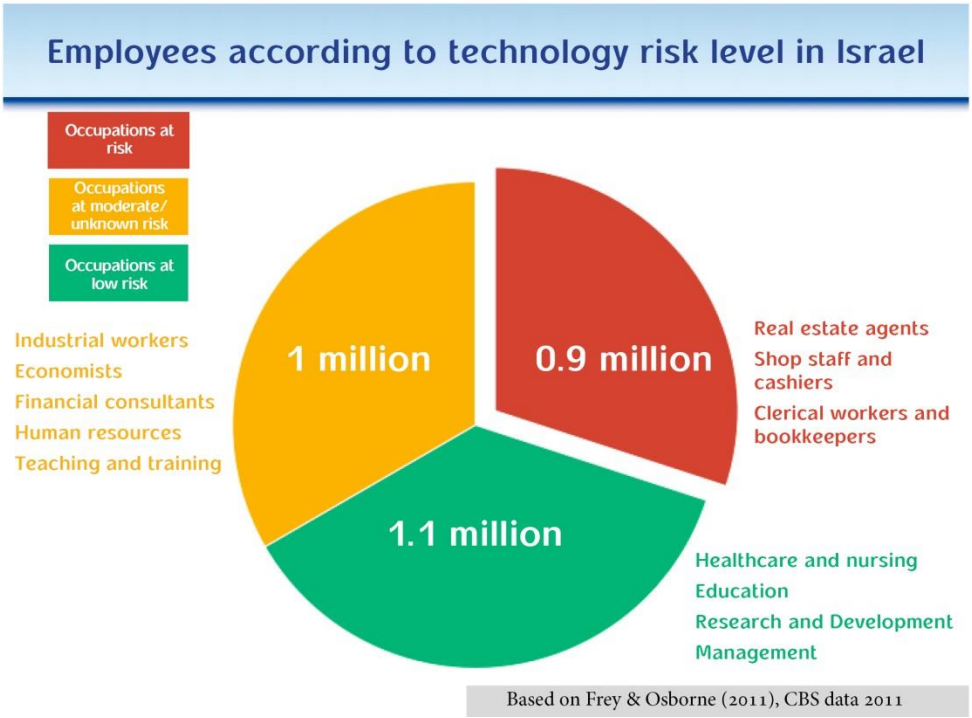
B.1 Economic and demographic factors influencing the national economy and its demand for skills.

One of the main factors identified is the massive penetration of computers and automation into the workplace. According to studies,[33] about 47% of jobs in the USA are at risk of being replaced by computerization, with an inverse ratio between the levels of pay and education and the risk of replacement. In the past, the assumption was that there would be a high level of replacement only for repetitive jobs, but in light of the advances in ICT and the rising capabilities of rapid processing of big data, new fields have joined the ranks of high replacement risk. As a rule, research pinpoints three elements that affect the level of replacement risk: social intelligence, creativity, and perception and

[32] 30.3.2016 Amendment to Technicians and Practical Engineers Law

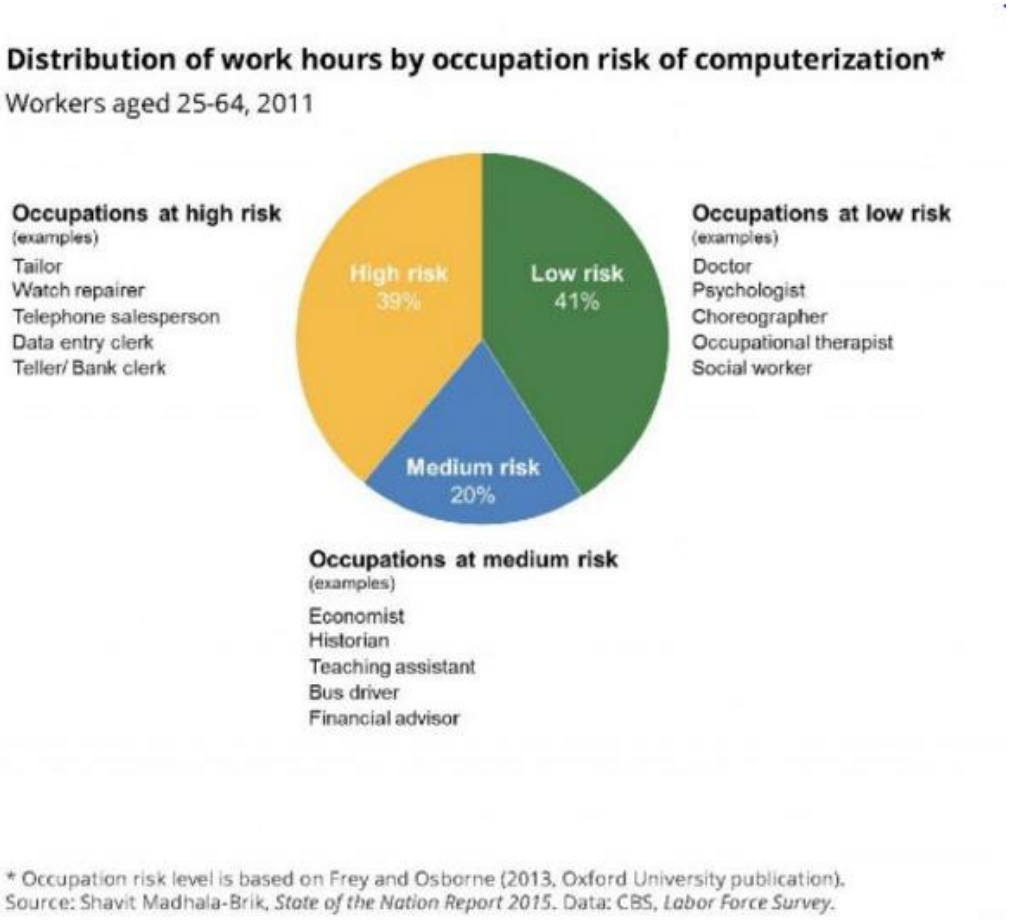
[33] Carl Benedikt Frey & Michael A. Osborne, 2013

manipulation.[34] The more these components are needed for a job, the less likely the worker is to be replaced by a machine. About 40% of the jobs in Israel are at high risk of being computerized within the next two decades.[35] However, according to the Taub report, "the number of workers at high risk in Israel is slightly lower than in other developed countries". In the USA and Germany, for example, the number of workers at high risk is even greater: 47% and 49% respectively. The common feature of jobs at high risk of replacement is repetitive technical work, such as bookkeeping and data entry. On the other hand, jobs at low risk require skills such as creativity, social intelligence, complex perception and negotiating skills. According to the analysis, occupations such as economist, historian or bus driver have a moderate risk of being replaced by computer, while doctors, social workers, choreographers ad psychologists are at low risk.



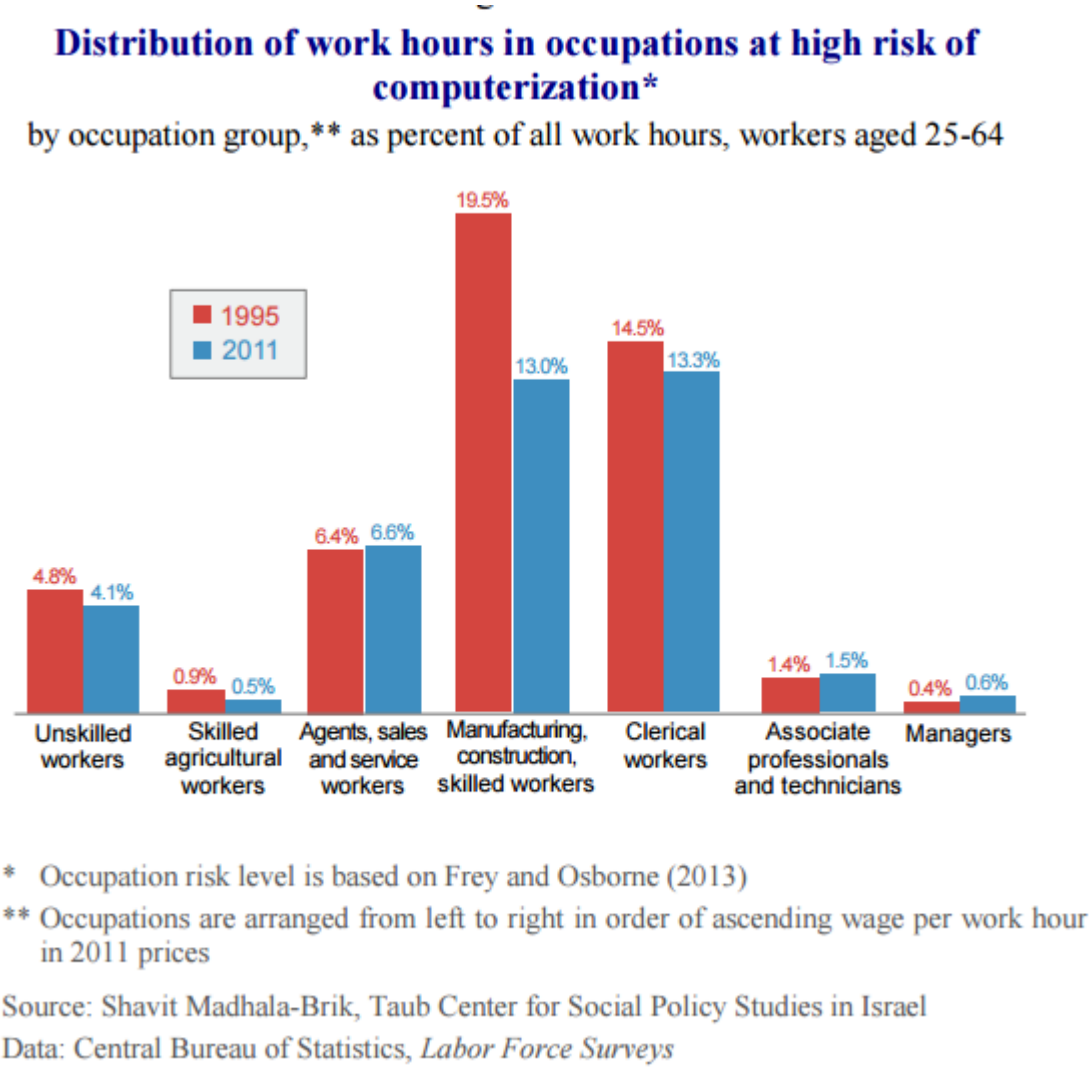
[34] See study graph in Annex 2.

[35] One can see that also in the chapter "Jobs at risk": Computerization trends in the Israeli labour market, from the Taub Centre Annual Report, presenting a 2015-2016 socioeconomic status report for Israel, relative to other countries and to the past.



In the last two decades in which computerisation has been evident, a 9% decrease has been recorded in the relative percentage of high risk work hours out of the general number of work hours in the economy for those years. Thus, for example, between 1995 and 2011 there was a 38% decrease in relative employment of metalworkers and car body technicians, blacksmiths and welders. Moreover, there has been an extensive move of workers lacking academic education into service jobs (similar to the trend in the USA). Many of those employed in occupations at risk of computerization belong to the most vulnerable population groups: those lacking academic education, those with low hourly wages and young employees. The group at the greatest risk of losing their jobs to computerisation is that of non-Jewish males – 57% compared to 35% for Jews. Just over half (52%) of the work hours of those employed in this group are in industry and construction – areas in which most occupations are at high risk of computerization. In 2011, 59% of the work hours in the 15-24 age group were in jobs at risk of computer replacement. It also emerges that women in all sectors are more vulnerable.

Distribution of work hours in occupations at high risk of computerisation, from the 2015 Taub Centre annual report, data source: CBS[36]



B.2 The labour market situation, challenges and developments: in the past decade, the Israeli labour market has been on a positive track, showing a rise in participation and a parallel decline in unemployment. This positive trend has continued this past year, with unemployment for the 15+ age group at a low point of 5.3% for 2013. In addition, there is a noticeable increase in the number of unfilled jobs in the economy, particularly in positions involving technology.

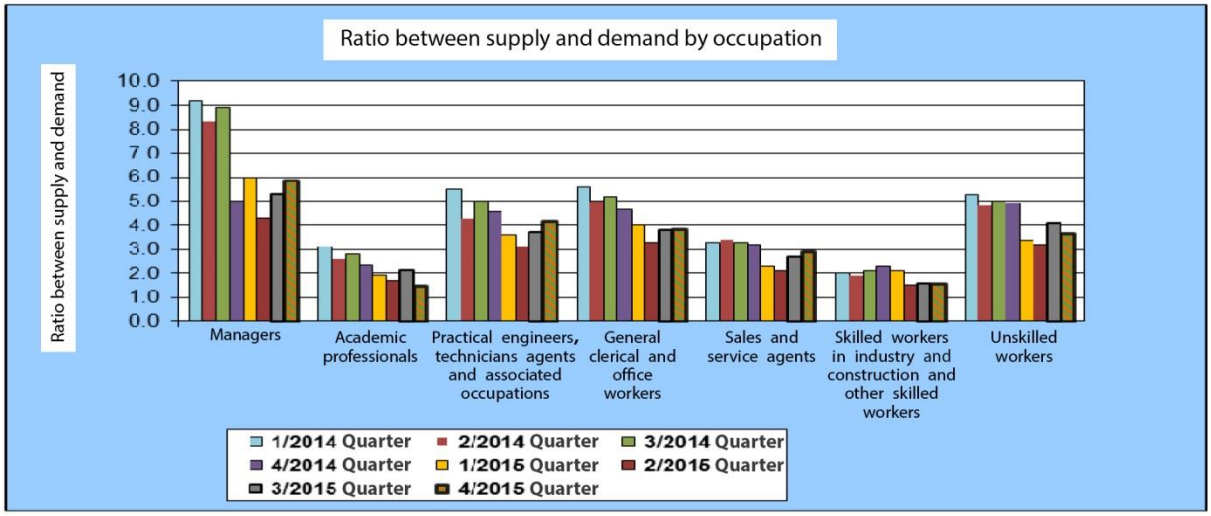
A significant challenge for the Israeli labour market today is the low level of work productivity relative to OECD countries. The gaps in productivity are particularly prominent in local (non-fungible) branches. For example, in construction, commerce, food and hospitality, work productivity in Israel is only about 70%-80% of the OECD average. In contrast, in exports such as electronic equipment, productivity in Israel is higher than the OECD average.[37]

B.3 As for the mismatch between skills demand and supply in Israel, in some branches of the economy there is a gap between the demand and supply of skilled workers. CBS data indicate that in industry the ratio between supply and demand is the lowest, i.e. for every trained worker needed in industry there are only two potential candidates, as opposed to a supply of 5-6 candidates for every unfilled clerical job.

[36] Shavit Madhala-Brik http://taubcenter.org.il/wp-content/files_mf/occupationsatriskenglish.pdf

[37] 2015 Bank of Israel report, p. 32

Ratio between supply and demand by occupation



Source: CBS, 2015

According to the CBS survey of unfilled positions (in economy and industry), we see there is (permanent) short supply for occupations such as computers, electricians and installers, welders and metalworkers, machine operators, construction workers and drivers (mainly heavy load vehicles). Another survey conducted by MAI in February 2016 also shows the shortfalls in industry for similar occupations. The table below shows the occupations with the greatest shortfalls.

Vocational HR needs in industry and the economy
A CBS Survey

Occupation	Q3/15	Average 2013	Average 2014
Chemistry and pharmaceuticals / exact sciences	465 (316)	395	339
Engineers	2,349	2,016	2,172
Education professions	3,222	1,402	1,525
Practical engineers and technicians	960	569	824
Architecture and design	772 (151)	356	390
Sales staff, agents and marketers	3924 (472)	10,750	11,765
Computers	6,490 (393	4,329	4,712
Senior managers	329	455	417
Mid-level managers	85	131	49
Clerical workers	5,646 (630)	3,732	4,517
Foremen and inspectors	72	165	93
Metal production	636 (536)	347	441
Metalworkers and welders	1,625 (373)	1,505	1,573
Mechanics	636 (87)	316	397
Electricians and installers	1,914 (500)	1,344	1,569
Machine operators	1,919 (1,194)	1,125	1,137
Construction workers	6,806	4,545	4,060
Painters	433	259	237
Carpenters	503 (216)	231	206
Tailors and jewellery makers	404 (267)	231	256
Printers	32	180	83
Drivers (mainly heavy load)	4,424	3,309	3,430
Cleaners	4,620	3,494	3,469
Unskilled workers	1,892 (350)	969	1,207

Data processing: Economic Research Dept. MAI

Shortfalls in industry - MAI survey, Feb. 2016
General manufacturing workers
Machine operators
Metalworkers and welders
Delivery drivers
CNC operators
Forklift operators
Electricians
Maintenance mechanics
Quality control workers
Carpenters
Tailors
Printers
Template builders
Wirers

Note: Figures refer to unfilled positions in the economy and figures in parentheses refer to unfilled positions in industry

As mentioned earlier, the significant rise in the number of unfilled positions in hi-tech; together with the rise in salary in this field is a key indication of the mismatch between demand and supply of skills for this industry. Once the Israeli government adopted the main conclusions of the team headed by the National

Economic Council, an inter-ministerial committee was appointed, headed by the employment supervisor. Its mandate was to formulate individual policy tools to increase the supply of skilled work force in Israel. The committee submitted its recommendations to the Minister of Economy in August 2014.

Solutions for identifying the demand for skills

B.4 Israel has a partial system for collecting data about the current gap between demand and supply. The Central Bureau of Statistics (CBS) has surveys of unfilled jobs by quarters and the MOEC has surveys of occupational needs. In addition, there are surveys conducted by employers' organizations run, such as the MAI surveys of expectations and HR needs. Nevertheless, there are no national mechanisms to define needs, vocations or skills in the long term. At present, the MOEC, the MoE and employers are examining the possibility of joining the UNESCO programme for forecasting future HR needs. This issue is expected to be reinforced in the future by the establishment of an R&D department in the TVET Dept. of the MOEC, which will formulate recommendations for a change in the scope and types of vocational training in accordance with developments in global and local economy. Other tools designed to enhance the match of skills taught, the needs of economy and industry are statistical tools such as surveys of graduates, and employers examining to what extent graduates are working in the field they studied. Surveys should examine to what extent training systems and contents match the labour market and provide relevant knowledge and skills. The MoE, together with the MAI intends to conduct a survey of TVET graduates to examine their integration into employment, the army and industry. In June 2016, the OECD published the results of its large-scale international PIAAC survey[38] (30 countries including Israel) for different populations between the ages of 16 and 65. Findings show that Israel falls below the OECD country average in the three areas of proficiency examined: literacy, numeracy and problem solving in a technological environment. However, it appears that Israel actually ranks high in the dispersion of scores – the gap between the 95th percentile and the 5th percentile – for all three areas. Thus, for example, the gaps in Israel are the largest for problem solving and second largest after Singapore for numeracy and literacy. For the three areas examined, the average scores among Arabs were considerably lower than for the Jews. Among the ultra-orthodox, for problem solving in a technological environment their numbers at the average to high levels was half that of the rest of the Jewish population – 19% and 37% respectively. About 14% of the ultra-orthodox adults failed to reach a basic evaluation in computer use as opposed to 8.5% for the rest of the Jewish population.

While the literacy and numeracy proficiency of adults in Israel is lower than the average across OECD countries, a proportion of adults in Israel similar to that on average across OECD countries performs at the highest levels in literacy and numeracy. Israel's 25-34 year-olds score closer to the OECD average in literacy and numeracy than do 55-64 year-olds. Workers in Israel use their skills as frequently as workers across participating OECD countries. More than one in three adults in Israel score at the lowest levels in literacy, numeracy or both (below Level 2). A large proportion of adults show poor proficiency in using common computer applications. The association between low performance and parents' low educational attainment is particularly strong in Israel. Israel shows one of the strongest positive associations between skills proficiency and wages and one of the largest wage penalties associated with skills mismatch.

The results of the survey are currently being studied by various ministries, which will draw their conclusions in the near future.

Solutions for matching skills supply with demand

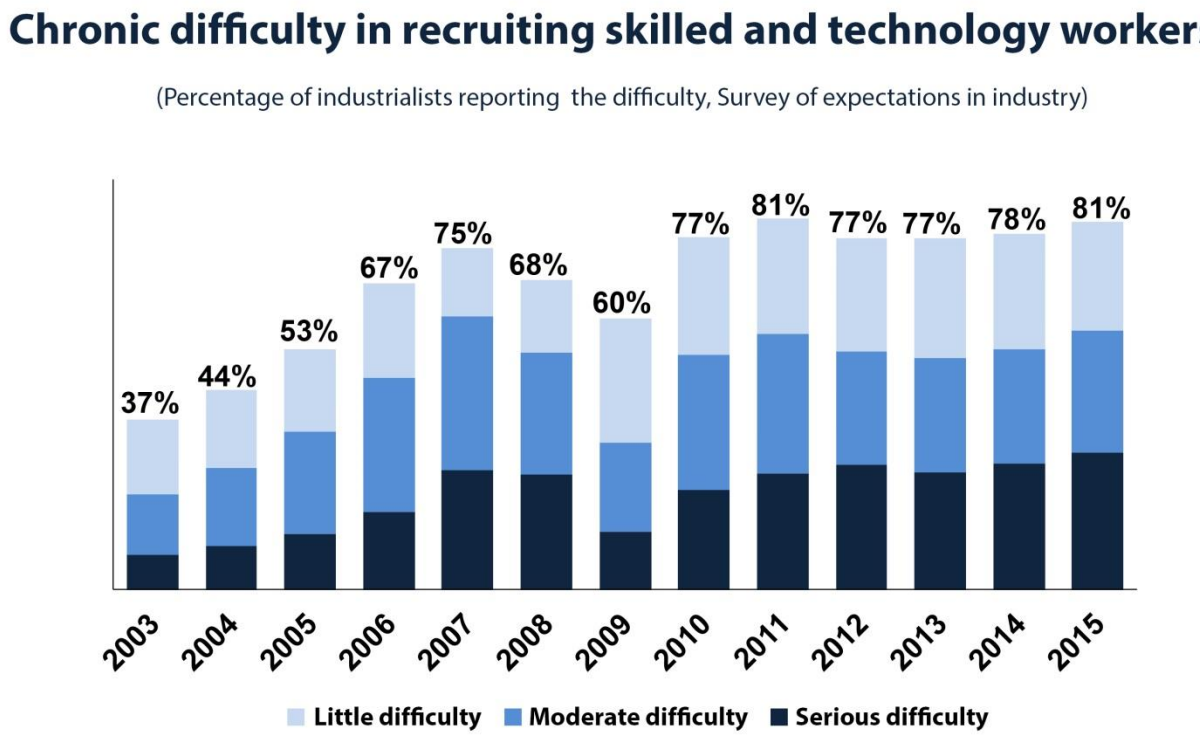
B.5 According to the Taub Centre, the organisation needed for the changing labour market may entail several steps, including: expanding and focusing the use of vocational training tools to match the relevant characteristics of those expelled from the labour market, and at the same time to be oriented towards the future labour market; ongoing updating of existing curricula; the establishment of a government body to coordinate the handling of the issue and work with training institutions, academic institutions, schools, etc. The Labour Federation recommends setting up local and national "round table discussions" for all actors

[38] OECD 2016 reports on Israel on PISA and PIAAC Results 2016.OECD Skills Studies, Skills Matter: Further results from the survey of adult skills.

in order identify and clarify needs and build VET systems for the present and future needs of the labour market. Moreover, it recommends creating short-term internships in industry as an effective solution that can bridge labour market needs and employee training. In fact, in order to provide a holistic response to creating a training setup that is updated online, the MOEC has set up a pedagogical council with all the key actors in the economy whose role is to shape systemic and practical TVET policy. The department for HR training and development in the MOEC has added training sessions in advanced and multidisciplinary technology systems, broad study clusters for diverse positions and skills, such as soft skills that stress imagination, creative thinking, survival skills and so forth. The existing solutions are grounded in worked-based learning (WBL), integrating students into companies and factories as an integral part of the curriculum in which they gain experience of real-life systems and processes, and work on projects and research together with the employers. Another initiative that encourages WBL is the establishment of advanced technology centres for practical VET. In recent years, the MoE and the MAI have set up such centres for secondary school students and adult VET. In 2016, the first two such technology centres opened in Haifa in the north and in Beer Sheva in the south, for CNC, biotechnology, mechatronics, media and communications. The centres offer students an opportunity to work on systems similar to those they will encounter in the workplace and to initiate innovative projects together with industry and employers.

Below are details of several long-term projects that integrate student real-world experience: "Student Experience in Industry" – MoE, operated by Ta'asiyeda, the educational NPO of the MAI. It operates in close to 200 classes in a variety of subjects together with a wide range of industries; "Vocation for life" – IDF, the initiative of the army's Department of Technology and Logistics, which trains soldiers during their service and prior to their discharge in a range of occupations needed in the country's industry and economy such as: electricity, maintenance, computerized machining etc.; "Starter" – training and apprenticeship in industry – is a collaboration between the VET Dept. of the MOEC and JOINT Israel; "Momentum in Employment", which combines VET at a training centre and employment in industry, covering the apprentice's tuition fees as well as part of the salaries of the apprentice and the workplace mentor for continued training. Training is conducted with the industry and with the MAI in several fields that are needed. To date, training programmes in conjunction with industrial plants have opened up all over the country in computerised machining, welding/metalwork and autotronics, and additional courses have been planned in plastics, printing and machining. At the same time, the trend of involving employers in the development of study programmes and vocational accreditation continues – including the development of curricula, vocational training and accreditation relevant to the labour market and according to employers' needs. To strengthen ties and formerly establish these processes, professional committees have been set up within the MoE's VET Accreditation Dept., with representatives of the employers' organisations. Their aim is to validate and develop accreditations relevant for the labour market. In 2016 three such committees were formed: industry (mechanics in particular), tourism (together with the Israel Hotel Association) and vehicles (together with the Israel Garage Association). In industry, for example, vocational accreditation will be given in CAD (using the 3D design software Solidworks) and in mechatronics/robotics – using Lab-View software.

B.6 The challenge in processing labour market data and using it to plan education: As stated in section B.4, surveys show consistently that 80% of employers have difficulty in recruiting workers for industry.



Source: Data from Expectations Survey of the Manufacturers Association – Economic Research Dept.

CBS surveys and economic research studies are constantly used to understand labour market needs. However, the statistics emerging from these surveys requires further validation through the ongoing dialogue with employers. Thus, while formulating any training programme there are several discussions with employers from different fields to understand their HR needs. Nevertheless, it is the opinion of the Labour Federation that one of the main challenges is that at present, there are no effective channels of cooperation between the relevant actors in the labour market – the trainers, the employers and the regulators – and so there is no effective process of planning appropriate education and training.

Access to work through better transition

B.7 Factors facilitating and impeding access to employment: In Israel there is a relatively sophisticated labour market with commonly available platforms to facilitate matching between VET graduates and potential employers. However, due to a lack of dialogue and reciprocal feedback among these platforms, VET graduates are not always provided with the relevant tools to enable them access to employment at their proper level. The Employment Services website of the MOEC contains information about training and continuing education courses and workshops. It also lists online courses on topics that facilitate job finding. Nevertheless, given the findings of the OECD's latest skills survey (see B.4 above) it seems that considerable numbers of people outside the work force lack the basic computer skills to take advantage of these resources in order to find work. In order to examine the match between the VET system and the Israeli labour market, the ETF conducted the GEMM project over three years, the conclusions from which were published recently.[39] The project focused on the south of the country on the understanding that Israel is a small country and that phenomena found in this region would be similar to those found in other regions (even though there are no official data on this).

[39] ETF GEMM Report "Working in Partnership to Better Match Skills Offer and Demand in the South Israel", December 2015, Dr. Roby Nathanson
http://www.etf.europa.eu/webatt.nsf/0/72BE0DE41CC60F02C1257F99005E53CF/$file/Israel%20pilot%20matching%20skills_EN.pdf

Analysis revealed that the southern district and its towns are poorer and have higher numbers of new immigrants, higher levels of unemployment and lower income than the national average. In the south, there is high demand for skilled workers with relevant vocational training that does not involve tertiary education. The teachers mention a very low level of cooperation with business and factories, with employers displaying scant regard for the existing courses, the scope and level of the training and degree of integration of VET graduates. The opinions of the industrialists, business owners and managers closely match those of the teachers. They mention having to hire a large number of inadequately trained workers and thus having to invest heavily in training them. Their involvement in planning curricula or active training in TVET institutions is very low. Regarding the gender gap in TVET, even though teachers mention a considerable gender gap that needs to be narrowed, business owners do not believe there is such a gap, and if there is, its originates in physical differences.

B.8 Facilitating transition to work from unemployment and inactivity: According to the Labour Federation, at present Israel has no VET mechanisms for transitioning to work from unemployment and the state does not provide sufficient tools for this purpose. The findings of the GEMM report confirm this. The results reveal a gap between market demand and the ability of the TVET system to provide an appropriate response. The following recommendations from the GEMM report aim to solve the problem for both supply and demand:

- The mismatch between supply and demand: create a 3-pronged feedback mechanism – (a) regular updating of information and data about the labour market; (b) sharing decisions about the opening and closing of study tracks and curricular design of existing tracks with representatives of the corporate and industrial sectors; and (c) strengthening the partnership with the business sector. This can be achieved partly by building a sophisticated model promoting the assignment of workers to unfilled jobs and creating a training framework both at the schools and in the workplace in which the business representatives can play an active role.
- Strengthen the partnership between the private sector and the professional unions to increase the integration of gradates into industry, while ensuring continuing education courses at work as determined in the collective agreements of various unions such as the Construction Workers and Carpenters Union, the Engineers Union, and the Technicians and Practical Engineers Union.
- Establish a fund together with employer organizations, labour unions and the government that will promote TVET that matches the labour market.
- Build a model of career development for TVET students, from secondary school into army service and then work in industry and the economy.
- Provide ongoing information through periodic surveys among TVET graduates to document their areas of specialization versus their actual job. The IDF should also be included in the survey, since such a large organization can certainly serve as a springboard for professional development and experience for industry.
- Invest in the teaching of soft skills in two main categories: practical skills (language, computers, social media, mathematical skills and basic financial skills) and social/emotional skills (writing a CV, preparing for a job interview, teamwork skills, interpersonal and life skills).
- Invest in research and development in traditional industries: if the government were to free up half of the R&D costs allocated to universities and promoting industrial technologies (about 3 billion shekels) for traditional industries that have higher growth potential, this might have significant impact on economic growth and on the narrowing of social gaps. Moreover, regional R&D centres should be set up to provide more support for small businesses and independents that employ some 60% of the workforce.

B.9 Career guidance for VET students wishing to reskill: Following on from the abovementioned challenges of integrating the target population into the Israeli labour market The MOEC is operating special employment guidance centres. At present, there are 22 such centres for minority populations across the

county, run in conjunction with JOINT Israel, and 12 centres for ultra-orthodox society. These centres are a "one-stop-shop" for the unemployed seeking guidance to reach appropriate employment. The centres provide individual career counselling, including referrals to vocational training, education completion and higher education, preparation for the world of work, placement and subsequent accompaniment. In this context, we note the work of Mr. Stef Wertheimer, an Israeli industrialist, founder of Iscar[40] and winner of the Israel Prize. He initiated and established several special industrial parks in Israel designed to promote export and ensure a better quality of life. In order to encourage a new generation of entrepreneurs, the industrial parks offer mentoring and support in the initial stages. Wertheimer's approach creates a link between manufacturing and industry on the one hand, and art and culture on the other. Consequently, the parks allow their employees to also enjoy art and culture facilities, schools, aesthetic grounds, and a high-quality living environment.

Access to work through business creation and self-employment

B.10 Tracking self-employment and business creation by VET graduates: Within the framework of the wide range of courses offered, some of these have potential for self-employment and so the training incudes not only vocational knowledge but also relevant business skills and practical knowledge for starting a business. The main occupations in this category are beauty care (cosmetics, makeup and hairstyling), woodwork, qualified electricians and more. However, the department does not monitor its graduates (youth or adult) to see who has moved into industry, who has started a new business entrepreneurship and who has combined the two.

B.11 Entrepreneurship as a key competence in VET schools: "Entrepreneurship as a key competence" is not yet part of the systemic curricula or part of mandatory school studies. However, VET providers, mainly the large technology education networks, ORT Israel and AMAL, are pioneering the development of programmes and centres of entrepreneurship as part of an innovative move designed to teach skills essential for integrating the youth into the industry of tomorrow.

For example, the AMAL network emphasises "entrepreneurial thinking skills" and is setting up entrepreneurship centres in the periphery in order to train business and social leaders and thereby contribute to Israel's socioeconomic growth. The first centre was set up in the northern town of Safed, with an emphasis on developing the skills of initiative, original thinking and creativity, and enables students to specialise in biomed and drones, advanced technology for a wide range of uses. The objective is to fully realize the students' abilities, develop entrepreneurial thinking and give them an opportunity to truly experience the processes of entrepreneurship and project development. Following the success of the initiative in Safed, a second centre began operating in Hadera, focusing on app development and biomed. The centre was designated by the ETF as inspiring and was praised at an international conference. The centre in Hadera is the first in Israel to teach app development in conjunction with Apple and iDigital, and biomed in conjunction with the Hillel Yaffe Hospital and the Faculty of Biomedicine at the Technion. The third entrepreneurship centre was set up at the Shevach-Mofet school in Tel Aviv, focusing on cyber and apps. Preparations are underway to open more centres in the forthcoming school year.

The ORT Israel network developed an enrichment programme for technological entrepreneurship together with Nobel Laureate Prof. Dan Shechtman of the Technion. Intended for outstanding students, the programme has has received the ETF good practise award in training for youth entrepreneurship. Also involved are Prof. Arie Maharshak, President of ORT Braude College and the organization of graduates of the Intelligence Units in the IDF. The programme was recently integrated into the iSTEAM (Innovation, Science, Technology, Engineering, Art, and Mathematics) project. The iSTEAM approach to learning enables a comprehensive overview of all the various fields of science and engineering, with in-depth learning of a particular discipline. It teaches learners' to develop a broader perspective of science and engineering topics and a systemic approach to product planning. This style of teaching and learning enables students to develop a professional 21st-century language and links science, engineering and

[40] The Iscar Group is the flagship of Israeli industry and is the second largest manufacturer of machining tools in the world.

design. In schools supervised (until now) by the MOEC, entrepreneurship will be piloted in 4 schools in 2017 via a "mini-plant" – a social business on campus that combines business entrepreneurship studies with practical experience in setting up a business, under the guidance of mentors from the business sector, developing a commercial product, marketing and sales. At this stage, the MOEC has defined four categories of key competences: employment empowerment, cognitive potential and effective learning, interpersonal and intrapersonal communication, and finding a job. There are budding signs of "entrepreneurship as a key competence" in MoE curricula, very early stages together with NGOs such as Unistream and NFTE. The technology education networks take part in the entrepreneurship studies and international competitions of these NGOs, for example, entrepreneurship studies in the ORT Israel and AMAL networks, which emphasise career education and making the vocations of tomorrow-available today. AMAL developed an innovative programme entitled Start-up Now, in which the youth learn concepts from the business world, economy and entrepreneurship, and put the process into practice. The programme is being implemented in 22 accelerator schools together with Unistream. ORT Israel developed a course of study entitled The Heart of the Matter – a joint venture between the ORT Israel D&D department and Biosense-Webster (a subsidiary of Johnson & Johnson). This multidisciplinary topic involves science, engineering, technology and social issues.

B.12 Career guidance: The MOEC notes that during the pilot will enable examination of the potential of entrepreneurial activity as leveraging possibilities for professional advancement. The assumption is that the training in the pilot will encourage advancement, but there is no data yet.

C. Effectiveness and efficiency in addressing demographic, social and inclusion demand

Overview of sociodemographic factors that shape demand for VET provision

C.1 Factors dominating the social inclusion agenda since the previous report: Presently at the heart of the social inclusion, agenda lies the awareness of a vulnerable group with special educational needs – people with disabilities. With this in mind, equal rights regulations for people with disabilities were recently legislated (adapting accessibility to vocational training) and will go into effect in January 2017. The MOEC VET Dept. is preparing for their implementation and enforcement by providing specific guidelines to the schools as of 2017. The regulations relate to making to buildings and services accessible for training people with disabilities. Together with the National Insurance Institute, the MOEC is preparing to help private training institutions cover the cost of making the necessary services accessible as well those budgeted by the state (regulations regarding the budgeting of state institutions will begin in January 2018). In addition, the MOEC VET Dept. is working to integrate people with disabilities into VET based on individual localized solutions for learning and testing, and of suitably preparing the teaching and administrative staff. Its department for the integration of people with disabilities into the labour market holds shared training sessions for employers interesting in hiring these people and offers to participate in the costs of the adjustments the employers have to make, to examine an adjusted minimum wage, and runs three support centres to help actualise rights regarding the hiring of people with disabilities. Moreover, the legislature has made the MOEC responsible for training licensees deemed accessible in terms of buildings, infrastructure, environment and service.[41] As a result of all this, there are about four courses a year on this kind of accessibility, and there are periodic further education courses for licensees.

Recently (July 2016), a historic law was passed requiring that 5% of the employees in public institutions in Israel be people with disabilities. In Israel, there are some 880,000 people of working age with disabilities, and 330,000 children with special needs. According to the CBS, 14% of those over 20 have severe functional limitations. 60% of them are unemployed. There are 130,000 Arabs with disabilities, 70% of whom are unemployed. The State Comptroller has determined that the economy loses 5 billion shekels a

[41] Regulations have been written and approved for training licensees, curricula and exams have been written, a manager for training licensees has been appointed, as has a pedagogical supervisor. Academic institutions have been approved to conduct the training and registrars have been appointed to manage the records of accessible licensees and accessible buildings, infrastructures and environment in accordance with the levels detailed by law.

year as a result of the non-employment of people with disabilities. Consequently, the law that obliges all the various branches of government to provide equal opportunity by making 5% of its workforce people with disabilities is a historic move that puts Israel on a par with Europe and the USA. In accordance with this law, public bodies with over 100 employees must reach the 5% target within five years, as of January 2017. Refusal to abide by this law will incur a fine of ILS 75,000, with an additional fine for every day of violation. Among other things, this is for people of a 40% level of disability, people designated as legally blind, or the hearing impaired who are entitled to support for communication, and people eligible for rehabilitation.

Regarding minorities, in the last two years, two vocational schools have opened in East Jerusalem - one for girls and one for boys – offering VET that will enable their integration into the work force. Likewise, the study of Hebrew has been augmented within the Arabic-speaking sector in order to widen their employment options in Israeli society.

Access, participation, progression

C.2 In terms of arrangements that facilitate students' access to higher levels of formal technology education or tracks adapted to the labour market, there is a study programme in conjunction with JOINT Israel that seeks to prepare VET graduates for optimal immediate continuation of studies to become technicians and practical engineers. A new policy is currently under review in the vocational training department at MAHAT,[42] in which a more meaningful link will be made between the system of apprenticeships in the MOEC VET Dept. and the colleges of technology overseen by MAHAT. This should make it easier for apprenticeship graduates to move on to technician and practical engineering studies after completion of their schooling or their national army service. Issues being looked into include cooperation between different institutions, recognition of scores achieved, conducting technology prep courses, etc. However, we also draw attention to the integrative work of the IMAST led by the Prime Minister's Office (see sections D.12, D.13).

C.3 Measures to increase the attractiveness of VET: A significant effort is being made to increase the attractiveness of VET among young people via publicity and marketing. Every year the MoE and MOEC launch an enrolment campaign aimed to raise awareness of the advantages of vocational technology education over academic education. The MoE campaign has emphasized the new system of accreditation and is encouraging students to realise their vocational dream and enrol in technology study tracks that provide both a matriculation certificate and accreditation. In addition to the longitudinal study tracks, the MoE is also promoting a horizontal programme to create science and technology leadership.[43] This prestigious excellence programme works on a 6-year track leading to a high-quality matriculation certificate in science and technology and includes incremental hours in maths, physics, computer sciences and robotics, special budgets for equipment, extra classes etc. In contrast, the MOEC campaign emphasises the apprenticeship programme as a worthwhile alternative to the MoE's academic and technological education system, since it enables dual education in which the apprentice has a paid job twice a week. In addition, the welfare authorities conduct short-term training tracks for youth at risk to integrate them into the work force. The MAI is involved in several programmes aimed at attracting students to study technology subjects in secondary school, while changing the image of TVET, e.g. introducing girls in lower secondary classes to industry: the women's forum of the MAI runs a programme with the IDF and the MoE to introduce various branches of industry and technology subjects in the IDF to girls in 9th grade who are at the critical stage of choosing study tracks for upper secondary classes. In this programme, the girls meet with women who hold various positions in industry in order to encourage them to choose science and technology majors with a view to joining Israeli industry in the future. This is an additional stepping-stone to the activities of the IDF and the MoE and operates in some 100 schools, where women in senior positions in the army's technological systems accompany the girls and act as role models. In addition, Taasiyeda holds special workshops for lower secondary students to learn about

[42] MAHAT – Government Institute for Science and Technology Training, subordinate to the MOEC, which oversees the vocation training of technicians and practical engineers in Israel.

[43] This excellence programme gives an extra bonus at the Technion.

industry as well as about entrepreneurship and creative thinking, management and technological leadership in developing a product for the hi-tech industry from the first step to the finished product.

The technology education networks consider it highly important to attract young people to science and technology – ORT Israel starts with various study programmes in lower secondary classes (brain sciences, nanotechnology, science & engineering, Young Tutors), and AMAL has a special programme starting in 9th grade to attract girls to science and technology studies together with the Karev Foundation. The programme, entitled "Girls for Science", encourages girls to study advanced levels of maths, physics and engineering subjects. This strengthens the girls' belief in their own abilities, introduces them to the world of contemporary and future industry, causes the teachers to believe in them and overcome prejudices, and remove conscious barriers and emotional obstacles that prevent girls for going into science and technology, and developing long-term career paths in these fields.

C.4 In terms of options for transition from general education to technology education, and the constraints affecting access to higher levels of training, any student who chooses technology education is welcome according to his or her level. There are no barriers or threshold requirements for entry into technology education. Of course, the possibility of joining various tracks depends on the level of studies. Higher level students can integrate into tracks such as cyber, software engineering and biotechnology; at the intermediate level, there are media studies and industrial management, arts and design; at the lower levels there are autotech, cosmetics, mechanics and automotive electricity. The MoE conducts extensive activities to increase the number of learners and there has been a considerable rise in numbers over the years.According to the MoE, the average number of learners in science and technology tracks in upper secondary tracks in general schools is 30%-40%. However, when the ORT Israel and AMAL networks take on a new school, they set a goal of having 60% study in the technology track within 3-4 years. These networks invest a great deal in developing materials and teachers to attain this goal. Regarding the question of transition from VET to higher education, VET students who attain a technology certificate (14 points composed of core subjects + technology subjects), may move on to technician and practical engineering studies. After the practical engineering course and their army service, graduates may go on to complete engineering studies in special frameworks (Pa'amei Atidim), and in the colleges of technology. There is, as yet, no such continuation to universities, and so mobility between VET and academia is low.

C.5 Vulnerable subgroups excluded from the labour market: MOEC data show that the two most vulnerable subgroups are ultra-orthodox Jews (especially men) and Arabs (especially women). Besides these two, there are additional subgroups with a relatively low employment rate: single parents, Jews of Ethiopian descent and people with disabilities. Data for these groups show low employment rates and high levels of poverty. Alongside job guidance centres for these different groups, in the last two years the MOEC has extended its Vouchers Programme, which provides a 75%-85% subsidy for courses up to a maximum of 9,000 shekels. For the weaker populations the subsidy is even higher than the cost of the course, and the budget allocated from the programme (totalling 30 million shekels for 2016) is divided as follows: ultra-orthodox 12.5%; Arabs - 40%; people with disabilities 6%; single parents 6.3%; members of the Ethiopian community 5%. For the sake of comparison – for all those seeking work the allocation is 16%.

Delivering to socioeconomic and inclusion demands and objectives

C.6 With regard to providing solutions to economically, socially and politically disadvantaged groups, the MOEC's VET system provides a significant and comprehensive response to VET – the vocational schools in the Arabic-speaking sector provide a very good opportunity for their graduates to be integrated into industry.[44] Following the government resolution to integrate Arab girls into vocational training (Trachtenberg Report), the number of girls in vocational schools has risen significantly. In 2015 a vocational school for girls opened in East Jerusalem (200 girls) and in 2016 the first vocational school for boys opened in East Jerusalem. The MOEC also provides solutions for new immigrants through special

[44] In this context, the RAMA report dated April 2016 provides data, which can testify to the insufficient supply of adequate learning frameworks for Arabic speakers, especially in the south of Israel. Possibly a greater supply of similar vocational frameworks would help decrease the number of students who drop out before upper secondary school.

preparatory classes. Together with the Ministry of Immigration and Absorption, its Adult Training Dept. holds vocational courses for immigrants from France and the Ukraine, and its youth training provides vocational training in autotronics to Ethiopian immigrants. Regarding youth in the periphery, there is a greater spread of industrial schools, particularly in the north (30 of the 60 schools). Two out of the five government training centres are located in the northern region, which thus gets more input than other regions in relation to its population size. The MOEC's budgeted training programmes are intended for job-seekers and unskilled workers, to enable them to attain vocational training fully subsidized by the state. The state also reimburses travel fares for these budgeted courses. In courses paid for by the learner, the MOEC TVET Dept. offers a 75%-85% subsidy (depending on the population) of the tuition fees, up to the sum of 9,000 shekels to enable access to training and studies for disadvantaged populations. There are also living expense and perseverance scholarships in fields needed by the economy in order to enable the learners to support themselves during training and encourage them to continue working in the vocation they acquired.

C.7 Actions taken to remedy shortcomings for the potential groups of learners: Israel has undertaken to train and integrate populations that are not sufficiently integrated into the work force. The "prep course" is one of the most common and accepted solutions for narrowing the gaps between normative populations and those more excluded from society. It can increase the chances of getting into a vocational training programme and later on into independently productive work. The course provides support beyond the curriculum as a remedial step.

As part of the MOEC policy, special employment units have been set up to increase employment among the disadvantaged sectors of the country and fully involve them in the Israeli labour market. These units encourage employment both by setting up guidance and support centres around the country or various sectors and by encouraging training, providing budgets and tools such as workshops on work skills, soft skills, prep courses, making services available, specific support, building adapted study programmes etc. This is all in order to encourage employment, VET and socioeconomic integration.

Working with the IDF: The MAI and the IDF have put together a joint strategic plan to train soldiers, particularly from the ultra-orthodox sector and the minorities for employment in industry. The plan includes training during national army service and immediately prior to and following discharge and special employment fairs for placement and training. For example, a recent employment fair in the northern city of Carmiel for discharged Druze soldiers was attended by hundreds of Druze solders and dozens of industrial plants offering hundreds of positions. The fair also offered specific state-funded VET for plastics and metalwork, together with the plants looking for workers.

Activities to help new immigrants find employment: The MAI collaborates with the Ministry of Immigration and Absorption and the Jewish Agency, and includes training and placement of immigrants and special employment fairs for immigrants in the country up to five years in Israel and overseas for potential immigrants.

D. Internal efficiency of the VET system

Teaching and learning

D.1 Mechanism for evaluation and appraisal of teachers and trainers in VET: With the introduction of the Reform for Meaningful Learning[45], which combines innovative teaching methods, investigative learning and PBL, the ICT Dept. of the MoE prepared a significant array of in-service courses to train teachers to use innovative methods, mainly PBL. These courses include ties with industry so that technology teachers will be up to date with what is happening in the world. The MoE mechanism for evaluation and appraisal of teachers and expert VET instructors has two tracks: the first is via the head teachers of the schools employing the teachers and the second is via the Chief Inspectors of the various technology subjects. The evaluations in both these tracks determine the composition of the work and accompaniment each teacher needs, including individual counselling and relevant in-service courses.

[45] About three years ago, see TPR 2014

D.2 Opportunities and incentives for professional advancement: TVET teachers have opportunities for advancement and professional development within the schools as discipline coordinators and technology studies coordinators, as well as advancement outside the school in lateral counselling positions for their relevant study track (senior instructor, counsellor to other teachers in the track, etc.) The large technology networks have strengthened their internal professional development mechanisms. For example, at ORT Israel's Goralnik Institute there is ongoing pedagogical training for discipline coordinators delivered by the 18 discipline directors, who also initiate and develop innovative curricula and teaching methods, thereby enhancing the work of the network's teaching staff. Effectivity is assessed by looking at the percentage of students choosing VET tracks and the improvement in their achievements. The AMAL network has, for years, run its Pedagogical-Technological Centre (PTC), which develops in-service courses emphasising technological innovation and focusing on keeping teachers informed about current industry and high-tech practices, and on innovative teaching methods using advanced technologies and mobile devices such as iPads, Google tools etc. Apart from teaching the discipline, AMAL continuously implements computer literacy that adapts to the dynamic and changing word of employment.

D.3 Shortages of VET teachers or trainers in the VET system: There is a tremendous lack of TVET teachers as well as expert instructors, because TVET requires mostly licensed engineers, preferably with industrial experience, but industry salaries are far more attractive than what the MoE can pay its teachers. The government does not yet offer incentives to engineers and experts to move to teaching, and without such an incentive, all teachers in Israel earn a uniform salary regardless of what discipline they teach, only according to their degree, continuing education courses attended and years of seniority. Seniority in industry is not yet recognized in teaching, and so the salary of someone interested in moving into teaching would drop considerably. Moreover, continuing education courses attended in industry are not recognized for compensation for teachers. These continuing education compensations are a significant part of the teacher's salary, and so this is a further blow to anyone thinking of moving into teaching. Since most workers in the technology sector are male and see themselves as the primary breadwinners in the family, the motivation to move to teaching is low. Furthermore, when it comes to developing a career, the teacher's path to promotion is limited, very few positons are allocated for management and so the employee has limited development horizons to advance in the system, except in the northern and southern peripheries. Over the years, many courses have been given to retrain academics or engineers for education, but successful placement of these graduates remains in doubt. However, the social status of teachers has improved somewhat thanks to the overall improved image of TVET in Israeli society and the latest reforms. This improvement stems from a raised awareness of the importance of VET, the improved quality of the curricula and their adjustment to 21st-century needs, the investment in advanced equipment and so forth.

D.4 Methods of teaching and learning in VET: TVET Teachers in the MoE today undergo thorough training in teaching and assessment of PBL. This method is student-centred, with the teacher acting as facilitator. This year the MoE Managing Director issued a directive requiring all TVET teachers to attend 210 hours of courses on PBL over the next 7 years. There is also a rising trend of close cooperation between the technology education department of the MoE and industry, academia and the IDF. As a result, teachers and students are more and more exposed to industries relevant to their fields through a project of integrating students into industry – practical work in industrial plants during their schooling. In recent years, online learning methodologies have penetrated all study tracks with great intensity. The teachers have been trained for this and the websites at their disposal support the teaching with lesson plans, presentations and additional study materials. This process started with great momentum mainly in the technology education networks, and from there it trickled through to the rest of the education system. Several network schools have even started teaching interdisciplinary clusters compatible with the world of industry, where teams from different areas of technology work together. For example, for the past four years AMAL has been pioneering a community experiment in 12 schools applying the HTH (High Tech High) method developed in San Diego, Ca., - technology PBL stressing social involvement and contact with the community. This kind of learning connects with the real world and integrates experience in real project development in industry. As part of this community experiment, which works on a six-year model,

7,000 students experience learning that maintains reciprocal ties with their community in expanding circles, while their teachers cooperate in the communities with specific content, problem solve, and conduct peer learning throughout the school year. In addition, AMAL runs a pioneer project for active mobile learning using iPads in technology trends in their schools, in close pedagogical cooperation with the MoE Chief Inspectors for ICT (new media), mechatronics, flight systems, machine control, arts and design, and with Apple Inc. and its representatives in Israel. AMAL's PTC staff, which is heading the implementation of the use of iPads in Israel, has developed specific training for teachers and provides close accompaniment throughout the school year. The training sessions emphasise the learning design process, particularly collaboration, investigation and creativity, and use of the strengths of the iPad such as its mobility, its visual illustration via enhanced reality, hyperlinks, and its access to educational apps from around the world. The project also examines three models for integrating technology into education: the 1:1 model – each teachers and each student has an iPad containing study material and course books; the mobile class model – the iPads are kept in a charging cart and are moved between classrooms to be used by a large number of students; and finally the model dedicated to a particular study track, in which the iPads are a significant tool in the process of learning and generating outcomes.

The ORT Israel network operates the iSTEAM (Innovation, Science, Technology, Engineering, Art, and Mathematics) programme. The iSTEAM approach to learning enables a comprehensive overview of all the various fields of science and engineering, with in depth learning of a particular discipline. This type of learning develops a broader perspective of science and engineering topics and of the process of product planning with a systemic approach. It enables students to develop a 21st-century professional language, and links fields of science, engineering, art and design. The programme was launched in September 2016 in six key ORT Israel schools as a multi-age model beginning with students in Grades 9 and 10. It is expected to expand to other age groups within the schools in the programme and to other schools next year. Significant emphasis was placed on teacher training, with leading teachers and iSTEAM coordinators in the schools, as well as on preparing the other teachers some of whom will act as process experts and others as content experts. In 2015, the ORT Israel R&D department began developing its 2020 Digital Classroom, aiming to create pedagogical models applicable to meaningful teaching and learning in a technology-rich environment. Thus, teachers may choose a teaching model that suits them, go into the relevant contents and recommended tools, and thus enter the class with a very large range of teaching methods suited to the discipline and the pedagogical objectives they have set for themselves. This means no longer going into a resource centre for lessons or special projects in which the computer is used, but rather ongoing lessons in which the computer becomes part of the student's textbook and notebook. In 2016, 30-hour in-service courses opened in which teachers learned, practiced and used new teaching models that give students key 21st-century competences.

The new positioning of the education system vis-à-vis the labour market blurs the boundaries between study and work. Vocational training must expand to into the domains of the education system and into the labour market. The difference in the perception of work shifts the focus from the more technical concept to a more holistic one – that of lifelong learning (LLL). This approach marks a complete revolution compared to the notion aspiring to specific vocational training, and emphasizes the interdisciplinary fundamentals in the topic clusters, and the development of soft skills such as problem solving and teamwork.

Learning conditions

D.5 What have been done to improve the learning and training environment of VET providers: As the main provider of TVET, the MoE invests considerable resources in improving and updating the learning environments, labs and workshops so that they suit developments in their field. At the same time, it invests in training teachers to develop new up-to-date curricula in order to adapt them to the needs of the economy, industry and the IDF in the 21st century. The MoE budgets VET classes, giving them priority over purely academic classes and the students in workshops and labs get to work in smaller groups with more personal support. In addition, as of this year, the MoE is running two highly advanced regional technology centres, in Haifa in the north and in Beer Sheva in the south. The centres are well equipped at an industrial level, with an investment that would not be possible in Israel for each separate school.

Teachers at the centres are carefully chosen and are leaders in their fields. The centres offer practical experience and training for all students in the relevant tracks in the region, and are a bridge between industry near the centre and the schools. The technology networks also invest a great deal in the learning environment both in terms of physical infrastructure and in teaching methods, and work on developing 21st-century oriented curricula and study materials. Efforts are made to purchase equipment resembling that found in today's industry in order to enable students to practice its use. The networks further invest in building learning spaces and entrepreneurship centres in schoolyards in Safed, Tel Aviv, Hadera and Beer Sheva, they have advanced computerized labs, and introduce innovative technologies such as Google tools, iPads, 3D printers, laser cutting and equipment that allows for makerspaces. They also create enrichment facilities: *Mithamada* - a complex on the school campus in Gan Yavneh with facilities for use by students and teachers like those found in certain science museums, and the Biomimicry Path[46] recently opened on a Binyamina school campus with demonstrations and activities that can be used both in science and technology classes and individually. There is also the Fab-Lab in Kiryat Tivon a lab with technology devices from the most basic to advanced 3D printers, which demonstrates technology innovation in an active learning environment.

D.6 The main driving factors and obstacles for WBL for youth and adults: As of today, the state offers no incentives to industry to integrate students into the workplace as we see in the dual education system in Germany, for example. Moreover, the employment period is limited; immediately upon completion of secondary school studies, the students join the IDF, and there is no guarantee that the investment will be returned at the end of the three years of national service or that the graduate will return to work at the plant upon discharge. However, there is a recent trend in the MoE to begin integrating WBL as part of the meaningful learning experience (not for pay) – integrating students of all levels from all study tracks into industry. Various models used around the world are being examined to see how they might fit the Israeli education system. An innovative project for schools under review is the Big Picture[47] model – specialisation-based learning. It is found in 80 schools in 14 US states and ten other countries, and Israel is currently looking into how to localise it for a pilot in 4-6 schools (MoE, MOEC, Democratic Institute and the JOINT). While in the US this program is intended for youth at risk, the intention in Israel is that it be for all populations, with various adaptations. If, until recently, MoE schools made אס with the labs and workshops on campus, while the MOEC schools also included work at actual industrial plants a few days a week, the MoE is now beginning to make contact with industrial plants, with the help of the MAI, the trade unions, the IDF and the industrialists themselves. The main point of collaboration is the programme for student experience in industry as detailed in section B.5. Moreover, the MOEC schools are starting to create "mini-plants" e.g. a hair salon, an electrical repair shop, food preparation etc. to make up for the lack of industrial plants able to take on students in the vicinity of the school.

D.7 Main policy options for WBL in VET: The MoE offers everyone an equal opportunity, according to ability, to have an academic education and obtain a matriculation certificate parallel to TVET, which offers significant vocational accreditation. To this end, various actions are being taken: TVET is testing students via summary projects (as matriculation tests), and the biggest change is the TVET Accreditation Dept. (see Annex 1). In addition, the programme for practical experience in industry exposes students to relevant experience as part of their general studies. At the MOEC schools, on the other hand, WBL plays an integral role, although a stronger connection is needed between what happens in the workplace and the teaching and learning. Occupations studied are mainly automotive fields, hotel hospitality, clerical work and low-tech industries, and there is still a need to offer WBL in high-tech, which is the backbone of Israel's profitable industry. As yet no WBL programmes have been created for high-tech and start-ups. The vision includes this possibility, but there are no market incentives. The IDF technical division is an employment incubator in which technology track graduates accumulate plenty of practical experience and are then highly sought after in the labour market. Some secondary schools have special cadet classes that prepare students for the IDF technical units either at the end of 12th grade or as technicians or practical engineers.

[46] http://biomimicrynews.blogspot.co.il/2012/07/blog-post_9580.html

[47] http://www.bigpicture.org

Quality assurance

D.8 Availability and adequacy of quality assurance arrangements, measures and practices: The MoE has a unit dealing with measurement and assessment of the entire education system, RAMA.[48] The MoE has a pool of training/course providers carefully selected via tenders according to professional, pedagogical and legal criteria and standards. The MOEC has a process of assessment and feedback for its youth and adult training programmes expressed in satisfaction surveys of graduates of the budgeted training centres and the ranking of student satisfaction via internet surveys, professional supervision and initiated measurement and assessment processes via statistical reports, identification of system failures or "over-successes" and data analysis vis-à-vis all vocational units in order to optimise existing training processes in the various study tracks for youth and adults. The large technology networks also have well-developed courses: at ORT Israel, through Afikim, with teacher training for ORT teachers and for all teachers, budgeted by the MoE, in conjunction with the Chief Inspectors for technology subjects; AMAL has its PTC, which trains its teachers and offers in-service courses for all technology teachers both in content and in the integration of advanced technologies into teaching.

Regarding the quality of technology teachers and instructors compared to national standards, the MoE requires by law that teachers have at least an undergraduate degree and a teaching diploma. TVET has allowed some exceptions, mainly because of the irrelevance of an academic degree and because of the demand for extensive practical experience in the field. And yet, in certain areas there is still a shortage and difficulties in recruiting teachers that have both the work experience and the ability to teach. In recent years the MoE has opened a course for retraining engineers in teaching, and next year courses are planned for training young practical engineers (outstanding Year 14 graduates) as teachers and *Meister* courses (experienced practical engineers). The technology networks have a strategic goal of enhancing teaching and learning. ORT Israel has the Goralnik Institute for the Enhancement of Teaching and Learning, which works with the head teachers and teaching staff in the schools, offering incentives to outstanding teachers or those with skills for which it is hard to find teachers. The incentives are given subject to the setting of goals for the teachers and checking them throughout the year. Meeting these goals is a prerequisite to continued receipt of the incentive the following year. The Institute is responsible for pedagogical monitoring and accompaniment of new heads and teachers and is involved in the decision whether to continue to employ a new teacher. At AMAL, the PTC promotes teacher professional development and maintains a structured process of teacher assessment and selecting outstanding teachers who receive a significant financial incentive. Throughout the year, AMAL trains and accompanies new heads and teachers and conducts an annual assessment of every new teachers, stressing quality, personal initiative, and design of meaningful methods of teaching and learning, with the help of the professionals in the network.

VET providers (including private entities): The new Accreditation Dept. of the MoE , as further elaborated below, is preparing a tender to build a pool of private accreditation providers alongside the existing recognized providers (see next section).

Learning outcomes

D.9 How the quality of learning outcomes of VET, CVET and IVET[49] students are assessed, in particular key competences as defined in national strategies and how the assessment can be improved:

IVET

All students at all levels of the education system are assessed via general national matriculation exams – for theoretical subjects, technology and vocational subjects and practical work. These are all directed and supervised professionally by the Chief Inspectors and their Advisory Committees of educators, academics and people from relevant industries and trade unions. These national external exams assess the students' knowledge and quality of work. This highly supervised system ensures a high quality

[48] RAMA - National Authority for Measurement and Assessment in Education, http://cms.education.gov.il/EducationCMS/UNITS/Rama

[49] TVET Technical and vocational education and training / IVET Initial vocational education and training / CVET Continuing vocational education and training / VET Vocational education and training

matriculation and vocational certificates. This can still be improved upon through closer ties with industry, making it part of the assessment: practical exams by professionals in the relevant industry. However, in Israel, industrialists are not compensated for cooperation with education (via payment or tax considerations), and so this kind of connection is very hard to achieve and is depends entirely on the good will and volunteering spirit of the industrialists, or on payment from a government ministry for the cooperation. Assessment of MOEC students is performed using one of three models: a theoretical exam, a practical exam including preparation of a product and a combined final project. As of 2016, the MOEC is promoting alternative assessment and creating PBL-based models of teaching, learning and assessment.

The new accreditation system

In terms of the supervision of the accreditation, in addition to the existing MOEC exams, this past year the MoE opened a new Accreditation Dept. that is finalising a comprehensive accreditation system for technology students that aspires to enable every graduate a meaningful certificate of value in the labour market or for continued studies towards higher certification, diplomas for technicians and practical engineers and academic engineering studies. To match this view, a new flexible system of accreditation is being built to enable advancement from one level to the next (for details see Annex 1). This new system translates the structure of technology studies into recognised accreditation in a three-year model, beginning in Grade 10.[50] The new Accreditation Dept. of the MoE is currently formulating a tender (following in-depth investigation and mapping that exists in Israel and elsewhere), to build a pool of private accreditation providers alongside the recognized ones we have today such as the various ministries (economy, tourism, transportation). These can provide TVET students with training and accreditation paths and the accreditations themselves and in certain instances the theoretical and practical study programs or confirmation of study programs used today that provide accreditation.

Assessing and improving achievements in the technology networks: ORT Israel and AMAL conduct continuous pedagogical-organisational tracking. ORT has a network-wide project called "Talking Data": three times a year teachers have to forecast end-of-year achievements and expected matriculation eligibility rates for 12th grade students. The school then implements an intervention programme based on this forecast. The process involves mapping the current situation of each student, setting a study goal for each subject and laying out a work plan to attain that goal. ORT Israel's target is a 5% deviance between forecast and realization. This process makes it possible to track difficulties across three years of study. There is also tracking of the data of graduate entry into the IDF, but not of entry into industry. AMAL works according to a detailed model of planning to raise matriculation eligibility rates, and a structured assessment process from which data is collected under the section on scholastic achievements at their pedagogical administration. In addition to raising matriculation eligibility rates, there is an emphasis on the quality of the certificate and there are checks and feedback processes in place on the percentage of students majoring in science and technology as a strategic goal. All incremental programs are assessed by way of questionnaires and focus groups, using mapping and creating programmes to advance individual students every quarter, together with the parents. The network also caters to raising the eligibility of students in MABAR and ETGAR classes for low achievers and students with learning disabilities and covers the cost of didactic and psycho-didactic assessments for some of them in order to adjust the learning and testing methods according to their needs on the path to matriculation and technological certificates.

CVET

Despite all the recent developments, a notable shortcoming is the lack of a system capable of making useful labour market information available to education and training planners. Israel collects data on the labour market, including data on job vacancies, and participates in the international labour market survey. However, although some of the data available are used for local or sectoral purposes, there is no formal

[50] 10th grade students who started the school year in September 2015 will be the first ones to get this new accreditation in September 2018.

national mechanism for processing such labour market data to make it accessible to education and training policy makers for the purposes of planning and supplying education and training.

To respond to the need for better mechanisms for forecasting and regular monitoring of skills, in 2015 a TVET Committee was established following a proposal of the MAI. This coordinating body, supported by the unions and technology education networks, aims to establish closer and more structured relations between the education and business sectors, including all the actors involved in human capital development (and the army). It is playing a significant role in defining strategy and policy and in developing plans for advancing TVET, promoting research, and ensuring employers' active involvement at both the central and local levels. The EU's regional project Governance for Employability in the Mediterranean (GEMM) has been an inspiration for Israel's National TVET Committee.

D.10 The NQF and lifelong learning: Israel is a country of immigrants coming from Europe and its neighbouring regions. Even if the influx has slowed down, there is an exception of French citizens arriving in considerable numbers in recent years. Research indicates that the recent arrivals are frequently over-educated for the work that the Israeli labour market has to offer. This situation is not solely due to lack of qualification recognition. Language skills of the host country are a major obstacle and other issues, such as obsolescence of qualifications or lack of professional networks are a major factor influencing labour market integration. The government is pressured to act on these challenges particularly related to qualification recognition: i) lack of legal frameworks and non-existence of procedures to actually entitle and enable foreign qualified professionals/workers to get their qualifications recognised; ii) lack of employers' understanding of foreign qualifications and low awareness of the existence of recognition services where these exist (with the exception of those companies that have highly professionalised international recruitment services); and iii) lack of an established structure that would support exchange of information about vocational qualifications with a view to their recognition.

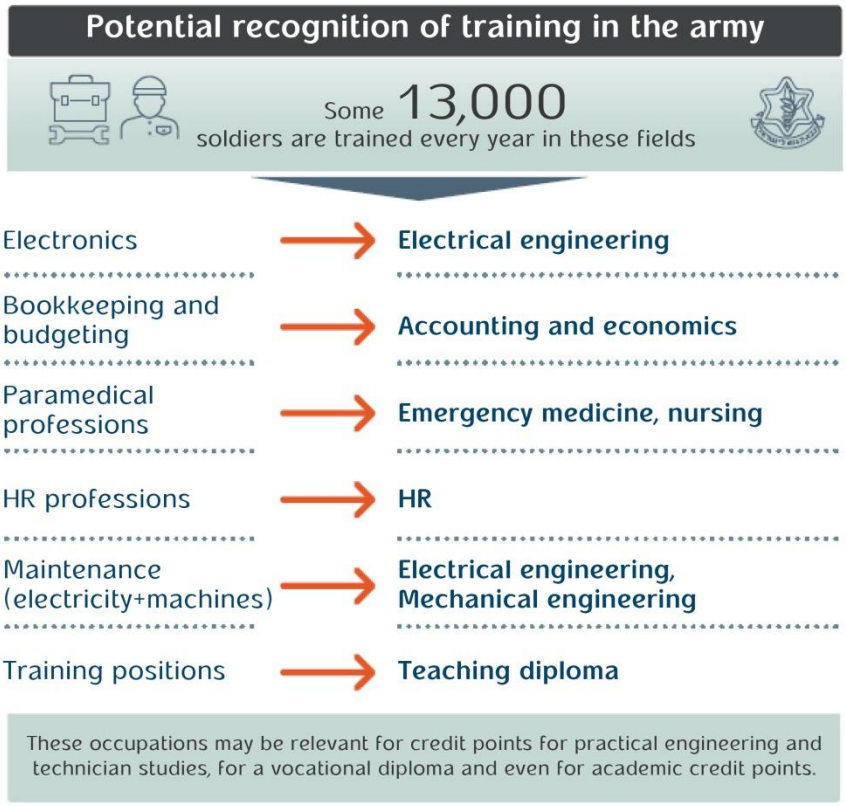
This explains the efforts made by different ministries/institutions and coordinated by Prime Minister's Office: Israel's Department for Evaluation of Foreign Academic Degrees (DEFAD) at the MoE, MOEC and Industry, other departments of the MoE, members and experts from Israel's TVET Committee including employers' organisations and trade unions which have participated in a number of peer learning events, workshops, training programmes organised by the European Commission and the ETF. They have been exposed to the ongoing developments in the European Qualification Framework (EQF) and the referencing of the EU Member States and other ETF partner countries' NQFs.

D.11 The match between qualifications defined by learning outcomes, and whether they are accounted for in the NQF: Recently the MOEC included soft skills in its curriculum as part of its new view that a vocational positon is more than the sum of its technological skills. Thus, it recommends adding literacy of technological languages such as mathematics, computers and spoken language, and the use of alternative assessment tools. However, as stated above, the IMAST submitted its recommendations in the summer of 2016, but in fact the NQF is still under construction and there are, yet, no data on change, rather just a mapping of what currently exists.

Though plans are still at an early stage, given the complexity of bringing the whole education system under a framework, in particular TVET and higher education, Israeli institutions have been using TAIEX funded workshops, experts' visits and study visits to facilitate the discussions for reaching a consensus on the work ahead.

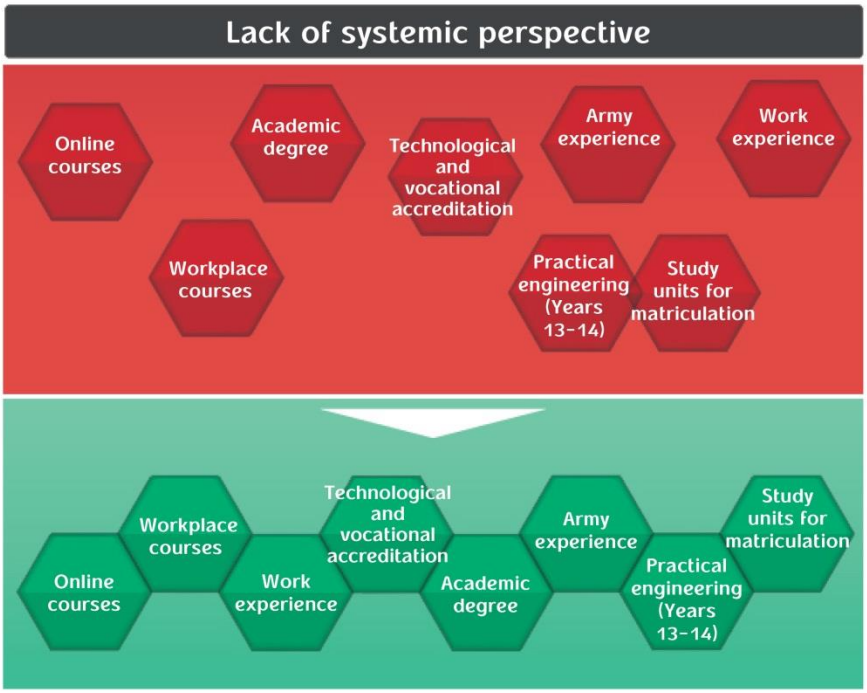
D.12 Institutions governing the NQF and the strength of the involvement of social partners in NQF implementation: The figure below maps the current situation from the accreditation improvement recommendations report of August 2016: education and training in Israel is composed of four different systems functioning independently and often without coordination: the education system, vocational training, technological training and academia. Moreover, Israel is unique in that a substantial number of its citizens serve in the army for a long period and during their service, they often attend VET courses and accumulate intensive work experience in these fields. Even though there is overlap and even duplication among these systems, they often work with no coordination regarding the design of the training and policies of recognition of prior training. This is despite the fact that the government is the most significant

actor in designing these systems through the MoE, the MOEC, the Ministry of Defence, the Council for Higher Education and other government entities.



Taken from the accreditation recommendations report. August 2016

D.13 The mechanism to ensure that the qualifications are relevant/credible for employers: Below is a mapping of the existing situation for the August 2016 accreditation recommendations report: the lack of a centrally coordinated mechanism in Israel causes systemic inefficiency, even though each system seeks optimisation for its own area of responsibility. Many citizens undergo similar or even overlapping training at different stages: secondary school studies, in the IDF, and later on in TVET or academic studies. In order to ensure efficient "passing of the baton" from one system to the next there has to be a comprehensive lateral perspective of all education and training stations in a person's life and the creation of a single language for all systems that allows for continuity and optimal recognition of prior education and training. The current inefficiency is expressed in the late entry into the labour market that is typical of the Israeli economy. This inefficiency is particularly prominent considering the scope of technological and vocational training courses the IDF gives to thousands of soldiers every year, which are only partially recognized in later frameworks. Below is a chart illustrating the disconnect between the various links compared to what should be:



Taken from the accreditation recommendations report. August 2016

The practical significance of the lack of lateral perspective of the accreditation system is its lack of continuity in layered training, which would enable career planning on the one hand, and streamlining of the training system on the other. In a well-organised, coordinated system, each link in the TVET chain would receive full or partial recognition in the next chain and this will save both the young adult and the economy precious time and resources. In practice, these links are not connected and there are no organised recognition mechanisms for content and skills acquired in prior training. In order to maximize mutual recognition, the IMAST recommends the following **plan of action**: the MoE shall formulate a response catering to students who are currently ineligible for the component of 30% internal assessment so that all students will have an equal opportunity to obtain a certificate that will allow continued study; the MoE shall formulate a response catering to students who are currently ineligible for the internal assessment component so they can make up the 2 points they are missing to be able to continue with post-secondary studies during Year 13; at the same time, the MoE, MOEC and MoD shall work together to expand the numbers of recipients of a secondary school completion certificate (SSCC) among adults through the following: the Moe and the MOEC will finalise pedagogical coordination to enable recognition of graduates of TVET prep courses as eligible for an SSCC. The MoE will look into the possibility of coming up with a formula for recognition of relevant work experience for the purposes of obtaining an SSCC. Once the above pedagogical coordination is completed, the MoD shall work with the MoE and the MOEC to examine the existing tools and adapt them to soldiers without an SSCC, so that they can include studies to obtain the SSCC, vocational training and accumulation of army experience relevant to their training, as far as possible.

E. Governance and policy practices in the VET system

Update on governance arrangements

E.1 Changes in the distribution of government functions and responsibilities for VET: In the past year, the TVET wing of the MOEC has sought to stress its role as the national integrator. In this framework, we note the pedagogical council and the vocational committees as mentioned above, the advanced organizational change in which cooperation will be established with employers, as well as the cooperation with all stakeholders in TVET. However, regarding the youth, the MoE made a strategic decision to bring all technological schools under its supervision. The process began in 2015, with the move of eight schools supervised by the MOEC to the purview of the MoE, in the hope that by 2020 all the schools will

have moved. According to the MoE, this is necessary for two reasons – first, on order to not damage the image of those studying vocational education on Israel who are excluded from normative social circles, and to give them an equal opportunity, and second, the inability of the state to sustain a duplicate education system for fewer than 12,000 students. Nevertheless, as stated in section A, in the coming school year these schools are transferred to the supervision of the Ministry of Labour, Welfare and Social services, and will function in the same format as before.

E.2 Level of autonomy at the provider level: Provider autonomy is expressed in teaching and learning methodologies, but they have no direct impact on the curriculum itself. In Israel, every TVET curriculum, including practical work and the final project are decided upon by the discipline advisory committees, whose partners include the Council for Higher Education, academia, industry, colleges, employers, the IDF and teachers. Funding and resources needed to sustain high quality vocational education are set by the MoE – the Minister and the Managing Director

Assessment of governance arrangements

Governmental institutions

E.3 Coordination of state actors in defining and implementing VET vision and policy**:** In Israel, most of the responsibility for TVET falls to the MoE, the second largest ministry after the MoD**,** and it has the biggest budgets. It is up to the MoE to maximise the effectiveness and relevance of TVET tracks according to the economy's needs, updating curricula as needed. Nevertheless, the MOEC is still highly involved through its VET Dept., which is determined to strengthen its involvement in directing VET issues at the national level. It has the authority to grant vocational certificates for the state and it does so for a very wide range of vocations. For these vocations, the department dictates the curricula and supervises their implementation, writes and administers exams and decides which vocations will be entered into the list of those recognised by a state certificate. The department receives applications for recognition at various levels of vocations and training that are not part of the pool, and conducts a comprehensive process of examining the national need for it. It is also involved in training activities of other ministries, such as the theoretical training for drivers supervised by the Ministry of Transport. Recently, an Accreditation Dept. has been set up within the MoE's Technology Education Administration (see section D.9), and to strengthen coordination and cooperation between the MoE and the MOEC, the IMAST has recommended setting up a steering committee for mutual recognition between secondary school VET systems and to create a plan to connect information systems relevant to both ministries.

Involvement of non-state actors

E.4 Participation and contribution of non-state actors in the governance of the VET system and the shaping of VET policy: The MoE is highly aware of the importance of the involvement of social, industrial and IDF actors and the teachers' unions, and so it holds regular meetings with all these entities both within the Science and Technology Administration and with the MoE Managing Director (in different steering committees). In certain cases, there are national projects involving the MoE, stakeholder economic entities such as Azrieli, Stef Wertheimer, The Rashi Foundation, The Karev Foundation, the JOINT, the Centre for Educational Technology and others. The trend of involving employers in planning VET policy and putting programmes into practice is growing. The MAI was involved in defining the MoE's strategic plan for TVET for 2015-2020, taking an active role in running some of these programmes, including student experience in industry (through its educational NPO, Taasiyeda), developing national accreditation systems, and establishing and operating regional technology centres. However, there are no built-in mechanisms established jointly by employers and ministries to oversee the issue of defining current and future needs in terms of HR and skills either nationally or regionally, or of adapting the education and training systems accordingly. In the MOEC, the involvement of other actors occurs to varying degrees in different periods and for different disciplines. As mentioned above, in the recent step initiated by the department for curriculum updates, it considered the cooperation with non-state actors to be necessary for success, and the following actors were fully involved: employers, employer associations,

pedagogical actors and more. However, we may note that compared to other developed countries such as Germany, the partnership with employers' associations and workers' unions in Israel is less than what we would like to see. It is worth noting that unlike European countries, Israel offers no tax relief to employers and industrialists who mentor students. As a rule, there are local initiatives of cooperation with non-state actors that sometimes yield impressive results, but there is no unified policy of this issue.

E.5 Distribution of functions and responsibilities for shaping and implementing VET between state and non-state actors: Among all TVET students in Israel, about 90% fall under the supervision of the MoE, and about 10% in the supervision of the MOEC. The distribution of functions between them is not as clear as it should be. The lack of clear VET legislation plays a part in this and the issue has taken shape over the years according to the changing power relations between the parties involved. Over the years, the MOEC VET Dept. was the main actor responsible for the issue, certainly for everything concerning adult training. In time, other actors entered the picture, be they more established ones such as the large employers' associations, or NPOs and philanthropic bodies wishing to meet needs not met by the establishment. As for the MoE, there is full transparency and maximum involvement both internally and externally. From the standing of the VET providers, there are good ties with the Chief Inspectors and other policy makers. However, beyond the partnership in developing curricula, there is little influence on VET policy. There is sharing of information and the exchange of ideas that affects strategy, but the latest reform decided on by the MoE is detrimental to VET in several areas, for example, the elimination of matriculation exams in 10th grade, which is very disruptive for the Tech-Mat programme, which enables students to complete secondary school with both a matriculation certificate and a technician diploma.

E.6 Sectors of the economy are most active in the shaping of and participation in the planning and implementation of skills provision through VET: The corporate sector and the IDF are the most dominant. In addition, there is a rise in the desire of industrial entities to be involved in VET. Although a formal system of social partnership has not been established, employers are represented through the frequent involvement – both formal and informal – of the MAI in a wide range of TVET policy development, implementation and reform activities. In addition to significant and frequent informal contacts, the MAI is recognized by the government as the representative organization of all the industrial sectors in the Israeli economy. It represents the country's larger employers and their organizations and thus makes a significant contribution to economic, labour market, social and educational decisions. It is often called on by government to engage in training issues, and has built up its own organization to handle TVET issues to some extent and has a considerable presence in national forums. Its activities range from lobbying to co-funding initiatives. It aims to increase the number of students learning in the TVET system through sponsorship and engagement of employers and businesses across a wide spectrum of the economy in a range of TVET programmes, and to improve the quality and relevance of programmes. Thus, for example, the MAI has representation on the discipline committees mentioned above in connection with the MoE's curriculum development, and it has established induction/training arrangements for its representatives who take part in the discipline committees.

In spite of the extent to which the MAI is involved in informal and issue-by-issue engagements with the TVET authorities and networks, it has expressed the view that more formal and systematic partnership arrangements would improve TVET governance and improve the robustness of the current, more ad hoc arrangements[51].

Arrangements between national and sub-national levels of governance

E.7 Distribution of roles and responsibilities for the implementation of VET across governance levels: Because Israel is a very small country; the national bodies are more dominant. The administrative responsibility for TVET falls to the MoE, in coordination with the MAI, where this is determined by need and issue, but not determined in advance. In the case of the MOEC TVET Dept., the regional entity is the district office, which is an integral part of the national level; its staff and managers are all government employees. The district offices play an important role regarding the field and knowing the providers and

[51] VET governance: ETF partner country profile. Israel (country fiche on governance of the VET system)

the needs first-hand, and they are essential to the functioning of the system. They also play a key role in making the main office aware of needs in order to create a clearer picture of the economy's needs. In the past year the department has paid more attention to the TVET providers, asking to hear more from them in order to elicit problems, difficulties and obstacles in their work vis-à-vis the government in order to overcome them.

E.8 Participation in VET governance of sectors and stakeholders at the local level: The opening of technological and vocational study tracks in secondary and comprehensive schools in all sectors is fully coordinated with approval by the local authorities and owners of the schools and in accordance with the needs of the city, the region and local industry. There are efforts to work with the local authorities and involve them on VET-related projects. However, the level of cooperation depends on the leadership and agenda of each authority. A new topic has recently been introduced – that of tenders to operate the schools in various authorities. Originally, the idea was to increase the competition between VET providers and thereby improve the quality of the education. However, there are several problems that have led to the opposite outcome: the criteria for the tender are not determined by the state, and each authority can set its own criteria; the decision-makers do not only look at professional criteria, but also political and other considerations that do not necessarily promote the highest quality provider; winning a tender is accompanied by appeals by other providers which are sometimes merely procedural.

E.9 Public-private partnerships: There are joint projects with public and private bodies and the system encourages directing suitable students towards vocational training that meets the specific needs of our industry and economy. For example, ties with the Garages Association, Vehicle Importers Association, Electronics Association, Ministry of Health, Ministry of Transport, Ministry of Tourism, Stef Wertheimer's Zur-Lavon Foundation and others. A tender will soon be closing in the VET Dept., the meaning of which will be a change in the nature of the relations between the government and the VET providers. For the first time, private providers will be responsible for budgeted training in the government centres as well. From this point on there will be no more state-employed vocational teachers, and in about 4-5 years' time, we anticipate complete privatisation of the government training centres. In the coming years, there will be a mixed model of centres managed and owned by the government where the teaching service providers will be private entities.

Financing of VET

Spending on education rose beyond the OECD average between 2005 and 2012. Pupil numbers increased by 15%, so per-pupil spending also exceeded the OECD average. For MoE, sources of finance are the government, local authorities and provider networks. It allocates finance to localities and schools via the districts. Local authorities provide for infrastructure and equipment and add to national allocations. They have considerable powers also to interpret the national curriculum and establish local initiatives and partnerships. Provider networks have their own sources of finance and can fund their schools directly or through teacher training or other initiatives. MoSASS' main sources are the government and provider networks. MoSASS' provision is tied more closely to the labour market and employment, including apprenticeships. Here, the networks and larger employers contribute, often to schools based on their own premises, and owned by the networks. There are no taxes or levies on employers, but MAI and its members contribute to skills development programmes and other initiatives. Funding goes to TVET providers on a per-capita basis.

Public-private structure orientated mechanisms exist through employers' frequent involvement, through MAI, in developing TVET policy, and in implementation and reform. Among other things, MAI aims to get more students into the TVET system through sponsorship and by getting employers involved in improving TVET programmes. MAI is represented on the subject committees related to MoE's curriculum development, and trains representatives who do this work. However, it believes more formal and systematic partnership arrangements would improve on the more ad hoc current arrangements.

How decisions about resources allocated to VET are made fit in with the aims of the policy reform for VET: Technology education is by nature about 40% more expensive than academic education for the following reasons: (a) the rapid changes in technology that must be reflected in updating curricula, infrastructure and teacher training, (b) technology teachers are more expensive because of the competition with industry, (c) the

study and practical work classes are smaller. For these reasons, any shortage in resource allocation has a significant impact on VET. Israel falls seriously short in its allocation of resources to VET and this has been stated in many reports and comparative studies, including the three previous Torino Reports (2010, 2012, and 2014) and so according to the MoE, only a Ministry with large budgets such as its own, can meet these demands. However, the problem in Israel does not lie only in resource allocation, but rather in the level of incentives in principle, for industrial bodies, the structure of the collaborations and the replications and gaps in the division of responsibility within the system.

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- Dr Ronit Ashkenazy, deputy Director and Head of the Pedagogical Administration, AMAL network
- Dr Eli Eisenberg, Senior Deputy Director General, Head of the Administration for R&D and Training, ORT Israel network
- Dr Tal Lotan, Director of Education and Training in Industry and the Corporate Sector, Manufacturers Association of Israel
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ANNEXES[52]

Annex 1. Qualitative and qualitative evidence

TRP16.01 Activity rate age group 15–64, by sex [%]

Sex	2009	2010	2011	2012*	2013	2014	2015
Total	64.1	64.5	64.6	71.5	71.6	72.2	72.2
Male	67.8	68.2	68.2	75.9	76.0	76.1	76.1
Female	60.5	60.9	60.9	67.1	67.3	68.4	68.3

Source: Israel Central Bureau of Statistics (LFS survey).
**Note: Break in series: 1) Transition to a Monthly Labour Force Survey; 2) Changes in the definitions of labour force characteristics (including compulsory and permanent military service into labour force)*

TRP16.02 Employment rate age group 20–64, by sex [%]

Sex	2009	2010	2011	2012*	2013	2014	2015
Total	66.5	67.5	68.3	72.5	73.1	74.1	74.7
Male	70.5	71.5	72.4	77.7	78.2	78.6	79.4
Female	62.6	63.7	64.3	67.5	68.2	69.6	70.0

Source: Israel Central Bureau of Statistics (LFS survey).
**Note: Break in series: 1) Transition to a Monthly Labour Force Survey; 2) Changes in the definitions of labour force characteristics (including compulsory and permanent military service into labour force)*

TRP16.03 Employment rate of recent graduates (age group 20–34) by sex and programme orientation [%]

Missing data

TRP16.04 Unemployment rate (age group 15–64) by sex [%]

Sex	2009	2010	2011	2012*	2013	2014	2015
Total	7.7	6.8	5.7	7.0	6.3	6.0	5.3
Male	7.7	6.9	5.7	6.9	6.3	6.0	5.2
Female	7.6	6.6	5.7	7.1	6.4	6.0	5.5

Source: Israel Central Bureau of Statistics (LFS survey).
**Note: Break in series: 1) Transition to a Monthly Labour Force Survey; 2) Changes in the definitions of labour force characteristics (including compulsory and permanent military service into labour force)*

TRP16.05 Youth unemployment rate (age group 15–24) by sex [%]

Sex	2009	2010	2011	2012*	2013	2014	2015
Total	14.6	13.7	11.6	12.1	10.5	10.6	9.3
Male	15.7	14.5	11.8	11.6	10.4	10.1	8.9
Female	13.6	12.9	11.4	12.7	10.7	11.1	9.7

Source: Israel Central Bureau of Statistics (LFS survey).
**Note: Break in series: 1) Transition to a Monthly Labour Force Survey; 2) Changes in the definitions of labour force characteristics (including compulsory and permanent military service into labour force)*

[52] Last update 01/12/2016, when the internal peer review of the report took place

TRP16.06 Youth unemployment ratio (age group 15–24) by sex [%]

Sex	2009	2010	2011	2012*	2013	2014	2015
Total	4.6	4.3	3.5	6.0	5.2	5.3	4.6
Male	4.6	4.2	3.3	5.8	5.3	5.1	4.5
Female	4.6	4.4	3.6	6.2	5.1	5.4	4.7

Source: Israel Central Bureau of Statistics (LFS survey).
**Note: Break in series: 1) Transition to a Monthly Labour Force Survey; 2) Changes in the definitions of labour force characteristics (including compulsory and permanent military service into labour force)*

TRP16.07 Participation in training/lifelong learning (age group 25–64) by sex [%]

Sex	2009	2010	2011	2012*	2013	2014	2015
Total	8.2	8.2	7.5	9.7	9.5	9.6	9.9
Male	8.9	8.9	8.2	11.5	10.9	11.3	11.6
Female	7.5	7.5	6.8	8.0	8.1	7.9	8.4

Source: Israel Central Bureau of Statistics (LFS survey).
**Note: Break in series: 1) Transition to a Monthly Labour Force Survey; 2) Changes in the definitions of labour force characteristics (including compulsory and permanent military service into labour force)*

TRP16.08 Tertiary educational attainment (age group 30–34) by sex [%]

Sex	2009	2010	2011	2012*	2013	2014	2015
Total	49.4	50.6	52.4	50.7	51.7	53.7	53.1
Male	43.7	45.0	48.3	43.7	44.5	46.1	45.1
Female	54.8	56.2	56.3	57.5	58.7	61.3	60.8

Source: Israel Central Bureau of Statistics (LFS survey).
**Note: Break in series: 1) Transition to a Monthly Labour Force Survey; 2) Changes in the definitions of labour force characteristics (including compulsory and permanent military service into labour force)*

TRP16.09 Low achievers in PISA (15-year-olds) by programme orientation [%]

Subject	2006	2009	2012
Mathematics	41.9	39.5	33.5
Reading	38.9	26.5	23.6
Science	36.15	33.1	28.9

Source: OECD, Programme for International Students Assessment

TRP16.10 Early leavers from education (age group 18–24) by sex [%]

Sex	2009	2010	2011	2012*	2013	2014	2015
Total	68.4	68.3	69.3	70.2	70.2	70.7	70.0
Male	71.4	71.1	72.3	73.2	73.6	73.2	73.1
Female	65.2	65.1	66.1	66.8	66.5	67.9	66.4

Source: Israel Central Bureau of Statistics (LFS survey).
**Note: Break in series: 1) Transition to a Monthly Labour Force Survey; 2) Changes in the definitions of labour force characteristics (including compulsory and permanent military service into labour force)*

TRP16.11 Persons not in employment, education or training (NEETs) (age group 15–24) by sex [%]

Sex	2009	2010	2011	2012*	2013	2014	2015
Total	28.8	27.8	28.5	17.2	16.6	15.8	15.6
Male	28.9	28.5	29.1	14.6	14.0	13.4	13.2
Female	28.6	27.1	27.8	19.9	19.2	18.3	18.2

Source: Israel Central Bureau of Statistics (LFS survey).
**Note: Break in series:*
1) Transition to a Monthly Labour Force Survey;
2) Changes in the definitions of labour force characteristics (including compulsory and permanent military service into labour force)

TRP16.12 Students in vocational programmes as a percentage of total upper secondary students by sex [%]

Sex	2009	2010	2011	2012	2013*	2014	2015
Total	35.3	38.2	38.5	39.1	40.3	40.8	M.D.
Male	38.7	41.4	40.8	41.0	41.4	41.4	M.D.
Female	31.8	34.9	36.1	37.2	39.1	40.2	M.D.

Source: UIS
*Note: * 2013 break in series, adoption of 2011 ISCED classification.*

TRP16.13 Students in combined work- and school-based training (total and as a percentage of total upper secondary students) by sex [%]
Missing data

TRP16.14 Educational attainment of active population (aged 25–64) [%]

		2009	2010	2011	2012*	2013	2014	2015
Female	Low	16.5	16.5	15.7	14.6	14.0	13.2	13.0
	Medium	34.5	33.9	34.6	34.3	34.0	32.9	33.0
	High	48.2	49.1	49.4	50.6	51.6	53.3	53.2
Male	Low	19.6	19.2	18.2	16.2	15.9	15.3	15.0
	Medium	38.5	38.9	38.5	41.7	41.0	40.2	39.8
	High	41.0	41.5	43.1	41.8	42.7	44.0	44.8
Total	Low	18.0	17.9	16.9	15.4	15.0	14.3	14.0
	Medium	36.5	36.4	36.5	38.0	37.4	36.5	36.3
	High	44.7	45.4	46.3	46.3	47.2	48.7	49.1

Source: Israel Central Bureau of Statistics (LFS survey).
**Note: Break in series: 1) Transition to a Monthly Labour Force Survey; 2) Changes in the definitions of labour force characteristics (including compulsory and permanent military service into labour force)*
Note: Low: ISCED 0-2; Medium: ISCED 3-4; High: ISCED 5-6 (from ISCED 97 classification); no schooling is included in low due to the very low percentage

TRP16.15 Public expenditure on education (as a percentage of GDP) [%]

	2009	2010	2011	2012	2013	2014	2015
Total	4.8	4.8	4.7	4.7	4.6	M.D.	M.D.

Source: Israel Central Bureau of Statistics (On line database - Education)
Notes 2013, 2014: Provisional.

TRP16.16 Proportion of teachers who have followed CPD in the last 12 months [%]

	2009	2010	2011	2012	2013	2014	2015
Total	M.D.	M.D.	M.D.	M.D.	91.1	M.D.	M.D.

Source: OECD_TALIS

TRP16.17 Total population [thousands]

	2009	2010	2011	2012	2013	2014	2015
Total	7552.0	7695.1	7836.6	7984.5	8134.5	8296.9	8463.4
Male	3734.7	3807.3	3878.8	3953.4	4029.3	4111.2	4195.2
Female	3817.3	3887.8	3957.7	4031.1	4105.2	4185.6	4268.2

Source: Israel Central Bureau of Statistics
Note: estimations

TRP16.18 Relative size of youth population (age group 15–24) [%]

	2009	2010	2011	2012	2013	2014	2015
Total	25.0	24.8	24.7	24.7	24.8	24.7	24.8
Male	25.7	25.5	25.4	25.4	25.4	25.4	25.5
Female	24.3	24.1	24.0	24.1	24.1	24.1	24.2

Source: Israel Central Bureau of Statistics
Note: estimations

TRP16.20 Incidence of self-employment [%]

	2009	2010	2011	2012*	2013	2014	2015
Total	12.9	12.8	12.6	12.7	12.6	12.5	12.6
Male	17.0	17.0	16.5	16.2	15.8	15.6	15.9
Female	8.2	8.0	8.3	8.7	9.0	9.1	9.0

Source: Israel Central Bureau of Statistics (LFS survey).
**Note: Break in series: 1) Transition to a Monthly Labour Force Survey; 2) Changes in the definitions of labour force characteristics (including compulsory and permanent military service into labour force)*

TRP16.21 Skill gaps [%]

2013
12.3

Source: OECD Statistical Database

Definitions

The activity rate is calculated by dividing the active population by the population of the same age group. The **active population** (also called '**labour force**') is defined as the sum of employed and unemployed persons. The inactive population consists of all persons who are classified as neither employed nor unemployed.

The employment rate is calculated by dividing the number of employed persons by the population of the same age group. Employed persons are all persons who worked at least one hour for pay or profit during the reference period or were temporarily absent from such work.

The employment rate of recent graduates is estimated for persons aged 20–34 who fulfil the following conditions: first, being employed, according to the ILO definition; second, having attained at least upper secondary education (International Standard Classification of Education (ISCED) level 3) as the highest level of education; third, not having received any education or training in the four weeks preceding the survey; and fourth, having successfully completed their highest educational attainment one, two or three years before the survey.

The unemployment rate represents unemployed persons as a percentage of the labour force. The labour force is the total number of people who are employed or unemployed. Unemployed persons comprise those aged 15–64 or 15+ who were without work during the reference week; are currently available for work (were available for paid employment or self-employment before the end of the two weeks following the reference week); are actively seeking work (had taken specific steps in the four-week period ending with the reference week to seek paid employment or self-employment, or had found a job to start later (within a period of, at most, three months)).

The youth unemployment rate is calculated by dividing the number of unemployed persons aged 15–24 by the total active population in the same age group.

The youth unemployment ratio is calculated by dividing the number of unemployed persons aged 15–24 by the total population of the same age group.
Lifelong learning refers to persons aged 25–64 who stated that they received education or training in the four weeks preceding the survey (numerator). The denominator consists of the total population of the same age group, excluding those who did not answer the question on participation in education and training.

Tertiary attainment is defined as the percentage of the population aged 30–34 who have successfully completed tertiary studies (e.g. university, higher technical institution). Educational attainment refers to ISCED 1997 level 5–6, and ISCED 2011 level 5–8.

Low achievers are the 15-year-olds who are failing level 2 on the PISA scale for reading, mathematics and science. The indicator is based on data from the OECD. If available, data should be reported by programme orientation (i.e. general/vocational).

Early leaving from education and training is defined as the percentage of the population aged 18–24 with at most lower secondary education who were not in further education or training during the four weeks preceding the survey. Lower secondary education refers to ISCED 1997 level 0–3C short, and to ISCED 2011 level 0–2.

Persons not in employment, education or training (NEETs) The indicator provides information on young people aged 15–24 who meet the following two conditions: first, they are not employed (i.e. unemployed or inactive according to the ILO definition); and second, they have not received any education or training in the four weeks preceding the survey. Data is expressed as a percentage of the total population of the same age group and gender, excluding the respondents who have not answered the question on participation in education and training.

Students in vocational programmes as a percentage of total upper secondary refers to students enrolled in vocational programmes in upper secondary education expressed as a percentage of the total number of students enrolled in all programmes (vocational and general) at upper secondary education level (ISCED level 3).

Students in combined work- and school-based training (total and as a percentage of total upper secondary students). A vocational programme is classified as combined work- and school-based if 25% or more of the curriculum is presented outside the school environment; otherwise it is classified as school-based. Programmes in which the work-based component accounts for 90% or more of the curriculum are excluded.

Educational attainment of active population. The active population (also called ‘labour force’) is defined as the sum of employed and unemployed persons. This indicator is usually measured with respect to the highest educational programme successfully completed that is typically certified by a recognised qualification. Recognised intermediate qualifications are classified at a lower level than the programme itself.

Public expenditure on education (expressed as a percentage of GDP or a percentage of total public expenditure). Generally, the public sector funds education either by directly bearing the current and capital expenses of educational institutions, or by supporting students and their families with scholarships and public loans as well as by transferring public subsidies for educational activities to private firms or non-profit organisations. Both types of transactions together are reported as total public expenditure on education.

Proportion of teachers who have followed continuous professional development (CPD) in the last 12 months. CPD means formal and non-formal professional development activities which may, for example, include subject-based and pedagogical training. In certain cases, these activities may lead to supplementary qualifications. The indicator is expressed as a percentage of total teaching staff or of the teaching staff at a particular level of education (to be indicated).

The total population is estimated as the number of persons having their usual residence in a country on 1 January of the respective year. When information on the usually resident population is not available, countries may report legal or registered residents.

Relative size of youth population. This is the ratio of the youth population (aged 15–24) to the working-age population (usually aged 15–64 or 15–74).

Small and Medium-Sized Enterprises (SME) Policy Index. The SME Policy Index is a European Union's benchmarking tool designed to regularly assess SME policy frameworks in transition and emerging economies and to monitor progress in policy implementation over time. The Index has been developed along the principles of the Small Business Act for Europe (SBA) by the European Commission, EBRD, ETF and the OECD. The SME Policy Index identifies strengths and weaknesses in policy design and implementation, allows for comparison across countries and measures convergence towards good practices and relevant policy standards. It supports governments in setting targets for SME policy development and helps to identify strategic priorities for improving the business environment. Three subdomains of SME are collected:

SME Policy Index – Entrepreneurial learning
SME Policy Index –Women's entrepreneurship training
SME Policy Index – Enterprise skills

Incidence of self-employment refers to the number of self-employed persons as a proportion of total employed. Self-employment includes employers, own-account workers, members of producers' cooperatives and contributing family workers.

Skill gaps is the percentage of firms identifying an inadequately educated workforce as a major constraint. The calculation of the indicator is based on the rating of the obstacle as a potential constraint to the current operations of the establishment.

Annex 2. Benchmarking[53]

EU2020 targets in education and employment			Israel		EU		*EU2020* targets
			2012*	2015	2010	2015	
Headline targets	Early leavers from education and training (%aged 18-24) [54]		70.2	70.0	13.9	11	**< 10**
	Tertiary educational attainment (% aged 30-34)		50.7	53.1	33.8	38.7	**≥ 40**
	Employment rate (% aged 20-64)		72.5	74.7	68.6	70.1	**≥ 75**
Other targets	Participation in training (% aged 25-64)		9.7	9.9	9.1	10.7	**≥ 15**
	Underachievement (% aged 15)	Reading	26.5	23.6	19.7	17.8	**< 15**
		Mathematics	39.5	33.5	22.3	22.1	**< 15**
		Science	33.1	28.9	17.8	16.6	**< 15**
	Employment rate of recent graduates (% aged 20-34)		m.d.	m.d.	77.4	76.9	**≥ 82**

***Sources**: Eurostat - online database for EU and CBS for Israel (data received); PISA results - OECD, Programme for International Students Assessment m.d. =missing data.*

***Notes:** PISA 2012 data refers to 2009 assessment and 2015 data refers to 2012;*

(*) 2012 is chosen for Israel as a reference year, due to break in series in the LFS: 1) Transition to a Monthly Labour Force Survey; 2) Changes in the definitions of labour force characteristics (including compulsory and permanent military service into labour force);

The indicator on early leaving rate in Israel has a different coverage of the youth population in the Labour Force Survey (including those enrolled in compulsory and permanent military service). The EU defines early school leavers as people aged 18-24 who have only lower secondary education or less and are no longer in education or training. The 'no longer in education or training' part of the indicator is operationalised though a question that asks about the four weeks preceding the survey. Since the compulsory military service in the country last for 30 months for males and 18 for females over the 18 years old, many youth end up being part of this category. Comparison with EU countries of this indicator is therefore not straightforward.

Israel is doing better than the EU average on the tertiary educational attainment (% aged 30-34) and is still progressing. The current rate (53%) is well above the EU average and the tertiary attainment rate in most of the EU member states.

The employment rate of persons aged 20-64 is also well above the EU average and increasing.

Adult participation in training is similar to the European average (at around 10% of those aged 25-64) and is increasing slightly.

Some progress can be also observed on reducing the underachievement of youths aged 15 in all three skills domains (reading, maths and science). During the latest OECD assessment (PISA 2012), the proportion of low-achievers was still well above the EU average, especially in maths and science, albeit the progress made since 2009. The next results from PISA 2015 due for December, should confirm this trend.

The indicator on early school leavers in Israel is not comparable with the EU due to different coverage of youth population in Israel (see above).

[53] Last update 01/12/2016, when the internal peer review of the report took place

Annex 3. Process assessment report

Country	ISRAEL
National coordinator	Refaella Ballas, Sagi Ben Bassat
Country desk	Lida Kita
Working group members	The TVET National Committee Members
Process implementation	The whole Process discussions, meetings, and coopération between the different stakeholders
Working group	No applicable
Use of local expertise	No applicable
TRP principles	The 5 principles: Ownership (yes), Broad participation (yes), Holistic approach (yes), Evidence based report (yes)
Implemented measures and qualitative achievement	Collective report, represents all the main achievements,
Evidence	All the CBS new data, all the reports since 2014: the OECD, TAUB reports, ETF GEMM reports, other reports from the Bank of Israel reports, Ministry of Economy, Ministry of Education (RAMA report), Prime Minister`s Office Accreditation report, Interviews with key partners
Participation	Key partners form TVET schools and the Technological networks, Government `s Ministries, The CBS, The MAI, The National Labour Organization,
Ownership	Owned by Israel`s key institutions and Government `s Ministries
Holistic view of VET	Yes
Use of TRP support package	Yes
Contribution of evidence to policy accountability and transparency	Yes
TRP added value	A national committee representing all stakeholders now meets regularly to discuss TVET issues. The 2016 Torino Process finds TVET in Israel - highly regarded by decision makers. We would like to note the extraordinary cooperation that we received this year from the committee members

Annex 4. Examples of good practice

- "**Student Experience in Industry**" - Teachers and students are introduced to the industry relevant to their field and gain experience of it during their studies. This MAI programme was implemented in 2016 in 200 classes in a variety of subjects among the general population of students, not only among those at risk, as in the past. This led to the strengthening and expansion of practical experience in industry as an integral part of the curriculum.
- "**Entrepreneurship as a key competence at VET schools**" – This does not yet exist in system-wide curricula and is not part of the mandatory studies at school. However, the VET providers, primarily the major technology education networks ORT and AMAL, are pioneering the development of programmes and entrepreneurship centres as part of an innovative move to impart essential skills to help today's youth integrate into the industry of tomorrow. Thus, for example, the AMAL network emphasises "**entrepreneurship thinking skills**" and has set up entrepreneurship centres in the periphery of the country in order to train social and business leaders and thereby contribute also to the socioeconomic growth of the country. The first centre was set up in the northern town of Safed, with an emphasis on developing the skills of initiative, original thinking and creativity, and enables students to specialise in biomed and drones, advanced technology for a wide range of uses. The objective is to fully realize the students' abilities, develop entrepreneurial thinking and give them an opportunity to truly experience the processes of entrepreneurship and project development. Following the success of the initiative in Safed, a second centre began operating in Hadera, focusing on app development and biomed. The centre was designated by the ETF as inspiring and was praised at an international conference. The centre in Hadera is the first in Israel to teach app development in conjunction with Apple and I-Digital, and biomed in conjunction with the Hillel Yaffe Hospital and the Faculty of Biomedicine at the Technion. The third entrepreneurship centre was set up at the Shevach-Mofet school in Tel Aviv, focusing on cyber and apps. Preparations are underway to open more centres in the forthcoming school year. The ORT Israel network operates the iSTEAM (Innovation, Science, Technology, Engineering, Art, and Mathematics) programme. The iSTEAM approach to learning enables a comprehensive overview of all the various fields of science and engineering, with in-depth learning of a particular discipline, and teaches learners' to develop a broader perspective of science and engineering topics and of the process of product planning with a systemic approach. The pilot programme was launched in 2015 in six key ORT Israel schools as a multi-age model beginning with students in Grades 9 and 10. In the iSTEAM framework, ORT developed a course entitled Technological Entrepreneurship in conjunction with Nobel Laureate Prof. Dan Shechtman of the Technion. The course was praised and recognized by the ETF. Partners in this projects are Prof. Dan Shechtman, Prof. Arie Maharshak, President of ORT Braude College, and the organization of gradates of Intelligence Units in the IDF, and is intended for outstanding students. In addition, ORT Israel has developed special study programmes on topics such as: brain sciences, heart sciences, nanotechnology, biomimicry and more that involve the application of 2st-centry skills. ORT Israel also exports content and methodologies to Europe, the USA and the Far East.

Annex 5. Additional evidence and information

The Israeli market is dynamic, shaped by an array of influences such as technological developments, globalization, and capricious consumer preferences. While such rapid technological advances are generally a blessing, they come at a cost in the guise of a loss of existing jobs55. Computerization is expected to particularly affect jobs held by some of Israel's more vulnerable populations groups – specifically non-Jewish men, teens and young adults, and low-income workers. In general, a negative correlation was found in the analysis of the Taub report between an occupation's average wage and its likelihood of being computerized – that is, those who earn low wages tend to be at higher risk.

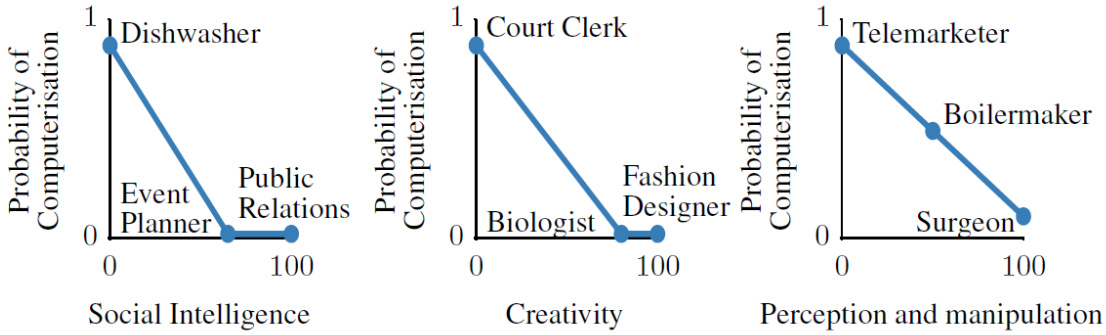

FIGURE I. A sketch of how the probability of computerisation might vary as a function of bottleneck variables.

Flow chart of the "bottlenecks that will affect the level of risk of every job to be replaced by computerisation: social intelligence, creativity, perception and manipulation". The more of these components a job has, the lower the chances of it being replaced. Seen over the long run, a more refined explanation is that the manufacturing share of the labour force in the nineteenth century hollowed out. This is suggested by recent findings, revealing a decline of middle-skill artisan jobs in favour of both high-skill white-collar workers and low-skill operatives (Gray, 2013; Katz and Margo, 2013). Furthermore, even if the share of operatives was increasing due to organizational change within manufacturing and overall manufacturing growth, it does not follow that the share of unskilled labour was rising in the aggregate economy, because some of the growth in the share of operatives may have come at the expense of a decrease in the share of workers employed as low-skilled farm workers in agriculture (Katz and Margo, 2013). Nevertheless, this evidence is consistent with the literature showing that unskilled factory workers, suggesting that technological change in manufacturing was deskilling, replaced relatively skilled artisans[56].

The new accreditation system: accreditation in technology education, Ministry of Education, 2015

Technology education aspires to enable every graduate a meaningful certificate of value in the labour market or for continued studies towards higher certification, diplomas for technicians and practical engineers and academic engineering studies. To match this view, a new flexible system of certification was built to enable advancement from one level to the next.

Certificates and requirements

Below is a table showing the range of possible accreditation certificates for TVET learners. Graduates will be eligible for an accreditation certificate on condition that requirements have been met, and they should aspire to the highest certificate that fully reflects all their skills and abilities.

[55] Using a method developed by American researchers that rates occupations, on a scale from 0 to 1, by the risk that employees will be replaced by computers, Taub Center researcher Shavit Madhala-Brik mapped Israel's labor market into low, medium and high risk occupations in a new study published in the State of the Nation Report 2015, http://taubcenter.org.il/the-digital-world-computerization-trends-in-israels-labor-market/

[56] The Future of Employment: How susceptible are Jobs to Computerisation? Carl Benedikt Frey and Michael A. Osborne September 17, 2013. http://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf

A student in a technology track will be tested for a technological accreditation certificate at the highest level possible for, accreditation 1.1 up to accreditation 3.3

Eligibility conditions for vocational accreditation

Accreditation	Certificate type	Minimum combinations for external testing – accumulated-ted points (study units)	Minimum technology requirements	Study requirements in mandatory subjects	Advancement options	Relevant vocational accreditation
1.1	Basic technology accreditation certification	3 points	Internal assessment in basic science /technology subject Internal assessment in major subject 3-pt studies in specialization subject	Internal assessment in a subject from mother tongue cluster (Hebrew or Arabic) Internal assessment in maths Internal assessment in English	Advancement up to level 1.2	Car mechanic Type 1 Car electrician Type 1 Auto-tech Type 1 Mech. engineering equipment Type 1 Incoming tourism operator Secretary Type 1 Bookkeeping Type 1 (5-point studies in specialization subject) Chef Type 1/ Patissier Type 1
1.2	Regular technology accreditation certification	6 points	According to eligibility criteria for 1.1 + 3 pts in major subject	According to conditions for 1.1 accreditation	Advancement up to level 1.3	Hotel receptionist Secretary Type 2 Practical electrician (subject to work one year experience as an electrician's assistant) Photographer Type 2 Child carer Type 1
1.3	Advanced technology accreditation certification	9 points	According to eligibility criteria for 1.2 or passing certification tests according to specialization track	According to conditions for 1.2 accreditation + 3 point English	Advancement up to level 2.1	Certified electrician (subject to two years' experience as a practical electrician) Tourism consultant Bookkeeping Type 2 (5-points in specialization subject)

Accreditation	Certificate type	Minimum combinations for external testing – accumulated-ted points (study units)	Minimum technology requirements	Study requirements in mandatory subjects	Advancement options	Relevant vocational accreditation
2.1	Techno-logical accreditation certification enabling admission to technician studies and continuing education	12 points	Internal assessment in a basic science/technology subject 3 pts in major subject 3 pts in specialization	Internal assessment in a subject from mother tongue cluster 3 point maths 3 point English	Advancement up to technician's certificate 2.2	Meeting requirements for admission to continuing post-secondary education (5 points required for bookkeeping)
2.2	Technician's certificate/diploma in further education	Achievement of accreditation 2.1	Passing technician exams and submitting a final project for technicians at the end of Year 13.		Advancement up to practical engineering certificate 2.3	Car mechanic technician Auto-tech systems technician Machine building technician Mechatronics technician Flight systems technician Marine mechanics technician Engineering machinery technician Electronic systems technician Computer & control systems technician Software engineering technician Operation systems technician Logistics & Marketing technician TV & communications systems technician Power, command and control systems technician ICT systems technician Diploma in legal administration Diploma in medical administration Diploma in bookkeeping and payroll accounting and bookkeeping certification Type 3.

Accreditation	Certificate type	Minimum combinations for external testing – accumulated-ted points (study units)	Minimum technology requirements	Study requirements in mandatory subjects	Advancement options	Relevant vocational accreditation
2.3	Practical engineer's certificate/diploma in further education	Achieving accreditation certification 2.1	Passing practical engineering exams and submitting a final project for practical engineers at the end of Year 14.		Advancement in accreditation or continuation to Year 14 for advanced accreditation and/or academic studies according to admission requirement of the institutions of higher education	Car mechanic practical engineer Auto-tech systems practical engineer Machine building practical engineer Engineering machinery practical engineer Mechatronics practical engineer Flight systems practical engineer Marine mechanics practical engineer Electronic systems practical engineer Computer & control systems practical engineer Construction practical engineer Media design practical engineer Product design practical engineer Architecture practical engineer Software engineering practical engineer Operation systems practical engineer TV & communications systems practical engineer Power, command and control systems practical engineer ICT systems practical engineer Paramedic

Accreditation	Certificate type	Minimum combinations for external testing – accumulated-ted points (study units)	Minimum technology requirements	Study requirements in mandatory subjects	Advancement options	Relevant vocational accreditation
3.1	Matriculation / techno-logical accreditation certification	24 points according to the law of eligibility	- Internal assessment in a basic science/technology subject 33/5 points in a major, 3/5 points in a specialization	16 compulsory points according to the conditions of the law of eligibility for matriculation, including 3 point maths and 3 point English	Advancement to accreditation certification 3.2 or academic studies according to admission requirement of the institutions of higher education	Kindergarten teacher's assistant (3 points in a major and 5 points in a specialization)
3.2	Advanced matriculation / techno-logical accreditation certification	26 points according to the law of eligibility	According to conditions for 3.1 level accreditation certification	18 compulsory points according to the conditions of the law of eligibility for matriculation, including 5 point maths	Advancement to accreditation certification 3.3 or academic studies according to admission requirement of the institutions of higher education	

Clarifications for the table

- The guidelines for the format of testing for accreditation will be determined jointly with the accrediting body and will be published on the website of the Science and Technology Administration, on the page for Technology and Accreditation.
- Mention of points in the table indicates that the student will take an external exam.
- "Minimal requirements" refers to succeeding (a score of 55 and up) in each subject mentioned.

Details of the technology tracks for continuing education for advanced accreditation and for a technician / practical engineering diploma from secondary school technology tracks

Technology track in continuing education		Secondary school technology track		
Code	Name of feeder track and specialisation	Code and name of specialisation	Code	Name of feeder track and specialisation
1091	Mechanical engineering – machinery building	Computerised manufacturing systems (10)	1010	CAD systems
			1020	Mechanical systems maintenance
1092	Mechanical engineering – mechatronics	Mechanical engineering (32)	3220	Mechatronics
1093	Mechanical engineering – flight systems		3210	Flight machinery
1094	Mechanical engineering – marine mechanics		3230	Marine technical thermodynamics
1095	Mechanical engineering – car mechanics	Computerised manufacturing systems (10)	1030	Car mechanical systems
			1040	Vehicle electrical and electronic systems
1097	Mechanical engineering – autotech	Mechanical engineering (32)	3240	Computerised vehicle systems - autotech
1098	Mechanical engineering – engineering machinery equipment		3250	Engineering machinery equipment
1191	Electronics and computer engineering – electronic systems	Electronics and computer engineering (11)	1140	Electronic systems
1192	Electronics and computer engineering – computer and control systems		1120	Computer and control systems
			1130	Computer systems
1291	Construction engineering and architecture - construction	Construction engineering and architecture (12)	1220	Engineering design of buildings
1292	Construction engineering and architecture - architecture		1210	Architecture
1491	Software engineering	Software engineering (14)	1410	System design and programming
1691	Biotechnology engineering	Biotechnology (16)	1610	Biotechnology applications

Technology track in continuing education		Secondary school technology track		
1791	Business management – legal administration	Business management (17)	1710	HR management
1792	Business management – medical administration			
1793	Business management – accounting and payroll accounting		1720	Bookkeeping
1794	Industrial management engineering – logistics and marketing		1730	Marketing management
1891	Industrial management engineering – operation systems	Industrial management engineering (18)	1810	Production management
2092	Design – media design	Design arts (20)	2010	Design
2191	TV and cinema systems	TV and cinema systems (21)	2110	TV and cinema systems
		Media and advertising (31)	3110	Electronic communications
			3120	Advertising and PR
2491	Qualified paramedic	Health systems (24)	2420	Medical systems
3391	Electrical, control and energy engineering -power, command and control systems	Electrical, control and energy engineering (33)	3310 3320	Power, command and control systems
				Climate control systems
3591	ICT systems	ICT systems (35)	3510	Computer and ICT infrastructures

Education classifications used

Educational attainment (broad levels)	ISCED-11 Level	ISCED-97 Level	ISCED-76 Level	Description
LOW	No schooling	No schooling	No schooling	Less than one year of schooling
	0: Early childhood education	0: Pre-primary education	0: Education preceding the first level	Education delivered in kindergartens, nursery schools or infant classes
	1: Primary education	1: Primary education or first stage of basic education	1: First level	Programmes are designed to give students a sound basic education in reading, writing and arithmetic. Students are generally 5-7 years old. Might also include adult literacy programmes.
	2: Lower secondary education	2: Lower secondary education or second stage of basic education	2: Second level, first stage	Continuation of basic education, but with the introduction of more specialised subject matter. The end of this level often coincides with the end of compulsory education where it exists. Also includes vocational programmes designed to train for specific occupations as well as apprenticeship programmes for skilled trades.
MEDIUM	3: Upper secondary education	3: Upper secondary education	3: Second level, second stage	Completion of basic level education, often with classes specialising in one subject. Admission usually restricted to students who have completed the 8-9 years of basic education or whose basic education and vocational experience indicate an ability to handle the subject matter of that level.
	4: Post-secondary non-tertiary education	4: Post-secondary non-tertiary education		Captures programmes that straddle the boundary between upper-secondary and post-secondary education. Programmes of between six months and two years typically serve to broaden the knowledge of participants who have successfully completed level 3 programmes.
HIGH	5: Short-cycle tertiary education	5: First stage of tertiary education (not leading directly to an advanced research qualification); subdivided into:		
	6: Bachelor's or equivalent level	5A	6: Third level, first stage leading to a first university degree	Programmes are largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programmes. Duration is generally 3-5 years.
		5B	5: Third level, first stage, leading to an award not equivalent to a first university degree.	Programmes are of a typically 'practical' orientation designed to prepare students for particular vocational fields (high-level technicians, teachers, nurses, etc.).
	7: Master's or equivalent level	6: Second stage of tertiary education (leading to an advanced research qualification)	7: Third level, second stage	Programmes are devoted to advanced study and original research and typically require the submission of a thesis or dissertation.
	8: Doctoral or equivalent level			

ABBREVIATIONS

The Central Bureau for Statistics	**CBS**
Continuing Vocational Education and Training	**CVET**
European Training Foundation	**ETF**
Government Institute for Science and Technology Training	**MAHAT**
Human Resources	**HR**
Israel Defence Forces	**IDF**
Initial Vocational Education and Training	**IVET**
Inter-Ministerial Accreditation System Team	**IMAST**
Manufacturers Association of Israel	**MAI**
Ministry of Education	**MoE**
Ministry of Economy	**MOEC**
Ministry of Defence	**MoD**
Research & Development	**R&D**
National Authority for Measurement and Assessment in Education	**RAMA**
National Qualifications Framework	**NQF**
Not in employment, education or training	**NEET**
Ministry of Labour, Welfare and Social Services	**MLWSS**