



TORINO PROCESS 2016-17

ISRAEL

EXECUTIVE SUMMARY

Executive summary of the Torino Process 2016–17 Israel report.

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Acronyms

CBS	Central Bureau of Statistics
CVET	Continuing vocational education and training
ETF	European Training Foundation
EU	European Union
GEMM	Governance for Employability in the Mediterranean
ICT	Information and communications technology
IDF	Israeli Defence Forces
ILS	Israeli shekel
IVET	Initial vocational education and training
MAI	Manufacturers' Association of Israel
MoE	Ministry of Education
MoEC	Ministry of Economy
NQF	National Qualifications Framework
OECD	Organisation for Economic Cooperation and Development
PIAAC	Programme for the International Assessment of Adult Competencies
PISA	Programme for International Student Assessment
RAMA	National Authority for Measurement and Evaluation in Education
TVET	Technical and vocational education and training
VET	Vocational education and training

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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 technical and vocational education and training (TVET) issues. The 2016–17 Torino Process review finds TVET in Israel is highly regarded by decision makers. The Ministry of Education (MoE) would like to have coverage of all Israeli students but the vocational schools supervised by the Ministry of Economy (MoEC) are being moved over to the Ministry of Labour, Welfare and Social Services¹.

The greatest change since the 2014 report has been the formulation of a new accreditation system for technology students, which translates the MoE structure into a recognised three-year accreditation programme. An inter-ministerial team was established to streamline and align accreditation for the different training systems as part of a strategic, economic and social assessment submitted to the government and approved from June 2015. This comprehensive National Qualifications Framework (NQF) will facilitate transitions between vocational, technological and academic studies. In the new format, all of the national certificates and accreditations issued by the Israeli TVET systems will be ranked and made accessible to the public, under the supervision of the Prime Minister's Office. The team has now drafted its final recommendations, including reforms to the training of technicians and practical engineers.

The World Development 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 – an approach essential to innovation and economic growth. The case study of the Israeli information and communications technology (ICT) sector highlights the important role of the government in Israel becoming a power house of high technology, laying the foundations of private industry support for innovation and investing substantially in the human capital resource. The government's role in advancing the economy of the state of Israel provides an excellent showcase of how capability in ICT was established with the contribution of a well thought-out and efficient intervention process.

Comprehensive public policies and funding have led to a paradigm shift in technological and vocational training in Israel².

¹ The professional rankings will remain unchanged and there will still be two VET systems working concurrently as there are now.

² Getz, D. and Goldberg, I., 'Best Practices and Lessons Learned in ICT Sector Innovation: A Case Study of Israel', Background paper prepared for the *World Development Report 2016: Digital Dividends*, World Bank, 2015.

Israel's branding as a 'start-up nation' has been successful on a global scale. However, Israel must continue to emphasise TVET nationwide and enhance its prestige in order to maintain this status. The best students must be encouraged to realise their full potential in technology and engineering just as they do in academic subjects. Special efforts must be made to attract girls to science and technology (helping them overcome wage discrimination in the future³) and to enable appropriate TVET accreditation for socially vulnerable populations.

The Torino Process 2016–17 report focuses on data analysis and recommendations based on the changes that have taken place since the Torino Process 2014 in relation to the framework questions received. The authors hope it will make a major contribution toward determining future policies.

2. Main findings

Overview of VET and vision for VET

Vision

In the last two years, we have witnessed a major change in the MoE approach. This entity is now prepared to invest in vocational education, including projects on the retention of dropouts needing vocational accreditation rather than academic matriculation.

MoE new Accreditation Department – The most significant change since the 2014 report has been the creation of a new accreditation system for students in technology education that translates the technology studies structure into a recognised form of accreditation within a three-year model⁴. This new system will provide flexibility, allowing students to advance and transition through the different levels of accreditation.

Accreditation⁵ – The National Economic Council's strategic, economic and social assessment and a government resolution from June 2015⁶ led to the establishment of an Inter-Ministerial Accreditation System Team (IMAST)⁷ to improve the accreditation system. This will work across the various training systems and facilitate transition between the systems for students and soldiers, and other vocational, technological and academic training areas. This vision will lead to a comprehensive mechanism in the form of a national accreditation system or NQF. This will facilitate the transition between academic, vocational and technological courses, and all national TVET certificates and accreditations will be ranked and made transparent and 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 recently decided not to transfer approximately 60 vocational schools run by the MoEC to MoE supervision. The planned transfer had been expected to include far-reaching changes in management and staffing in order to align the two parallel TVET systems in one. Instead, in August 2016, some MoEC powers, including the supervision of the vocational schools, were moved over to the Ministry of Labour, Welfare and Social Services. In the past two years, eight vocational schools owned by the technology education networks have moved

³ The OECD PIAAC survey in Israel found significant wage gaps between men and women at the same level of proficiency.

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

⁵ 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.

⁶ Government resolution No 147 of 28 June 2015 on cultivating and utilising human capital.

⁷ The team is led by the Prime Minister's Office and includes representatives of the MoE, the MoEC, the Israeli Defence Forces and the Manufacturers' Association of Israel.

from MoEC to MoE supervision, but it is still unclear whether the future trend will be one of consolidation or division.

Legislation

There has been a distinct lack of any recent educational and economic legislation. Professor Manuel Trajtenberg recently launched a parliamentary initiative for the formation of a technological education council charged with reform of the technology education system in line with the changing needs of the Israeli economy and industry⁸.

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. New areas of work are now classed as high-risk following ICT advances allowing the rapid processing of huge amounts of data. Studies indicate that the higher the levels of 'social intelligence', 'creativity' and 'perception' necessary for the performance of 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 decades⁹. In fact, a 9% decrease has already been recorded in the relative ratio of high-risk work hours out of the economy's total work hours over the last two decades. Growth can clearly be detected in the number of jobs available in the market, especially in technological areas. The ratio between low workforce productivity and long working hours constitutes 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) performs surveys of unfilled jobs; the MoEC undertakes surveys of occupational needs; and employers' organisations run items such as the Manufacturers' Association of Israel (MAI) surveys of expectations and human resources needs, but there are no national mechanisms in place for the definition of long-term needs, vocations or skills. In June 2016, the OECD PIAAC survey¹⁰ results were published for different populations between the ages of 16 and 65, 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

Reorganisation to the requirements of a changing labour market should include: the extended use of vocational training tools focused on the relevant characteristics of students who have dropped out in order to prepare them for the future labour market; ongoing updating of existing curricula and; the formation of a government body to lead the process with training institutions, academic institutes, schools and other relevant entities.

The Labour Federation has recommended short internship positions in industry as an effective solution capable of bridging the gap between labour market needs and worker training. The MoEC is approaching the same issue from another direction, forming a pedagogical council to represent the main actors in the economy. This group will attempt to shape a practical vocational education and training (VET) policy, in the form of a holistic solution of training in an updated online format.

⁸ Amendment to the Technicians and Practical Engineers Law, 30 March 2016.

⁹ The Taub Centre Annual Report presents a 2015–2016 socioeconomic status report for Israel relative to other countries and to the past, and the chapter 'Jobs at risk' shows computerisation trends in the Israeli labour market.

¹⁰ OECD 2016 reports on Israel PISA and PIAAC results. OECD, *Skills Matter: Further Results from the Survey of Adult Skills*, OECD Skills Studies, OECD Publishing, 2016.

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, the lack of dialogue and feedback means that graduates do not always have the relevant tools for 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 report¹¹ reveals similar findings. This results in 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 position as a 'start-up nation' requires the 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 it does not form part of the required courses at school. However, VET suppliers, especially the large technological education networks – ORT Israel and AMAL – are pioneering entrepreneurial programmes, study spaces and entrepreneurship centres, as part of innovative moves designed to provide young people with the skills necessary for integration into the industry of tomorrow.

Effectiveness and efficiency in addressing demographic, social and inclusion demand

Overview of sociodemographic factors that shape the demand for VET provision

The integration of people with disabilities and special needs into the labour market lies at the heart of the social agenda and recent legislation on equal rights regulations for disabled people (making VET accessible for the disabled) have been effective as of January 2017. In July 2016, a historic bill was passed, compelling all Israeli public institutions to ensure that people with disabilities make up 5% of their workforce, thus putting Israel on the same level as Europe and the USA.

The continuing vocational education and training (CVET) administered and funded by the 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. The MoEC has continued to support ongoing programmes and has also begun to invest in a number of innovative educational programmes. These are aimed at increasing opportunities for special needs students and promoting a greater focus on mathematics at secondary level (target populations include girls, weak learners, at-risk youth, the non-Jewish and ultra-Orthodox sectors). Four schools have been opened for ultra-Orthodox young people, along with nine guidance centres to serve the Ethiopian sector, alongside programmes for people with disabilities, young people with learning disabilities and those with mental health issues. The educational ORT Israel and AMAL networks manage schools and provide programmes for the Arab, ultra-Orthodox and Bedouin sectors, also running education and training courses for the integration of immigrants.

Haredi women have increased their participation in the labour market by 30% from 2000, which means that approximately 75% of them are now in jobs, in line with figures for the overall female population. According to the 2015 survey by the Israel Democracy Institute think-tank, Haredi women are becoming increasingly well-qualified and their role inside their communities is evolving. A significant number of high-tech companies have chosen to hire Haredi men and women as a result of generous state subsidies encouraging ultra-Orthodox individuals to join the labour force rather than relying on welfare. Haredi workers are often prepared to accept lower-than-average wages as a trade-off for working conditions suited to their lifestyle.

¹¹ ETF (prepared by Dr Roby Nathanson), *Working in Partnership to Better Match Skills Offer and Demand in the South of Israel*, GEMM (Governance for Employability in the Mediterranean) pilot project, ETF, 2016.

The newly launched Equal Opportunity Programme (February 2016) for special needs children will see ILS 945 million invested in accessibility adaptations in schools and classrooms to accommodate diverse special needs, including cognitive disabilities.

In keeping with national efforts to maintain Israel's reputation as a 'start-up nation' and its leading position in the world of high technology, particular emphasis will be placed on mathematics and science. 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 the introduction of Arabic as a required subject from preschool to 12th grade. A marked increase in demand from students for matriculation (*Bagrut*) studies in Arabic led the MoE to pass a law on learning Arabic from grade 1 to 12 that was approved by the Knesset in August 2016. This new government programme will make Arabic language classes compulsory from the fifth grade in Israel's schools and a pilot initiative was started in 170 public and religious-public schools in northern Israel in 2016. The new law requires curriculum review and the change is expected to draw dozens of Arabic teachers into the school system.

Other key reforms launched in 2016 include an extension to preschool education and efforts to put more high school students through the five-point maths matriculation exam.

Ambitious government and employer programmes and initiatives coupled with recent achievements and developments are, however, not enough to pull the sector forward and the Israeli government is aware that the TVET sector will need still more investment if it is to meet the current skills needs of the labour market. The reports cited in this document give different policy assessments and include discussions of policy platforms among the skills-related institutions, but they also demonstrate a common consensus that TVET could play an important role in combating unemployment, especially among certain minority groups, such as the Haredi and Arab communities.

Access, participation, progression

Publicity and marketing are being used in a significant step to increase the appeal of VET among young people. Every year the MoE and the MoEC lead an enrolment campaign, stressing the advantages of TVET over academic education. The MoE has also launched a campaign emphasising the new accreditation system and encouraging young people to enrol in the technology education study tracks that will grant them a matriculation certificate as well as vocational accreditation. The MoEC is similarly emphasising the apprenticeship system as a good alternative that allows an apprentice to combine core studies with theoretical and practical vocational studies while experiencing paid work in industry.

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

Transition from VET to higher education is possible for VET students who attain a technological certificate, allowing them to proceed to technician and practical engineering studies. Graduates can also complete engineering studies within special frameworks (*Pa'amei Atidim*) and in engineering colleges, but they cannot continue these studies at university. As a rule, mobility between VET and academia is low.

MoEC data show that the most occupationally vulnerable subgroups excluded from the labour market are ultra-Orthodox Jews (especially men) and Arabs (especially women). Additional subgroups with a relatively low employment rate include single parents, Ethiopian Jews and people with disabilities.

Job guidance centres are available for the different groups and the MoEC has extended the Vouchers Programme that subsidises vocational training courses.

Delivering to socioeconomic and inclusion demands and objectives

The MoEC VET system is very successful in providing solutions to economically, socially and politically disadvantaged groups, particularly in terms of learning opportunities for the Arabic-speaking sector and to the periphery. Vocational schools in the Arabic-speaking sector provide very good opportunities for graduates to be integrated into industry¹². The MoEC also supports new immigrants with special preparatory classes. The Adult Training Department works with the Ministry of Immigration and Absorption to provide vocational courses for immigrants from France and Ukraine, also giving some youth vocational training in autotronics to Ethiopian immigrants.

Youth in the periphery is partially addressed by the fact that two out of the five government training centres are located in the northern region, meaning that this area gets more input in relation to its population size than other regions. The preparatory programme is commonly used to narrow existing gaps between the normative population and underprivileged groups in society. The MAI and the Israeli Defence Forces (IDF) have a strategic plan to train and integrate (mainly ultra-Orthodox and minority) soldiers into work in industry after their discharge from the army.

The largest ever government plan to advance economic development in the Arab sector was approved in February 2016, allocating approximately ILS 15 billion for the development of Arab society and toward closing the socioeconomic gaps between Jews and Arabs in Israel. The Authority for the Economic Development of the Arab, Druze and Circassian Sectors within the Government of Israel, provides current updates on government investments and approach to these issues, produces the latest assessments of recent progress and the challenges ahead, and discusses existing programmes as well as future government plans in this area. Government and civil society programmes are particularly aimed at developing industrial zones and parks; enhancing access to housing, public transportation, adequate child-care options and higher education; increasing employment opportunities including vocational and professional training, support for high-tech careers, job creation and equal employment policies; ensuring access to government tenders and contracts; and other related issues¹³.

Internal efficiency of the VET system

Teaching and learning

There is a tremendous shortage of TVET teachers and expert instructors, mostly because TVET requires licensed engineers with industrial experience while work in industry pays far better than teaching. The government offers no incentives for engineers and experts to take up teaching, as teachers in Israel earn a uniform salary related not to degree of expertise, but to their degree qualification and years of seniority. At the launch of the reform promoting meaningful learning¹⁴, the MoE prepared a framework of in-service courses on innovative teaching methods and published a directive requiring all technology education teachers to undertake a 210-hour training programme on project-based learning over seven years.

¹² 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.

¹³ Read more about employment-related efforts in the Inter-Agency Task Force on Israeli Arab Issues' briefing paper *Arab Citizen Employment in Israel: Critical Concern and Great Potential*, July 2013 at: www.iataskforce.org/resources/view/1394

¹⁴ About three years ago, see the Torino Process 2014 report.

In addition, the MoE has been working closely with industry, academia and the IDF. Teachers and students are exposed to industries relevant to their fields through a project integrating the students into industry (practical training while still at school). In recent years, online learning has spread strongly and penetrated into all fields of study. Teachers have been trained to deal with this and the schools inspectorate websites provide online study materials for staff. The process started with great momentum, mainly in the technology education networks, and it trickled through to the rest of the education system from there. 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 teaching and assessment of project-based learning.

Learning conditions

Israeli education spending as a share of gross domestic product is relatively high in comparison to other OECD countries, standing at 7.9% (2014). Despite this, the evidence shows that spending is still not high enough to meet the growing demand for technological and vocational education. The key focus of the reform package is on a serious paradigm shift in teaching and learning in line with the impact of a knowledge economy and ICT, changing the role of the teacher from instructor to facilitator through professional development and teacher training, shifting power from the central authorities (central office, districts and local education authorities) to the school level, and moving toward school empowerment and school-based management with internal and external quality control. These efforts consider current worldwide trends, recent innovation and the underlying employment crisis in a broad systemic approach that also envisages future skills needs. The whole approach is based on ongoing research and impact assessment.

The MoE has also set up two highly advanced regional technology centres – in Haifa, in the north, and Beer Sheba, in the south. These centres have state-of-the-art equipment and expert teaching staff, providing practical training for all students on the relevant study courses in the region and serving as a bridge between schools and industry. The related technology education networks help create enrichment facilities, open advanced computer labs and build learning spaces and entrepreneurship centres in schoolyards¹⁵. They also introduce innovative technologies into teaching, such as Google tools, iPads, 3D printers, laser cutting devices and equipment that allows for maker spaces.

The government does not follow the German dual education system model that offers industry incentives to produce job openings for students. In Israel, moreover, the employment period is limited as most students join the army immediately after graduating from school and there is no telling whether or not they will return to the factory once they are discharged. However, the MoE has recently been looking toward integrating a pro bono work-based learning programme as a part of a meaningful learning experience. This approach involves an industry placement for students on all study tracks and at all levels. Different models from around the world are being examined with a view to implementation into the Israeli education system.

MoEC schools, on the other hand, have integral work-based learning, but better connections are needed between the worlds of work and teaching and learning. At present most of the subjects taught are low-tech and there is little possibility of work-based learning in the type of high-tech fields that form most of the profitable industry in Israel. There is currently no work-based study programme for either high-tech industries or start-ups.

¹⁵ For example, the AMAL entrepreneurship centres won the ETF award for inspiring centres and role models of collaboration between education, community and industry.

Quality assurance

Knowledge creation-oriented mechanisms exist mainly in the ministries, which are responsible for qualifications, the curriculum and exams. The MoE has specialist committees for the professions, which are made up of academic representatives, the MAI, the relevant trade union, other ministries and teacher representatives. These committees are responsible for quality assurance on the curricula and for developing curriculum requirements. The National Authority for Measurement and Evaluation in Education (RAMA) creates and administers the assessment of student achievement, pedagogy and the school matriculation exam. The ministries and the MAI are working toward greater employer involvement in deciding the knowledge and competences TVET should foster. However, the mechanisms for doing this have not yet been finalised.

The MoE legally requires every teacher to have at least a bachelor degree and a teaching diploma. There are exceptions in VET, mostly due to the limited relevance of an academic degree compared to the need for actual work experience, but there is still a palpable difficulty in recruiting teachers with both employment experience and teaching skills. A career retraining course was opened a few years ago for engineers who wished to change to a teaching career, and several such courses for young practical engineers (outstanding 14th grade graduates) and Meister courses (experienced practical engineers) will be opened. RAMA stands within the MoE operating as a special unit to deal with assessment and evaluation of the entire system along with a choice of suppliers to provide training programmes and continuing education in line with pedagogical, professional and legal standards.

The MoEC is currently undergoing an evaluation and feedback process on its adult and youth training programmes including elements such as satisfaction surveys for graduates at the budgeted training centres; professional supervision; and evaluation and assessment processes involving reports that will identify shortfalls or exaggerated successes along with data analysis on all vocational units. The extensive technological education networks have their own independent frameworks 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 or vocational and practical content. All of these processes are professionally directed and supervised by the chief inspectors and advisory committees within each specific discipline. The exams evaluate student knowledge and the quality of their work. There are three models for the evaluation of student achievement under the MoEC: 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-organisational monitoring systems. In addition to raising matriculation eligibility rates, particular emphasis is placed on the quality of the certificate and on the percentage of students who major in science and technology.

The MoEC system is complemented by the new Accreditation Department opened in the MoE to provide a thorough and methodical accreditation system for students of technology. This new worldview will result in a flexible accreditation system that will allow for advancement and transition through various accreditation hierarchies. This new system translates the technology school structure into a recognised accreditation programme, in the form of a three-year model starting from 10th grade¹⁶.

In 2016, the Israeli Knesset launched an initiative to establish a technological education council tasked with reforming the technology education system and adapting this to the changing needs of the Israeli economy and industry. This move resulted from enhanced cooperation between the ministries in

¹⁶ 10th grade students who started the school year in September 2015 will be the first to receive this new accreditation in September 2018.

charge of skills provision, showing that they are now ready to invest in vocational education for those students who need vocational accreditation rather than matriculation, including consideration of the retention of dropouts. Particular government attention is going toward the recognition of qualifications, especially in terms of dealing with: (i) the lack of legal frameworks and procedures for the recognition of many qualifications for foreign qualified professionals and workers; (ii) the lack of employer understanding of foreign qualifications and low awareness of the formal recognition services where these do exist (with the exception of companies with highly professionalised international recruitment services); and (iii) the lack of any established structure to support the exchange of information about vocational qualifications in line with potential for their recognition.

In the pursuit of this goal, many efforts have been made by various ministries and institutions under the coordination of the Prime Minister's Office. These entities include the Israeli Department for Evaluation of Foreign Academic Degrees at the MoE; the MoEC; other departments of the MoE; members and experts from the Israel TVET Committee including employers' organisations and trade unions, all of whom have participated in a number of peer learning events, workshops, and training programmes organised by the European Commission and the European Training Foundation (ETF).

Within the reporting period, the Israeli counterparts have been exposed to ongoing developments in the European Qualifications Framework and the referencing of the NQFs of EU Member States and other ETF partner countries.

Governance and policy practices in the VET system

TVET governance is centralised, with some functions devolved. Ministries have central control of the curriculum and textbooks for all schools, national assessments and exams for matriculation, and the inspection system. The intention is for this to provide a public guarantee of quality, irrespective of the type of school. The local authorities, provider networks and TVET providers themselves have considerable management flexibility and autonomy in other significant respects. VET is mainly state-provided and state-regulated by the MoE and the MoEC. Under the MoE, VET covers two separate paths: (i) technological-scientific education; and (ii) vocational (occupational) education. Study tracks in the technological-scientific path are: (i) engineering studies for learners who will continue to university; (ii) technology studies for learners who will continue to technician or practical engineer programmes in school or technical college; and (iii) occupational studies for learners who will enter the job market directly.

VET is mainly state-provided and state-regulated by the MoE and the MoEC. Initial vocational education and training (IVET) before entering the labour market is provided in state-run public schools or colleges and privately-owned or managed schools run by technological education networks and supervised by the key ministries. There is also some state-funded provision of CVET and some continuous training for adults by the MoEC after joining the labour force; this includes training for jobseekers and employer-led training for potential new adult employees. The MoE also supervises some CVET courses offered to adults at their own expense.

The government, local authorities and education networks are the main sources of funding for MoE-governed VET provision. While no training taxes are levied on employers, the 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, with some funding from the government. The IDF contribute to funding where schools operate on their premises.

The vocational tracks under the MoEC are: (i) apprenticeships; (ii) pre-VET and IVET provision for specific youth populations in education network schools; and (iii) frameworks for certified technicians and practical engineers through the Government Institute for Technology and Science Training.

Update on governance arrangements

The present situation of divided TVET school management has focused government debate on the potential transferral of approximately 60 vocational schools run by the MoEC to the MoE supervision. However, the planned transferral (that was also supposed to include far-reaching changes in management and teaching staff, while effectively ending the existence of two parallel TVET systems) was cancelled. Instead, in August 2016, a decision was made to move some MoEC powers over to the Ministry of Labour, Welfare and Social Services, including the supervision of these 60 vocational schools.

This effectively stopped the MoE plan to have all Israeli students under one ministry, resulting in no change whatsoever in the vocational rankings and the continuance of a situation where 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, with the biggest budget. It is up to the MoE to ensure the maximum possible effectiveness and relevance of all TVET courses in line with the needs of the economy. However, the MoEC is still deeply involved in the sector through its Vocational Training Department. IMAST has recently recommended forming a steering committee to maximize mutual recognition between the two secondary school TVET systems, combining the relevant information systems of both ministries.

As a rule, TVET courses in secondary and comprehensive schools in all sectors are opened in coordination with local authorities and the owners of the schools, according to the needs of the city, region and local industry. Approval by the local partners also forms part of the process. Local authorities have recently introduced a new tender method for bringing in courses, originally as a method to increase competition among VET suppliers and thereby improve the quality of education. Unfortunately this plan has backfired to some extent, as the criteria in the tenders were not set by the state, but by each local authority, meaning that the decision makers might be swayed by political and other considerations that did not necessarily promote the best supplier. On various occasions, award of a tender has been followed by appeals from other suppliers, even though the cause for the appeal may be merely procedural.

3. Conclusions and recommendations

This section presents the authors' recommendations to decision makers on the basis of operative decisions and recommendations taken from several key reports. These include the Taub Centre report, CBS data, OECD reports, the GEMM report, the IMAST report on transition among TVET systems, the RAMA report and the recommendations of the MoEC Vocational Training Department. The recommendations are arranged according to the order of the sections in the present report. The agreed recommendations and the priorities identified for the upcoming period with more concrete implementation actions are listed below.

1. Focus the national agenda on the strategic and legal framework needed 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. Enhance long-term policies through effective investment, improved strategic partnership and increased cooperation to further promote and embed 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 the quality and attractiveness of accessible and inclusive TVET.

3. Increase the budget for TVET financing at the national level, look for and further encourage and/or incentivise innovation in teaching and learning and other aspects of local activity such as engagement with industry and the formation of partnerships coupled with financial incentives (e.g. tax exemptions) for contributions to TVET. Promote and finance apprenticeship by involving employers' organisations, companies and TVET providers as well as further stimulate innovation and entrepreneurship by introducing 'entrepreneurship as a key competence' at all levels.
4. Address the TVET supply and labour market demand mismatch by replacing the ad hoc feedback mechanisms in Israel with national or regional skills foresight and forecasting mechanisms, establishing a sophisticated model that will facilitate the allocation of workers to open positions and creating a framework in which business representatives take an active part in training both in schools and in the workplace.
5. Establish an Israeli NQF for internal mobility and the recognition of qualifications, a framework governed by common principles – learning outcomes, agreed descriptors and levels – but allowing sectoral autonomy between higher education and TVET.
6. Launch joint institutional efforts to enhance the visibility of TVET and to highlight breakthroughs in preparing the youth of today to integrate into the ever-changing global economy and society, stressing the importance of entrepreneurship education and training as an integral feature of 21st century vocational training.

Overview of VET and vision for VET

Overview of VET in the socioeconomic context

Investing in research and development in traditional industries: the GEMM report recommends reallocating half of the government's current expenditure on research and development (about ILS 3 billion) to traditional industries with a higher growth potential, moving it away from universities and the promotion of industrial technologies. In addition, regional research and development centres should be established in order to provide greater support to small businesses and the self-employed, sectors that together constitute 60% of the workforce.

Opening new schools adjacent to factories: opening new schools with the collaboration of leading employers; an attractive model that provides the best response to both youth and to industry. This model provides a path to lifelong learning.

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 privatisation of the five government training centres. The government will still run the centres, but the teaching services will be centrally purchased. The MoEC recommends putting together a research and development unit to assess the compatibility of training with current and future human resource market needs.

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 living¹⁷.

¹⁷ 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. It is recommended that the number of work hours be reduced.

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 to practical engineers who wish to study for a Bachelor of Technology degree, and the level of exemption (non-academic) technology colleges can grant to practical engineers who wish to enrol for continuing education. Consideration should also be made of the possibility of forming specific collaborations between technology and academic colleges for a Bachelor in Technology degree. Moreover, vocational transition channels should be made available for practical engineers wishing to convert to a Bachelor in Technology Education degree.

Updating curricula and skills acquired for occupations at high risk of automation: since occupations with a low risk of automation require skills such as creativity, social intelligence, complex perception and negotiation abilities, all of which are known as the ‘soft skills’¹⁸, these skills should form an integral part of the curriculum, evaluated via alternative assessment. ‘Entrepreneurship as a key competence’ should be introduced as a mandatory course. In addition, given Israel’s scores in the large-scale international OECD skills survey, investment should be made in reading literacy (only about 37% of respondents in Israel were located in the upper levels of reading comprehension, including the understanding of 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 bridging the gap between labour market needs and employee training.

Effectiveness and efficiency in addressing demographic, social and inclusion demand

Despite ambitious government and employer programmes and initiatives, and the recent achievements and developments, the Israeli government is aware that more investment is needed in TVET to meet the skills current needs of the labour market. In the Israeli reports quoted (policy assessment reports including discussions among the policy platforms of skills-related institutions), the common consensus is that TVET could play a major role in combating unemployment, especially among certain minority groups, such as the Haredi and Arab communities.

Image enhancement: establishing a high-quality internationally-recognised accreditation system for the TVET system to enhance its image. To make themselves more attractive, schools should make their modernity visible by using modern training tools; they should invest in branding, and pay a yearly grant to workers in traditional industries (such as the grants given to recently discharged soldiers working for a short period in ‘preferred jobs’).

Increasing the number of students from populations with low employment rates (Arabs and ultra-Orthodox Jews) in 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 employers’ associations, the trade unions and the government: this will promote TVET according to labour market trends. **Cooperation between the private sector and trade unions** should be strengthened and the integration of graduates into industry should be enhanced, so that they benefit from in-service courses parallel to working, as established in the collective agreements of the various trade unions.

¹⁸ ‘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).

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

Internal efficiency of the VET system

Offering state 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 most of the profitable industry sector in Israel. This type of programme does not yet exist in high-tech industries and start-ups, and it should be developed. The state should also offer attractive financial incentives enticing engineers and industry experts to teach in such programmes.

Encouraging students 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 a detailed plan of action has been proposed.

Monitoring ongoing information: conduct periodic surveys among TVET graduates to document how their study specialisations match to their actual jobs. The IDF should also be included in the survey, as it is a large organisation that serves as a stimulus for professional development and experience for industry.

Establishing the NQF: all of the reports surveyed recommended the establishment of a framework for mapping and grading all national TVET certificates, making them accessible to the public. The NQF will make the value of each certificate clear to training institutes and employers, demonstrating 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, on all content concerning 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, ensuring their recognition for the purposes of a vocational certificate, and the formation of guidelines for the recognition of army training programmes in applications for technology studies.

Governance and policy practices in the VET system

Development assessment

TVET governance development is targeted. While some elements of the system, such as 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 the MoE and the 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, with the MAI taking the lead in developing TVET policy, as well as implementation and reform. Government often calls on the MAI to engage in training issues, such that the entity has built up its own organisation to deal with TVET and it has a considerable presence on national forums. The Israeli organisation of trade unions, Histadrut, is less active. In addition, collaboration between ministries, the MAI and other stakeholders may be extensive, but it is also ad hoc.

Ongoing work in policy development

The management of VET provider networks can be clearly seen in the mediation between national and local levels of provision in the education networks, and between public and private stakeholders. This brings flexibility and innovation to TVET governance, but there are some doubts as to whether the regulations covering different stakeholders' activities are fit for purpose, and a review could help to resolve these.

Bridging the mismatch between supply and demand could be achieved by 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 curricula designing 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.

MORE INFO

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