

Skills and Jobs in the Future Labour Market

# Skills Forecasting in Israel

## Validation Seminar

July 20, 2021



---

## UNESCO – a global leader in education

Education is UNESCO's top priority because it is a basic human right and the foundation for peace and sustainable development. UNESCO is the United Nations' specialized agency for education, providing global and regional leadership to drive progress, strengthening the resilience and capacity of national systems to serve all learners. UNESCO also leads efforts to respond to contemporary global challenges through transformative learning, with special focus on gender equality and Africa across all actions.



United Nations  
Educational, Scientific  
and Cultural Organization

## The Global Education 2030 Agenda

UNESCO, as the United Nations' specialized agency for education, is entrusted to lead and coordinate the Education 2030 Agenda, which is part of a global movement to eradicate poverty through 17 Sustainable Development Goals by 2030. Education, essential to achieve all of these goals, has its own dedicated Goal 4, which aims to *“ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.”* The Education 2030 Framework for Action provides guidance for the implementation of this ambitious goal and commitments.



---

# Contents

<b>Acknowledgements</b> .....	<b>4</b>
<b>Introduction</b> .....	<b>5</b>
Framework .....	5
Participants/stakeholders .....	6
<b>Summary of the seminar lectures</b> .....	<b>7</b>
Greetings .....	7
<b>Session 1 – Models for assessing anticipated demand for professions and skills</b> .....	<b>10</b>
Mr Sani Ziv – The skills forecasting model, methodology and results .....	10
Dr Ben Kriechel – Quantitative approaches used for skills anticipation .....	11
Prof. Zvi Eckstein – Preparing for the future labour market with demand analysis .....	13
Dr Shay David – Identifying patterns in labour markets with real-time data .....	14
<b>Responses</b> .....	<b>16</b>
Dr Lev Drucker, Deputy Chief Economist, Ministry of Finance .....	16
Dr Noam Gruber, Head of Research Department, National Economic Council of Israel .....	16
Dr Mark Feldman, Director of Labour Sector, Central Bureau of Statistics (CBS) .....	16
Dr Osnat Peled Levy, Senior Economist, Bank of Israel, specialized in the labour market .....	17
Ms Lida Kita, Senior human capital development expert, European Training Foundation .....	18
Ms Keren Ben Natan Kruger, Head of Mapping and Planning in the Employers’ Directorate .....	18
<b>Session 2 – Designing skills and training for the future labour market</b> .....	<b>20</b>
Camille Courchesne – Institutional mechanisms and the roles of different actors for anticipating and matching .....	20
Dr Yuval Mazar – Findings and implications from the piaac survey .....	21
Ms Noa Ecker – Introducing the avodata platform as an example of using data for policy purposes .....	22
Ms Neelie Ben Tovim – Data-Based policy and responding to labour market demand .....	23
Ms Ori Carmi-Shachar – What skills are required in the future labour market .....	24
<b>Recommendations</b> .....	<b>26</b>

## Acknowledgements

This seminar was prepared within the framework of the Youth Employment in the Mediterranean (YEM) project, funded by the European Union (EU), by Sani Ziv, a macro analyst, economic research, and consulting at the Academic College of Tel Aviv-Yafo, and under the guidance of Hiromichi Katayama, Programme Specialist at the Section of Youth, Literacy and Skills Development, Division for Policies and Lifelong Learning Systems, Education Sector, UNESCO.

---

# Introduction

## Framework

Significant technological changes, accompanied by developments in the fields of society, economics and demographics, are expected to change several aspects in the labour market in future decades, and affect future professions market, their composition and demands. While Israel shared most of the international concern on the future labour markets, the economy and society of Israel has some unique social and economic characteristics which must be addressed: (1) Israel has a high fertility rate and an unusually high rate of population growth. (2) Israel is a society of immigrants, absorbing continuous waves of immigrations. (3) Israel has a leading high-technology sector (4) Israel society is characterized by high economic inequality.

To address these challenges, EU-funded YEM project has initiated the development of a labour market forecasting model to support the development of national capacities in undertaking labour market analysis.<sup>1</sup> The model is a quantitative tool for analyzing the world of future professions and predicting the development of supply and demand for professions. The formulation of the model was led by an international expert team, who set a uniform methodology as a basis for developing the model in different countries.

The model was prepared by a team headed by Mr Sani Ziv and in consultation with the Ministry of Labor and Social Services and Tevet organization.

It was built and compiled in December 2019 and was presented to the Ministry of Labor and Social Services and to JDC-TEVET organization in June 2020.

The model consists of 168 occupations and is based on a sectorial macro-economic model consisting of 13 industries. The model produces yearly projections for the years 2019 to 2030 for the 168 occupations divided into expansion and replacement demand. A comprehensive paper, including the methodology and results of data analysis, was released in December 2021.

The model was developed to serve as a tool for planning education policy and professional training, to improve individual decision-making on investment in human capital and foster discussions relating to the younger generation's working world such as hours and conditions of work, possibilities for flexible work and more. As part of country-level activities of YEM project in Israel, a national workshop was organized on July 20, 2021 to disseminate the results of the skills forecast and get the feedback from key stakeholders on skills development in Israel including the Bank of Israel, the Ministry of Finance, the National Economic Council of Israel, Central Bureau of Statistics and Manufacturers Association of Israel. Two international experts who provided technical support for the development of skills forecasting model in Israel under YEM project were invited and participated.

---

<sup>1</sup> The model was developed within the framework of the employment component under the Networks of Mediterranean Youth (NET-MED Youth) project. The project has been funded by the European Union.

## Participants/stakeholders

Different stakeholders were invited to the seminar in order to share, expose and up-stream the Israeli model as a tool for manpower planning. All participants are committed to the issue at varying levels of interest and have the capacity to enrich the discussion. Each participant in the seminar has a unique capacity that can contribute to the model and/or abilities in using the model once it is established.

### Participants/partners in the seminar (only speakers)

Partner	Participant	Position	role in the project/rationale for its involvement
Ministry of Labor and Social Services	Ms Rony Schnitzer	Director of Strategy and Policy Planning Division,	Gives data on all the trainings it does. In charge on all programme related to the developments in the labour market.
JDC-Tevet	Mr Rani Dudai Ms Shely Sussman	Director of Joint-TEVET Director of Learning and Development, JDC-TEVET	A non-profit organization; leading developer of employment service in Israel. Partner with the Government of Israel and local organizations in launching innovative, comprehensive programmes. Often used as an executing body for Ministry projects.
Bank of Israel	Dr Peled-Levi Osnat Yuval Mazar	Senior Economist, Bank of Israel Senior Economist	The Bank's Research Department assists the Governor in preparing policy recommendations and assessing policy in his/her capacity as the government's economic advisor
Ministry of Finance	Dr Lev Drucker	Deputy Chief Economist, Chief Economist	The Ministry of finance administers public expenditure and has three main roles, (1) Act as a central government unit for planning and budgeting, (2) Act as a consulting unit of the Ministry of Finance and the government for general aspects of its decision-making process, and (3) Elaborate macro-economic policy.
The economic council in the Prime Minister's Office	Noam Gruber	Head of Research department	The Council serves as headquarters for the Prime Minister of Israel on issues that require in-depth economic thinking and helps in decision-making involved in projects that are on the agenda of the government.
Central Bureau of Statistics	Mark Feldman	Director of Labour Sector, Central Bureau of Statistics	Among its roles: to perform statistical activities and projects regarding the State and its population, in the fields of labour, health, well-being, education, economy, etc.
Manufacturers Association of Israel	Keren BenNatan Kruger		
School of Economics, Aaron Institute for Economic Policy, IDC	Prof. Zvi Eckstein	Dean of the Tiomkin School of Economics, Head of the Aaron Institute	

One hundred and fifty-five people attended the web seminar, including policymakers and technical advisors working for ministries in charge of employment/labour and education, as well as other ministries involved in skills development and Technical and Vocational Education and Training (TVET). The seminar was also attended by representatives of workers' and employers' organizations involved in sectoral, regional or national skills anticipation; TVET experts and technical staff; planning; managerial and technical staff of institutions responsible for the collection of data; and staff from international cooperation agencies working in the area of TVET and skills development.

---

# Summary of the seminar lectures

## Greetings

Greetings were delivered by: (1) Mr Benny Alon, CEO of the Academic College of Tel Aviv-Yaffo, which hosted the seminar and managed the skills forecasting projects through its research fund, (2) Ms Rony Schnitzer, Director of the Strategy and Policy Planning Division in the Ministry of Labor and Social Services; the Ministry of Labor and Social Services is the national partner and the primary beneficiary of this project, (3) Mr Rani Dudai, CEO of Joint-TEVET, which accompanied the project, (4) Ms Emmanuelle Roure, EU Neighbourhood Team Leader in the European Commission Directorate-General for Employment, Social Affairs and Inclusion, and (5) Mr Hiromichi Katayama from UNESCO's Section of Youth, Literacy and Skills Development.

---

**Mr Alon** described the Academic College of Tel Aviv-Yaffo as a hotbed of economic and social entrepreneurship and innovation, constantly influencing its environment and community. He described the research activity of the faculty members, which includes a lot of work on applied research, among other skills forecasting. Alon said that the College's broad curriculum prepares the students, including students from special population groups to the changing labour market, with a view to fill in gaps in demand where needed.

The College uses many models of experimental learning and collaboration with organizations and companies, combining tools for teamwork, project development, etc.

He also said that from a national perspective (Alon is a member in many forums and organizations dealing with future labour markets), Israel's colleges are major contributors to social mobility in the country's economy and a bridge between pure academic curriculums and more practical qualifications, practicum and know-how.

Referring to the skills forecasting seminar, Mr Alon said that we live in an era of disruptive innovation. The latter creates new and increasingly perfect markets,

which push aside the traditional market in their respective areas and gradually take over as the leading, dominant category. Innovation is no less dramatic in the extent to which it disrupts the labour market, very quickly creating new occupations while eliminating and making redundant many others. It emphasizes and hones special required skills.

Mr Alon thanked UNESCO for supporting the development of the forecasting model and the conference, in particular Mr Hiromichi Katayama from UNESCO, the EU, in particular Ms Emmanuelle Rohr, and Mr Sani Ziv for his research and organization of the conference.

---

**Ms Schnitzer** reviewed her Division's activities, saying that a significant part of its work relates to demand for occupations, wages and their future.

Attempting to read the future is a bold undertaking deserving appreciation, given that even trying to figure out the present can be a struggle. Until recently (two to three years), there was little data available about the past in terms of occupations, their respective wages, etc. But things have now advanced significantly, thanks among others to the work of Mr Sani Ziv and others.

Analysing data on occupations, market requirements and other indicators is important not only because we are interested in knowing what the future holds, but for the most fundamental practical policy needs.

Results of analysis from the skills forecasting model and from other research work are used to channel vocational training budgets and programmes for guidance, or towards general or specific skills with increasing demand. Deeper and sharper analyses, as well as better and more validated models, improve the Division's ability to make ongoing policy decisions on incentives, resources and other factors, and hopefully benefit the economy at large.

Ms Schnitzer thanked the many people working on this, including the foreign consultants, Mr Sani Ziv,

the College hosting the seminar and supporting this activity, and the partners at TEVET.

.....  
**Mr Dudai** reviewed the Joint's unique role in Israel, with its main mission — to help weaker, disadvantaged populations achieve the best life quality possible — depending dramatically on employment. Mr Dudai thanked the Ministry of Labor and Social Services for its contribution in developing employment and productivity services in Israel.

He spoke about the dynamic nature of the new labour market in the past year or two and the growing importance of information systems and real-time data. He noted that the lack of information was painfully felt during the COVID-19 crisis.

He noted that this was the rationale behind the development of *Avodata*, a website allowing intelligent, up-to-date access to employment data. The end goal of this project is to provide a real-time picture of changes in demand for occupations and changes in skills requirements, and to make it possible to provide employment guidance tailored to individuals, spot market trends and offer the relevant training. This venture is a unique cooperation between the government, civil society, and the business sector.

He thanked the Ministry of Labor and Social Services, *Yisrael Digitalit* (Digital Israel), the Tel Aviv-Yaffo College for organizing the seminar, the Joint's business-sectors partners (including retrain), and TEVET.

.....  
**Ms Roure** presented the comprehensive framework package put in place by the European Commission as part of its agenda for COVID-19 recovery efforts in the fields of employment and social policy, with a focus on skills and vocational education and training (VET).

This so-called Youth Employment Support Package, adopted end-October, is built around four components:

1. EU youth guarantee: a policy to ensure that all people aged 15 to 29 receive a quality offer of employment, continued education and training within four months of becoming unemployed or leaving formal education, with a strong focus on disabled and rural populations.

2. Vocational education and training (adopted end-November 2020): meant to modernize VET systems and make them more attractive and flexible.

3. Apprenticeships: the European Alliance for Apprenticeships is now reinforced with six new priorities, among them gender, social inclusion, health, safety, internationalization of vocational training. The European Alliance is gradually being opened to all partners, with Israel the first to join from the Neighbourhood.

4. Additional measures to support youth employment, e.g.: start-up incentives, capacity-building, and support for young entrepreneur networks.

Ms Roure linked the package to the European skills agenda (adopted July 2020). She said that opportunities to reskill must be an integral part of COVID recovery. For example, COVID-19 accelerated the digital transition, further underlining the importance of digital skills and the growing gaps between skills and companies' needs.

.....  
**Mr Katayama** thanked the College for hosting the event and the European Commission for its support. He reviewed the support of UNESCO for Israel in the last five years in developing the skills forecasting model. He expressed his hope that the Israeli government now will take over and continuously update the model and use it for policy purposes. He said that the YEM project will be ended at the end of this month, but that efforts will be made by UNESCO or out partner to ensure its sustainability.  
.....



# Session 1

Models for assessing anticipated  
demand for professions and skills

## Session 1

### Models for assessing anticipated demand for professions and skills

The first session in the seminar dealt with the skills forecasting model, its methodology and results in an international perspective. Mr Ziv kicked off the presentations and introduced the Israeli skills model, its main findings and methodology, following which three key speakers described the Israeli model and its relations to their work and areas of specialization. They discussed ways to integrate the model and its results in their expertise.

The first speaker was Dr Ben Kriechel, who spoke on Quantitative Approaches Used for Skills Anticipation in Europe in relation to the Israeli model. The second speaker was Prof. Zvi Eckstein, Dean of the Tiomkin School of Economics and Head of the Aaron Institute for Economic Policy. Eckstein was the Deputy Governor of the Bank of Israel and headed many committees, notably the 2030 Committee for promoting employment in Israel. He spoke on Preparing for the Future Labour Market using a Decision Support System including the Avodata platform and the skills forecasting model. The last speaker in the first session was Dr Shay David, Co-Founder and CEO of the human-resource start-up named retrain.ai. Dr David talked about Identifying Patterns in Labour Markets with Real-time Data.

#### Mr Sani Ziv

#### The skills forecasting model, methodology and results

Mr Ziv thanked UNESCO for accepting this project and its persistence in supporting it, the Ministry of Labor and Social Services for its backing, and the College for hosting the seminar and the project. He spoke about the future labour market and its ongoing changes due to technologies changes, demographic changes, and globalization processes. For example, he provided two professions that will be potentially revolutionized: 1) Drivers and how they might be affected by the advent of autonomous vehicles, and 2) Robots controlled by computer operators replacing surgeons.

He described the model objective as to determine how many job openings are expected in Israel in the next decade, and what qualifications and training are to be provided by the universities and other training

institutions. In economic terms, the goal is to apply models of skills forecasting to the Israeli labour markets and to quantify the expected changes in demand for occupations.

He spoke about the importance of forecasting. The main rationale for producing these kinds of projections is no longer that policymakers are trying to engage in detailed, top-down, planning (or anticipation) of the education and training system in order to ensure it meets the needs of the economy and the labour market. Rather, it is more about providing information to allow individual actors throughout the system (individuals making career choices, educational and training establishments and employers generally) to make better informed choices and decisions. Past trends, and trends in other countries, likewise provide clues and tend to recur.

Of course, nobody can predict the future with certainty. Most people can and do make plans and try to prepare for it. In doing so they adopt assumptions about what the future might be like, even if it is simply that the future will be the same as the past. There are also advantages of providing such projections centrally, as a public good, rather than relying on organizations and individuals to develop their own views independently. These advantages include the fact that this approach can provide a comprehensive, methodical, consistent and transparent set of results. It also benefits from economies of scale.

Some argue that the labour market should be left to regulate itself, but planning is important, because supply and the training apparatus are significantly late to respond to changing demand and because countries experience difficulties matching demand and supply. Training takes years, hence the importance of forecasts. Planning also helps in the case of older people, who have a harder time changing careers.

The model provides quantitative projections based on a macroeconomic-industry model. Some industries/occupations present an optimistic outlook, but taking an overall view is important. In the aggregate, the number of jobs will decline: the optimistic outlook is that number will go from seven to five million in 2030.

The methodology is the same across the board. If changes are to be made, they should be in the underlying assumptions, which would then yield different results.

---

The model can benefit the following players: (1) the government, in designing vocational training programmes, (2) employers, for greatly improved allocation of resources, (3) young people making career decisions, and (4) job seekers, in considering career changes.

Another advantage of this kind of models is the international experience: the United States (US) has been using and constantly honing such models for 40 years, covering more than 800 occupations. The same should be done in Israel.

The European experience was addressed later in the seminar by Mr Ben Kriechel.

## Methodology

Mr Ziv reviewed the methodology of the Israeli model. There are two sources of job openings: (1) job opening derived from expansion, and (2) job openings derived from replacement. Medical specialists are a good example: the total number of people that need to be trained equals the sum total of both expansion and replacement projections.

The industry–occupation matrix holds data for the number of people employed in a given profession in a given industry between 2012–2019, to which penetration and decline equations are estimated to obtain the projections 10 years ahead.

Based on the demographic model and the multi-sectoral model (which predicts outputs in different industries), one calculates the number of people employed in each industry, which we can then use in order to calculate, based on the industry-occupation matrix above, the future number of those employed in each occupation under each industry. This makes it possible to predict expansion demand.

Replacement demand is calculated using an occupation-age matrix, with replacement rate in each occupation directly correlated with its age profile.

Systems analysts, for example, work in various industries other than information and communication (e.g., FinTech), with a growing penetration rate in some of these industries between 2012–2019.

## Results

Overall, a total of 1,700 thousand job openings are forecast in Israel by 2030, one million from growth and 700 thousand from replacement.

The 138 occupations in the model were divided into 20 broader occupation groups for ease of analysis. Mr Ziv presented a table showing the top ten groups by projected percentage change in 2019–2030, indicating the predicted growth in jobs for each and the total number of additional jobs (including replacement). Most notable and interesting are community and social service occupations, computer and mathematical occupations, and healthcare support occupations. Some of these underscores the connection between occupations and leisure (e.g., sports trainers).

On the flip side are those occupation groups bound to shrink (in terms of replacement as well) due to automation and technology. Examples include some marketing professions (pushed aside by digital marketing) and middle-level management occupations. The positive job openings figure for some of these professions reflects the difference between the effects of growth and replacement.

Looking forward, there is a lot to improve. Results can be made more reliable by having experts refine the parameters for each occupation. New dimensions can be added, and the model can be analyzed by additional parameters (age, population groups, etc.). One might consider modules, such as replacement between occupations, but this requires better data.

## Dr Ben Kriechel

### Quantitative approaches used for skills anticipation

The second speaker was Dr Ben Kriechel, a managing partner at Economix Research and an expert in labour market research and research methodology. Mr Kriechel specializes in labour economics, education economics and has a lot of experience in using empirical methods and qualitative techniques to skills forecasting.

He spoke on Quantitative Approaches Used for Skills Anticipation in Europe in relation to the Israeli model. He presented the basic framework of a quantitative skills forecasting model. Such a framework usually

includes a macroeconomic model, employee demand by sector and a model of transitions/replacement demand. Many models also include some element of supply. The emphasis is on demand for skills and the underlying occupations.

He describes the Israeli model as more in line with the American models as it is focused on the demand side and on occupations. He offered his advice that it is often useful to think about available supply, since this is often the limiting factor in the economy's growth, and the availability of people and skills, which is where the shortages and imbalance occur.

He said that the Israeli model is very elaborate and that, while exchange of know-how and experience is beneficial, a lot is learned from hands-on experience from actual practice within the country-specific context.

Addressing the ambitious character of the model in terms of occupational detail (three to four digits), he warned that a trade-off exists between the level of detail, which makes it easier to present and explain the results, and stability in the results. Achieving permanent stability for such levels of detail takes considerable work.

Many European countries have regular forecast exercises. Some rely on their specific strengths (e.g., administrative data in Scandinavian countries), others on labour force surveys and occasionally some vacancy data.

Mr Kriechel described the European skills forecasting framework through the CEDEFOP (the European Centre for the Development of Vocational Training) project. CEDEFOP Skills forecasting model was developed since 2007 by a consortium of universities, including Economix Research (Mr Kriechel's business). It has since provided a platform for the discussion of results, among others with policymakers.

The CEDEFOP's methodology is highly quantitative, intended to provide forecasts for all 27 EU Member-States and others (Norway, Switzerland) and allow for comparable results. It is based on common methodologies and common sources of data. This approach makes it possible to identify long-term trends and differences between countries to be used by policymakers. Mr Kriechel emphasized that as part

of the work on the forecast, national experts provide crucial inputs through regular (annual) meetings.

Next, he presented the German skills forecasting model, in which he was involved for the past six years. This was commissioned as a quantitative model with the option to run scenarios and include qualitative input. It has gone through three different forecasting scenarios, with various qualitative inputs from experts providing insights into possible macroeconomic assumptions, various modules and useful changes to modules as regards immigration, digitization, automation, etc.

Expert input also includes reports (e.g., on demographic, climate change, technological change, etc.), fed into various assumptions for possible tweaking of the macroeconomic model but also the underlying demand and supply elements, so as to be able to define different scenarios, which are defined quantitatively so that people can understand where the differences are coming from.

The German model resembles CEDEFOP in its setup and is more detailed in its differentiations. It covers numerous occupations (which are challenging to get right) and 29 qualifications.

## Organization and use

Mr Kriechel talked about the organization and use of skills forecasting, as this is where he believes the Israeli model to be currently.

Forecasting, in his opinion, is just one labour market information tool, which should be somehow institutionalized. It requires country-specific experience and expertise, and results can be interpreted if the tool has been run several times over a number of years. It allows a medium-term view and the incorporation of qualitative insights into the forecast.

The model needs to be complemented by additional information: vacancy surveys, mismatch indicators and sector studies.

The crux of the work is to translate results into something people can understand, such as differences in how skills are reacting to future changes in the labour market.

Success factors in terms of organization include: allowing the forecast to gain experience; interaction

---

between the forecasting team and the stakeholders, decision makers, and data organizations; and trying to keep the organization impartial and apolitical.

Success factors when it comes to use: presenting the forecast output in terms that are understandable to the different target audiences, with the help of the forecasting team; discussing results; and feedback that includes improvement suggestions.

Mr Kriechel concluded by saying that the Israeli model is a promising approach to introduce a quantitative skill forecasting model and expressed his hope that it would be further developed, with an institutional framework built around it.

He added that many countries use quantitative skill forecasting to supplement their toolbox of labour market monitoring and skill anticipation and understand market mismatches and education needs, and that he was curious to see how the Israeli model will evolve.

## **Prof. Zvi Eckstein**

### **Preparing for the future labour market with demand analysis**

Prof. Zvi Eckstein is the Dean of the Tiomkin School of Economics and Head of the Aaron Institute for Economic Policy at the IDC. He was formerly Deputy Governor of the Bank of Israel and participated in headed many committees, notably the 2030 Committee for promoting employment in Israel.

He talked about Preparing for the Future Labour Market with Demand Analysis. He thanked Sani Ziv and the organizers for inviting him, praised Mr Ziv's and Mr Shapir's work and noted the importance of the seminar.

In his lecture, he noted that he would attempt to put skills and occupation forecasting in the context of the labour market - past, present and future.

According to Prof. Eckstein, the last 20 years (barring the COVID-10 period) have seen an amazing and dramatic growth in employment rate in Israel, to be the result of a policy-supporting employment. In the last ten years especially, this has been a dominant factor in the growth of the Israeli gross domestic product (GDP) growth and also contributed to lower the poverty rate.

A dominant factor underlying this growing employment rate was the dramatic growth in academic education, with 45 per cent of Israelis attending higher education. Generally speaking, this also offset a primary threat - the relative demographic growth in low-skilled populations characterized by lower employment rates. Again, a policy that emphasizes skills and higher education yields very positive outcomes in terms of employment and household incomes.

Commenting on the skill-biased technical change factor presented in Dr Kriechel's model (on the demand side), Prof. Eckstein said that this was a phenomenon characterizing the western world from the late 1980s.

In view of the COVID crisis, he believes that it is important to also look at the short term to see whether we will go back to the pre-crisis employment rates in the near future, as a key factor in adapting skills to the future labour market.

He listed the main challenges in the labour market: low employment rates among certain populations; notably, low productivity levels compared to certain European countries for example, due to shortage in human capital and skills, mainly among individuals with no higher education; ejection from the labour market due to COVID and technological change (digitalization, etc.).

The 2030 Committee established employment and employment-quality objectives that require reorganization in terms of defining required skills.

To place this in the labour market context, he suggested a macro-economic view represented by a matching triangle, with each of its components viewed in terms of the modern labour search model by Pissarides and Mortenson. The key component is the matching function, between employers and employees involving a highly significant friction component in the labour market, which is where the above triangle comes into play. Its three elements are diagnosis and guidance (especially needed in order to fix the marked failure affecting weaker populations), training (academic and non-academic, with the government involved fully in the public, and partially in private, institutions) and placement. Employer involvement is required in the link between training and placement. The knowledge flowing to the

academic institutions is important if they are to adapt to present and future needs. Matching must include specific programmes for specific populations from different backgrounds.

A central tool emphasized by the 2030 Committee to target a known weakness is the vocational and technological training system, mainly the former, with a focus is on occupations with higher demand and with employer involvement. Target audiences include the unemployed and job seekers, young people who do not choose an academic education, professions in danger of extinction.

All this requires a quantity data platform, in this case Mr Ziv's model, which identifies the required skills and occupations. This will greatly help in building suitable vocational training programmes (as well as academic programmes, even though the academia is much better adapted to the changing needs).

Avodata is also a great tool making a tremendous amount of information accessible. It stills lacks a division into industries in some occupations.

The competition between the education providers and employers is what ensures good matching.

Commenting on Mr Ziv and Mr Shaphir's occupation demand model, Prof. Eckstein said that the model in itself is important, but needs more detail.

The question is who will take charge of it in the future. It is important for the Ministry of Labor and Social Services to cooperate with the other players, validating the model, setting parameters, improving forecasts, translating it into skills, defining the occupations, and ensuring a connection between job definitions and open jobs, as it is this connection that needs to be optimal.

The Avodata platform, he added, needs to be connected to the vocational training systems. An important factor, which the Committee recommended, is accreditation. Emphasis should be placed on branches, occupations, and trends in wages (which always interests people).

Prof. Eckstein ended on a necessary condition for the operation to work and that is lacking in Israel — that is, a Ministry of employment, which would handle employment in general while prioritizing people not equipped or prepared for the labour market or far

away from employment centres, as well as people changing careers. Good examples to imitate in this respect are Denmark and Sweden. The platform is another necessary tool that must provide accessible, accurate and up-to-date labour market data to workers, employers and the institutions bridging between them.

## Dr Shay David

### Identifying patterns in labour markets with real-time data

Dr David is an expert in information systems, Co-Founder and CEO of human resource (HR) start-up retrain.ai. He discussed Identifying Patterns in Labour Markets with Real-time Data.

According to his company's approach, a big part of skills forecasting and identifying patterns is data. Dr David identified three compounding vectors driving the skills gaps today:

- A significant and rapid change in skills demand, in the nature of work, which makes forecasting difficult.
- A constant widening shortage in skill supply, both globally and domestically, not only in high skills but also in middle and low skills.
- Generally inefficient HR systems that are not driven by data. Retrain is trying to solve this.

The real risk in Israel and elsewhere, according to Dr David, is not unemployment but growing unemployability. And while employment is improving, long-term unemployability, affecting increasingly larger percentages of unemployed, is not. This poses a problem for individuals and for CEOs seeking the talent they need.

Retrain.ai's is slightly different to some of the approaches presented but shares the notion that data is key to solving the problem. The idea is to merge and fuse three different data sets: occupations and jobs, people, and learning and training pathways, so as to know where the market is now and where it is headed, where the talent is now and where it could go, and how to help the talent get from where it is to where the market is going.

This is achieved by building universal real-time labour market data, based on millions of job postings, CVs,

---

compensation data, training pathways, etc. The question is then how to collect and analyse the data. The outcome is what the company calls the “Talent Intelligence Platform” (TIP). TIP helps navigate through change by:

- Helping people understand current and future roles and skills with real-time labour trends.
- Understanding the workforce’s existing inventory of skills, interests, and personal attributes.
- Analysing the skills gap between present skills and required future needs.
- Bridging the skill gaps by establishing individualized training pathways according to the gaps mapped.

Retrain’s approach is different:

- It relies exclusively on the data, with no a priori assumptions about what jobs, demand and skills exist.
- It involves a bottom-up process, based on artificial intelligence (AI) analysis of millions of job descriptions in order to extract job titles, job descriptions and skills, which can then be compared to the previously mentioned datasets.
- It breaks down complex tasks into simple ones
- It distils knowledge through validation

The starting point is noisy raw data (job descriptions, CVs, etc.), processed using NLP-based automatic detection and labelling of skills and roles.

This information is used to create a layer of information consisting of demand and supply maps, at either the organizational level or state/country level. Through a process of “organization in the loop”, work is done with people in organizations to validate the maps, and place organizations and individuals on the maps, to some extent creating the labour market equivalent of Google Maps.

The end result is reliable knowledge that can be used to show individuals pathways into their destinations and how the training pathways work.

Retrain is collaborating with TEVET and the Ministry of Labor and Social Services as part of the Avodata project.

Retrain’s objective is to empower HR, to be able to work with organizations before people get into or drop out of the labour market, to understand from employers what roles they have, what jobs they are hiring for along with the necessary skills. The endgame is to be able to move into and focus on career pathways and skills rather than job titles and job descriptions, to show how people can move within organizations, grow their skills and remain relevant to the marketplace, and allow organizations to retain employees. The assumption is that many people (about one-third in the developed world) will need to be retrained and reskilled over the next ten years as organizations transform.

## Responses

**Dr Lev Drucker**, Deputy Chief Economist, Ministry of Finance

Dr Drucker talked about the Future Labour Market Outlook. He said that the COVID-19 crisis accelerated two pre-existing labour market trends to full maturity, as was evident in:

- The differential impact of the crisis on different industries/sectors and their differential recovery. However, there is a major discrepancy between the rapid recovery in most sectors and the slower, more gradual recovery in the labour market.
- The gaps within the labour market, with higher-earning occupations much less affected than lower ones.
- The acceleration noted above is indicative of future labour market trends, with higher-wage jobs offering more security than lower-wage ones, which are in danger due to automation and digitalization.

Policy needs to address and support skills throughout all education and training stages, while care should be taken to prevent rising employment costs (minimum wages, etc.), which might harm the future labour market.

He was appreciative of the opportunity to discuss the skills forecasting model and the global trends. He suggested to further discuss the model at a department seminar to the Ministry of Finance, Chief Economist department.

---

**Dr Noam Gruber**, Head of Research Department, National Economic Council of Israel

Dr Gruber qualified the model as impressive and very interesting, and yet another tool that the government can use to organize existing data and test various desired assumptions, which makes it very important to maintain and test on a regular basis.

On the other hand, he noted that such models cannot predict trend going as far as 2030. There are just too many changeable variables, e.g., input–output matrices, changes in industry occupation matrices, all the more so in an environment characterized by fast technological change.

The assumptions to use in the model should be considered very careful. The discourse about the future labour market includes things like the gig economy) the exchange of labour for money between individuals or companies via digital platforms) and job-hopping millennials, but these are slogans the data do not yet reflect. And these are examples of where the model can seriously miss the mark.

The model can also reflect reality, some of which is already known, e.g., the growing number of older-aged people, which means more jobs in healthcare and nursing.

The question is what can be done with the model's results. The labour and education markets are not perfect, as they involve a lot of government intervention. And while colleges like IDC Herzliya and The Tel Aviv–Yaffo College are quick to respond to changing occupational demand, the majority of quality education is still provided by public universities, which are slow-moving and burdened by considerable barriers to raising the supply of professions in demand. So while the model can show the need, the question is our ability to put things into practice.

He said that high skills are an obvious key need, as pointed out by Dr David and Dr Drucker, but that the question again remains how to ensure that young people going into the market have them. Training is a poor solution, because it comes into play too late, and the main player in this respect, the Ministry of Education, which has historically failed to form enough highly-skilled youngsters for the market, was not present in the seminar.

---

**Dr Mark Feldman**, Director of Labour Sector, Central Bureau of Statistics (CBS)

Dr Feldman talked about the importance of the model in providing a strategic view into the future of required occupations as a tool that the Ministry of Labor and Social Services can use to build appropriate training programmes, now that vocational training is well on the agenda.

From his perspective, the CBS's role is to offer a good and correct data infrastructure for decision makers. This requires two things that are still lacking:



- Collecting administrative data that include occupation per employee, including working hours.
- Establishing a uniform classification/taxonomy of occupations. The current classification only addresses general groups of professions, e.g., doctors, without drilling further down into sub-professions, e.g., by medical specializations. The requirements for each such individual profession may be higher or lower.

He said that the model is very useful and should be used and updated according to developments, with an eye to changes in government policy and the way they affect the assumptions (e.g., older retirement age for women).

---

**Dr Osnat Peled Levy**, Senior Economist, Bank of Israel, specialized in the labour market

Dr Peled Levy talked about the importance of the work on the model for policy purposes, businesses and the population at large, especially the young population. It also contributes to social mobility. All these things influence future productivity and social well-being.

In implementing this methodology adopted by Israel from other countries (e.g., the US, the EU), it is important to keep in mind a few characteristics that distinguish Israel from those countries:

- Israel is a small, open economy. This will probably affect Israel's ability to import foreign labour (workers), while allowing export of skilled labour that Israel needs. However, because of Israel's insularity, flexibility in terms of employment is relatively low.
- Israel has a high fertility rate. This not only means a high population growth rate, which the model has factored in, but also influences the make-up of demand, especially in healthcare.
- Israel has two distinct population groups, the Ultra-Orthodox and Arabs, whose influence on the situation stems from their different profile as a specific workforce with different demand and consumption patterns. This will probably have to be taken into account in forecasting demand; how to do this will require some deep thought, even though the model provides a very good analytical framework.

Again, some of these points were taken into account in the model but might require additional attention in development and refining the methodology.

Dr Peled Levy suggested some avenues for further exploration in terms of results of the forecasting model:

- The slowdown in the growth of the high-tech sector compared to the previous decade. Dr Levy, wondered whether the model assumes a bubble. It might be a good idea to rethink the assumptions leading to the results and the same holds true for the construction industry.
- The division between demand caused by expansion and demand caused by replacement in comparison to other countries is not only due to the fact that Israel's population is younger but may stem from differences in demand/consumption growth; and population growth might not be the only factor to look at in this context, but also the population's composition.

The model represents a very significant step forward in forecasting demand for occupations and skills. It is a highly complex task and an impressive achievement.

The model needs validation, in order to understand its strengths and weaknesses. Dr Levy's most significant recommendation is to add scenarios into the model, to see where the prediction is influenced by its underlying assumptions and by the quantitative analysis. It is important to monitor the model's flexibility with respect of future developments, test its correctness in hindsight, and see how robust it is.

Given that the model is largely past-oriented, another thing to consider is giving expression to non-linear developments. As the COVID-19 crisis has shown, reality can and does carry surprises.

Another important point is to address structural and political barriers, such as the ability to meet demand in healthcare.

Lately, COVID-19 has accelerated some processes and slowed others, making it necessary to determine which have been accelerated and which have not, and how the forecasts are impacted by these changes.

.....  
**Ms Lida Kita**, Senior human capital development expert, European Training Foundation

Ms Kita chose to discuss one point raised in the presentation — the big question of who may benefit, or more importantly who does benefit — from skills forecasting. She referred to the National Qualification Framework project (NQF) supported by the EU. This can be adapted and refined to the Israeli situation.

In 2015, the Israeli government agreed to and approved the establishment the national qualification framework. While it is still waiting to be adopted, the work is supported by the EU. The framework will address questions associated with what qualifications and for whom.

She expressed her hope that there will be a commitment to use all this wealth of evidence and modelling capacity by the TVET Committee and the National Qualification Framework, for qualification classification and occupational groups.

.....  
**Ms Keren Ben Natan Kruger**, Head of Mapping and Planning in the Employers' Directorate

Ms Ben Natan Kruger is a human capital expert. She served 25 years in the International Development Fund (IDF) Manpower Directorate

She joined the others in applauding the model as an outstanding, much-awaited platform and product producing data and serving as a compass for the various players in their respective missions.

The Employers' Directorate, established several months ago, is a joint venture between the Ministry of Labor and Social Services, the Business Sector Presidency, the Economic Social Forum and the *Histadrut* (General Organization of Workers in Israel). Its goal is to realize Prof. Eckstein's vision of having employers take an integral and direct part in steering government policy on training and human capital development. In this

context, the directorate has taken on data as a flagship project and is currently working on a multi-layer model.

The first layer includes data on the current situation from the employers' perspective (starting from the individual worker, individual skills required by individual firms, and working up to the occupations level, industry level, and then the overall picture).

Next, there is a methodology and research layer, whose aim is to build a picture of the near future, and not the future ten years from now, which is too far away for employers; this is where Mr Ziv's wonderful model, in Ms Ben Natan Kruger's words, complements the Employers' Directorate work and vice versa.

What they have realized at the Employers' Directorate is the need to look at the short and medium term and constantly validate findings together with the employers.

She believes that a challenge for everyone (employers, professionals, CBS, researchers, etc.) and for all platforms/layers is to create a common language in order to bridge current language gaps. For example, the term "machine operator" means different things to different employers, anywhere from technician or CNC worker to engineer, etc. Improving language accuracy, an effort to which Ms Ben Natan Kruger's office will be happy to contribute, will mean better and more targeted training.

She also said that they would like to receive feedback as employers, so as to understand what they can and have to do to influence the overall picture, because for employers it is not all about their needs, but also about what can be done to advance and retain employees (the issue of burnout was not discussed in the context of the forecasts). At this point, she added, the process is in its infancy, and she expressed her hope to see everyone cooperate and succeed.

## Session 2

Designing skills and training  
for the future labour market

## Session 2

### Designing skills and training for the future labour market

The second session dealt with the institutional perspective, including stakeholder engagement and ways to use a skills' forecasting model in managing various government programmes and establishing policies.

The first speaker was Mr Camille Courchesne from Canada. Mr Courchesne is a private consultant on labour market modelling and has vast experience in occupations forecasting and manpower planning processes. The second speaker was Dr Yuval Mazar from the Bank of Israel. He reviewed his research, "Findings and Implications from the PIAAC Survey." Next, Ms Noa Ecker from the Ministry of Economy and Industry presented the recently-launched Avodata website, Ms Neelie Ben Tovim from the Ministry of Economy and Industry presented the tools employed by the Ministry to monitor changes in demand for occupations, and Ms Ori Carmi-Shachar from TEVET presented the National Skills Programme and discussed the need to develop skills rather than just impart professional knowledge.

#### Camille Courchesne

##### **Institutional mechanisms and the roles of different actors for anticipating and matching**

Mr Courchesne presented the approach taken in Quebec, as in other Canadian provinces, in order to show how a skills' forecasting model can be useful in managing various government programmes and establishing policies. He reviewed the skills forecasting model in Quebec which has been in use for 20 years now.

The Quebec model provides information of the planning process to both the Quebec province, and its 17 administrative divisions and two metropolitan areas. In 2021, Quebec's population totalled 8.6 million, approximately the same as the Israeli population. The pre-COVID unemployment rate was at 5 per cent, with almost full employment and balances between labour-market needs and supply.

The model's projection horizon is ten years, divided into short-term (three years) and medium-term (over

five years). The basic model covers 41 industries (according to the NAICS classification) and 70 occupational groups allocated to 500 occupations by regions and metropolitan areas based on census data, labour force surveys and qualitative analysis. Because the model addresses both labour supply and demand, the focus is on imbalance analysis. Only qualitative imbalance information on the various occupations is disseminated, which is then qualitatively reviewed and validated by regional and sectoral experts.

According to the report of Mr Courchesne the anticipation and matching process in the Quebec model resembles the structure to the Israeli model. The starting point is an observation system (statistics, data), which undergoes qualitative analysis in order to create an information system. However, the main challenge and the important part of such models is the dissemination of the model's information, and the usefulness of the model lies in what the clients (institutions, policymakers, or individuals) do with the results.

In Quebec, the model results are used for administrative decision-making in:

- Evaluating requests to open new vocational training programmes by the Ministry of Education based on a formal TVET management framework devised and implemented in collaboration with the Ministry of Labour, Employment and Social Solidarity, where opening a new programme requires a match between training offer and labour market needs and funding prioritization are made according to partners' priorities. A major input comes from labour market (regional and sectoral) partners. Programme authorizations also take into account current school mapping, geographic characterization of proposed study programmes (whether local, regional or national), and — importantly — the contribution of partners. Qualitative information is important in defining the qualitative indicator that needs to be provided by the model, and many specific points of view from various players regarding the model results are considered and used in order to make adjustments to the model.
- Selection of immigration applicants, with priority given to skills that are in short supply.

- Individual decision-making, for individuals choosing their career paths as well as career counsellors, business managers, etc. The model results are integrated within a labour market information (LMI) system and presented within a website whose users can explore occupations and sectors of activity, find training programmes, and relevant businesses/employers. Information on the 500 occupations includes employment prospects (excellent, good or limited), estimated wages, etc.
- Management of certain training programmes offered by the Commission of Labour Market Partners.
- Deciding active employment support measures by Ministry of Labour, Employment and Social Solidarity
- Promoting registration in VET training programmes through the labour market information system (Ministry of Labour, Employment and Social Solidarity)

Mr Courchesne suggested drawing these lessons from the Canadian (Quebec) experience:

- Institutional collaboration at all levels and clear division and definition of each entity's mandates and responsibilities
- Using a combination of qualitative and quantitative data to improve the evaluation of the results and ensuring that the limitations of one type of data are balanced by the strengths of another.
- Clear collaboration rules, with binding consultation on specific decisions.
- Privacy rules governing the use of the data.
- Broad dissemination of results, using effective communication.

Mr Courchesne also commented on the Israeli model, noting that:

- It is an important tool for education and labour management in Israel.
- Its development is state-of-the-art and it uses best practices, but will eventually have to address the supply side as well as the demand side, because it is the discrepancy between the two that is ultimately the information being sought.

- A macro model is a good starting point in terms of model usefulness.
- Selecting 168 occupations is a big plus as a precondition for usefulness.

As Mr Courchesne sees it, the challenges ahead include maintaining collaboration between the various institutional actors and being patient enough to go through an experimentation period and seek feedback. He further recommended improving the tool by:

- Maintaining a support team for development.
- Securing data sources through formal agreements.
- Developing qualitative inputs by consulting with partners.
- Linking model results to the decision-making process.

### Dr Yuval Mazar

#### Findings and implications from the piac survey

Dr Yuval Mazar is a Senior Economist in the Macroeconomic and Policy Division in the Research Department

He presented a study on the gaps in wages, skills, and schooling between Israeli workers and those in the Organisation for Economic Development (OECD). The research compared the levels of wages, skills, and schooling in the various wage deciles for workers in Israel with those of workers in parallel deciles in other OECD countries, as well as the wage returns of the skills and schooling. This is while distinguishing between genders and emphasizing differences between the public and private sectors. The analysis was based on the Programme for the International Assessment of Adult Competencies (PIAAC) survey.

According to the survey, the wage gap between Israel and other countries decreases as the wage decile rises. That is, the higher the salary of a worker in Israel is, the narrower the gap between the worker in Israel and those in the comparison countries). In the highest wage decile, the hourly wage in Israel is even slightly higher than the average in the same decile in the comparison countries. These findings apply to both women and men. It was also found

that the gap in basic skills between men in Israel and in the comparison countries becomes smaller as the wage decile rises, while there is no strong connection between the gap in the number of years of schooling in each decile and the gap in wages. That is, the dominant factor correlated with wage gaps between Israel and other countries is skills, not schooling.

In equations that estimated the wage returns to skills and to years of schooling, it was found that among men, the return to skills and to years of schooling in Israel is not significantly different than that in the other countries, while among women the return to basic skills in Israel is double the average of the comparison countries, meaning women's wages in Israel are more closely correlated with changes in skills compared to women's wages in the other countries. These results help to explain the trends found in the document regarding the connection between the skills gap and the wage gap, by deciles. Among men, the skills in Israel are higher compared to other countries the higher the wage decile of the worker is, and accordingly the wage gap between workers in Israel and in other countries is lower in the higher deciles. Among women, though the skills gap between Israel and the comparison countries does not markedly narrow as the wage deciles rise, the skills level is higher in all countries as the wage decile is higher. Thus, the higher return to skills in Israel is reflected in a decline in wage gaps the higher the decile examined.

## Ms Noa Ecker

### **Introducing the avodata platform as an example of using data for policy purposes**

Ms Noa Ecker, from the Ministry of Economy and Industry, Strategy Division, is in charge of the Avodata project. She presented the recently launched Avodata website, a tool for individual decision-making which provides data on the labour market and studies in Israel. The idea behind Avodata was to offer a tool allowing people to make better career choices using information that is as reliable as possible.

The Avodata project, a collaboration with Joint-TEVET, took five years, and involved Digital Israel and the Ministry of Finance, the CBS as a central partner and Matrix (LTD) as the website developers, as well as retrain.ai.

For Avodata, a unique data infrastructure was created with two main clients in mind:

- Researchers and decision makers, for which a business intelligence was created.
- Individual citizens, interfacing through Avodata — the focus of this presentation.

The platform, which currently covers a basic set of occupations (that will gradually grow), also serves to introduce the kind of uniform language referred to by some of the speakers as a need. In this, it greatly exceeds the immediate goal of the site itself.

The site was developed after researching and defining client needs, and the needs of different populations, with the help of a steering committee, while taking into account accessibility. It comes ready to accommodate additional languages (Arabic is now a work in progress). Users can choose to have occupations presented in a gender-appropriate manner, neutralizing any potential bias that studies have proven can arise.

The website was also designed to generate automatic insights, namely simplified concise “bottom-line” conclusions for those who do not wish or know how to understand graphs and statistics. In general, it is built for understandability and friendliness for all types of users.

The first stage, the minimal viable project, was launched in July 2021. It is now awaiting feedback.

In December 2021, an occupational orientation questionnaire was launched based on the Orland model, as a basis for providing recommendations meeting the needs of different kinds of users.

In the seminar, Ms Ecker presented a demo of the website. The Avodata website is based on two major databases: (1) occupations (2) study and training programmes. At this point, the studies section covers academic degrees, technological training and vocational training.

She demonstrated the use of the site to explore a possible career as a speech writer. The search led to a page on this profession with a brief description of the job, the skills required and personal suitability criteria. A side rubric presented statistical data, such as wage, average hours of work, education level. The

---

information is derived from international databases, adding layers that are not yet available due to scant statistical information at this time.

From there, one could access more detailed information on the general category encompassing speech writing — Literature and Writing — which included various graphs and related occupations. The wage graph showed that some writers found work in high-tech, where salaries are considerably higher, and the various writing occupations suggested that technical writing was the occupation that most interested high-tech companies. This may lead the user to consider technical writing as a career option where they might not have, before.

Another search strategy was using parameters, e.g., defining that one wants to study only two years with an average wage outcome or higher. The results, again, offered a glimpse into a range of occupations in the same field, since the aim of the project is to open up horizons for people.

Yet another way was to search through the “Content Worlds” and the various categories listed there, e.g., Business and Finance. The results here were drawn from and connect both the Occupations database and the Studies database, presenting them alongside each other. If Accounting studies are selected, for example, results would show the number of years of studies, admission criteria, required grades, wage development at various points in time, the industries in which graduates work, the universities producing the better paid graduates, etc.

She concluded her presentation with future features planned for the website:

- Developing questionnaires for diagnosing and identifying individual occupational inclinations and for career guidance.
- Translating the site into Arabic and English.
- Comparing occupations/studies side by side, in order to facilitate decision-making.
- Including real-time data, using job ads, to build a picture of current demand.
- Including additional source Ministry of Economy and Industry’s of information, on other types of training, feedback on teaching institutions, etc.

## Ms Neelie Ben Tovim

### Data-Based policy and responding to labour market demand

Ms Neelie Ben Tovim, Head of Research Team, Ministry of Economy and Industry.

She spoke about the roles of the strategic department in the Ministry of Economy and Industry in monitoring processes in the labour market in general, with a focus on training programmes.

The Ministry’s aim is to support increasing employment rates and the quality of employee’s job, which means that it operates wherever it identifies demand for workers or potential unrealized supply due to barriers that the market fails to cope with. If the market operates on its own, the Ministry tries not to interfere and also aims to promote and improvement of accumulation of human capital and increasing productivity.

The Ministry work consists of two major efforts:

1. A general monitoring of the labour-macro indicators of the market

This includes broadest indicators such as unemployment rate, job vacancies; the number of unemployed for each job vacancy; employment rates by populations groups (recently indicating the greatest pre- and post-COVID-19 gap for Arab men). The latter are also compared to 2030 objectives as defined by the 2030 Committee, and this begs the question whether interim objectives are needed, whether to exclude Arab men from targeting, etc. Or for example, assessing how to reinsert the estimated 280 thousand post-corona jobless into the labour market, they need to be mapped and analysed in terms of education, population groups, age.

As another example of analysis, a look at the rate of men aged 18-24 are neither working nor studying shows a worrying and steep upward trend for Arab men post-COVID, which already started pre-COVID and is not reverting to pre-COVID levels as it is in other segments of the population. It is then the Ministry’s role to find a response accordingly.

2. Monitoring the results of the Ministry of Economy and Industry’s activity

One example is graduates of vocational training (50,000 per year), a major Ministry operation handled by one of its key divisions. The research team is called upon to provide information regarding their integration in the labour market, including their wages, employment rates, occupation status (their work in their profession), satisfaction with the course and many other parameters.

This is translated into high subsidies for vocational training towards in-demand and more lucrative professions (e.g., foremen, crane operators) and no subsidies for the low-demand, low-income trades (e.g., legal secretaries, bartenders).

A large unit within the Ministry also caters for practical engineering training. The aim is to steer more people into high-tech and resolve the “bugs in the system” that keep them from getting there. A general graph presenting participation rates in high-tech of people aged 30 between 2003–2018 shows around 20 per cent among non-orthodox Jews, 6 per cent among orthodox Jews, and 3 per cent among Arabs, which is still low despite having tripled since 2003.

The response side includes efforts by the Populations Administration within the Ministry via various programmes designed to put academics, orthodox Jews, and women into high-tech professions.

In conclusion, Ms Ben Tovim said that when it comes to steering demand and supply, the government’s power is limited, and the main effort – in terms of available time and incentive – comes down to the individual, which is again where the Avodata website comes into play with a possibly greater impact on directing individuals.

## Ms Ori Carmi-Shachar

### What skills are required in the future labour market

Ms Ori Carmi-Shachar is the Manager of National Skills Programme at Joint-TEVET Israel and spoke about the importance of skills in the new labour market. She reviewed their integration in various training apparatuses, and the ways to measure soft skills.

She said that the National Skills Programme was launched this year and that her talk would focus on the need to develop skills rather than just impart professional knowledge, as many of the previous speakers emphasized.

Joint-TEVET has been active for more than 15 years, among others in developing programmes for integration of weak populations in the labour market. At some point, around 2016, a shift towards skills took place. It was felt that the initial definition of employability which informed the Joint’s work in this area, namely the ability to get a job and fit into a workplace, was no longer relevant in view of the largely changing labour market trends (e.g., digitization), in view of the PIACC survey, etc.

In rethinking the definitions, account was taken of the publications of the World Economic Forum, the OECD, and other employment models worldwide. Many of these reflected sweeping changes expected in required skills, in the requirement to keep developing skills and acquire new ones in the course of a career.

In shifting to the skills-based approach, skills were classified into various types: basic skills (linguistic, mathematical, digital literacies), essential skills (required for any worker, namely life-long learning, long-term ability to cope in the labour market), transferable skills (required in all areas of work and all roles), and job skills (industry-specific skills).

This view of things led to the development of the I PRO Skills model four years ago, drawing among others on other models in the world (IFTF, OECD, World Economic Forum, etc.) and on the experience of other countries that set up skills centers. After three years of extensive implementation and testing on the ground, the model was re-validated.

Generally speaking, the model defines seven skill clusters. Two of them correspond to the basic (“I CAN”) and essential (“I GROW”) skills mentioned earlier. Next is the cluster related to motivation to develop skills and generate change by oneself (“I AM”). The other clusters were weighted according to different areas: work and interpersonal relations (“I MIX”), self-management (“I TASK”), skills for solving complex problems (“I DEAL”), social-occupational networking (“I NET”). Between them, the clusters cover 19 skills, which can then be matched to labour market requirements and in order



---

to assess employability. Even if the terms differ slightly between this and other models, the principles repeat themselves.

The next step was to think about the correct principles for developing skills, using the gym metaphor, and they are:

- Why? The reason for developing a skill — i.e., the employment need, which the individual too must understand.
- What? The work to be done and the expected results.
- How? Developing a training programme, based on these five principles: simple and attainable, enjoyable, includes practice, work in a group is better, promotes independence in learning and acquiring skills.
- Now what? Constantly maintaining and improving skills.

## Stages of skill development

- Diagnosis
- Acquisition/teaching
- Guidance: practices and missions; those teaching should also be trained to teach not only job skills but broader work skills
- Evaluation, to assess the effectiveness of the intervention

## Challenges in developing skills

- Achieving consensus on the definition of skills.
- Diagnosing and segmenting skills by skill levels (which relates back to the different populations and backgrounds).
- Creating a standard in practices for developing skills and ways of learning. This new approach must be assimilated on the ground by those providing the training.
- Defining a measurement standard and devising tools to assess the effectiveness of intervention in developing skills.

## Recommendations

Many countries are experiencing a persistent gap between the skills needed in the labour market and those offered by the workforce. Skills anticipation is a strategic and systematic process through which labour-market actors identify and prepare to meet future skills' needs, thus helping to minimize potential gaps between skills demand and supply. Skills anticipation enables training providers, young people, policymakers, employers and workers to make better educational and training choices and leads, through institutional mechanisms and information resources, to improved use of skills and human capital development.

**The role of institutions:** A number of institutions have an interest in skills development. These include, among others, various government agencies, education and training institutions, and employers' and workers' organizations. The functions of the various institutions participating in the labour market information system should be mutually complementary in order to ensure a sustainable skills' planning and forecasting process. Therefore, the institutions should ensure, as a matter of priority, coordination of functions with regard to anticipation of skills' needs.

Bringing this project to a successful conclusion requires the active engagement of all stakeholders, including government departments and agencies and social partners in the skills anticipation and planning process. It is recommended to establish a regular platform to bring together the different partners as each has its unique strength/data that are necessary for the model, and/or abilities to use the model.

**Improving data collection:** Especially important are those organizations with data- collection responsibilities. Currently, the Central Bureau of Statistics conducts surveys (e.g., the Labour Force Survey, Household Survey, census) to collect skills and labour market data. However, additional data are required and gaps in data collections exist. Improving

data collection is paramount, with emphasis on administrative data that include occupation and working hours. Also important is the establishment of a uniform taxonomy of occupations (as Mr Mark Feldman noted in his lecture). For example, data are required on retirement age, including the decompositions of retirement age, and data on people leaving the labour market on a temporary basis (such as maternity leave or sickness) and those retiring, dying or emigrating.

### **Tools for using the results of skills needs anticipation:**

Tools are instruments that provide information about changes and trends in the job market. The model results should be integrated within a labour-market information system and presented within a website whose users can explore occupations and sectors of activity, find training programmes, and relevant businesses/employers (as suggested by Camille Courchesne). The Avodata website (reviewed by Ms Noa Ecker in the seminar) is an example of a platform that enables youths to make informed choices about their careers. The Avodata platform needs to be connected to the skills forecasting model, to vocational training systems and to the National Qualification Program.

### **Integrating qualitative and quantitative models:**

It is important to use a combination of qualitative and quantitative data to improve the evaluation of the results and ensure that the limitations of one type of data are balanced by the strengths of another.

**Establish a Ministry of Employment:** Prof. Eckstein noted that a necessary condition for a viable system is the establishment of a Ministry of Employment, which would handle employment in general while prioritizing people not equipped or prepared for the labour market or too far away from employment centres, as well as people switching careers. Good examples to imitate in this respect are Denmark and Sweden.





**unesco**

United Nations  
Educational, Scientific  
and Cultural Organization



Funded by the  
European Union