



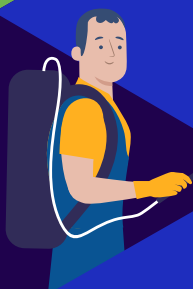
International
Labour
Organization



Co-funded by
the European Union

► Identifying skills for transitions to formality in the Lebanese agri-food sector

Focus on Dairy Production and Non-Alcoholic Beverages



December 2023

© International Labour Organization 2024.

First published 2024.



Attribution 4.0 International (CC BY 4.0)

This work is licensed under the Creative Commons Attribution 4.0 International. To view a copy of this licence, please visit <https://creativecommons.org/licenses/by/4.0/>. The user is allowed to reuse, share (copy and redistribute), adapt (remix, transform and build upon the original work) as detailed in the licence. The user must clearly credit the ILO as the source of the material and indicate if changes were made to the original content. Use of the emblem, name and logo of the ILO is not permitted in connection with translations, adaptations or other derivative works.

Attribution – The user must indicate if changes were made and must cite the work as follows: Identifying skills for transitions to formality in the Lebanese agri-food sector, Focus on Dairy Production and Non-Alcoholic Beverages, Geneva: International Labour Office, 2024. © ILO..

Translations – In case of a translation of this work, the following disclaimer must be added along with the attribution: *This is a translation of a copyrighted work of the International Labour Organization (ILO). This translation has not been prepared, reviewed or endorsed by the ILO and should not be considered an official ILO translation. The ILO disclaims all responsibility for its content and accuracy. Responsibility rests solely with the author(s) of the translation.*

Adaptations – In case of an adaptation of this work, the following disclaimer must be added along with the attribution: *This is an adaptation of a copyrighted work of the International Labour Organization (ILO). This adaptation has not been prepared, reviewed or endorsed by the ILO and should not be considered an official ILO adaptation. The ILO disclaims all responsibility for its content and accuracy. Responsibility rests solely with the author(s) of the adaptation.*

Third-party materials – This Creative Commons licence does not apply to non-ILO copyright materials included in this publication. If the material is attributed to a third party, the user of such material is solely responsible for clearing the rights with the rights holder and for any claims of infringement.

Any dispute arising under this licence that cannot be settled amicably shall be referred to arbitration in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (UNCITRAL). The parties shall be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of such a dispute.

Queries on rights and licensing should be addressed to the ILO Publishing Unit (Rights and Licensing) at rights@ilo.org. Information on ILO publications and digital products can be found at: www.ilo.org/publns.

ISBN 9789220407165 (web PDF)

The designations employed in ILO publications and databases, which are in conformity with United Nations practice, and the presentation of material therein do not imply the expression of any opinion whatsoever on the part of the ILO concerning the legal status of any country, area or territory or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The opinions and views expressed in this publication are those of the author(s) and do not necessarily reflect the opinions, views or policies of the ILO.

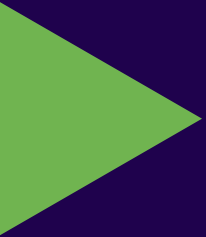
Reference to names of firms and commercial products and processes does not imply their endorsement by the ILO, and any failure to mention a particular firm, commercial product or process is not a sign of disapproval.

Printed in Lebanon.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	5
ABBREVIATIONS AND ACRONYMS	6
EXECUTIVE SUMMARY	7
PART 1: INTRODUCTION AND OVERVIEW	12
1. Introduction.....	12
2. Research design	13
2.1. Data collection tools and desk review.....	14
2.2. Research limitations and challenges.....	15
3. Socio-economic context of Lebanon.....	15
3.1. Financial and monetary crisis.....	15
3.2. Lebanon's labour market and the rise of informality	16
3.3. Existing Lebanese education and training system and labour market mismatches	16
4. National development and employment policies.....	20
4.1. Labour Law, employment contracts and minimum wage policies	20
4.2. Social protection systems	20
4.3. Labour market information and employment systems	21
PART 2: AGRI-FOOD SUBSECTOR STUDIES	22
1. Focus one: Dairy production	22
1.1. Background and economic contribution of the subsector.....	22
1.2. Employment in the subsector.....	25
1.3. Industry trends in international trade and innovation	26
1.4. Research and consultation findings	27
1.4.1. Skills demand in the job market: analysis of occupations and competencies in demand	27
1.4.2. Competencies needed for identified occupations and difficulties in hiring	33
1.4.3. Repercussion of skills gaps on business performance	37
2. Focus two: Non-alcoholic beverages	37
2.1. Background and economic contribution of the subsector.....	37
2.2. Employment in the subsector.....	38

2.3.	Industry trends in international trade and innovation	38
2.4.	Research and consultation findings	39
2.4.1.	Skills demand in the job market: analysis of occupations and competencies in demand	39
2.4.2.	Competencies needed for identified occupations and difficulties in hiring	43
2.4.3.	Repercussion of skills gap on business performance	46
3.	Analysis and key takeaways.....	47
PART 3: GAP ANALYSIS AND MAPPING.....		50
1.	Employability gaps for workers in two selected agri-food subsectors	50
1.1.	Employability gaps by occupation in the dairy production subsector	50
1.1.1.	Management skills	50
1.1.2.	Production skills.....	50
1.1.3.	Distribution skills:.....	52
1.2.	Employability gaps by occupation in the non-alcoholic beverages subsector	52
1.2.1.	Production skills.....	52
1.2.2.	Repair skills	53
1.3.	Common employability gaps for workers in the two selected agri-food subsectors	54
2.	Consolidated mapping tables	54
2.1.	Skills needed and skills gap by occupation	54
2.2.	Skills currently offered by TVET training programmes	56
3.	Future demand for skills in the two subsectors	57
PART 4: RECOMMENDATIONS.....		59
ANNEX.....		62
1.	Questionnaire for Ministry of Agriculture TVET institutes	62
2.	Questionnaire for dairy production business owners	65
3.	Questionnaire for non-alcoholic beverages business owners	70
4.	Focus group discussion guide	75



ACKNOWLEDGEMENTS

This report is one of the main outputs of the International Labour Organization (ILO)'s SOLIFEM “Social Dialogue for Formalization and Employability in the Southern Neighbourhood” project, co-funded by the European Union.

ILO National Project Coordinator Méliissa Bader oversaw development and coordination of the report. It was developed by consultant Sami Nader under the technical supervision of Daniel Cork, Kishore Kumar Singh and Julien Varlin.

Sincere thanks are extended to all who participated in the development of the report, and to all key informants who agreed to be interviewed for the report.

This publication was co-funded by the European Union. Its contents are the sole responsibility of the International Labour Organization and do not necessarily reflect the views of the European Union.

ABBREVIATIONS AND ACRONYMS

ALI	Association of Lebanese Industrialists
BP	Brevet Professionel
BT	Technical Baccalaureate
CAGR	Compound annual growth rate
CAS	Central Administration of Statistics
CGTL	General Confederation of Lebanese Workers
DGTVET	Directorate General of TVET
FAO	Food and Agriculture Organization of the United Nations
FENASOL	National Federation of Worker and Employee Trade Unions in Lebanon
GDP	Gross domestic product
IDAL	Investment Development Authority of Lebanon
IECD	Institute for Entrepreneurship and Careers Development
ILO	International Labour Organization
ISO	International Organization for Standardization
LBP	Lebanese Pound
LET	Technical Education Bachelor
LFPR	Labour Force Participation Rate
LFS	Labour Force Survey
LP	Vocational Secondary Certificate
LT	Technical Bachelor
NEO	National Employment Office
NGO	Non-Governmental Organization
NSSF	National Social Security Fund
TVET	Technical and Vocational Education and Training
TS	Superior Technician Certificate
UNICEF	United Nations Children's Fund
US\$	United States dollar

EXECUTIVE SUMMARY

Lebanon has experienced a protracted economic downturn since October 2019, with significant shocks felt across the financial and banking sector. This has resulted in the expansion of the informal sector, with persistent rises of youth unemployment and underemployment. With informal employment reaching 62.4 per cent in 2022 (a 7.5 per cent increase since 2018-2019), the youth and new university graduates are struggling to enter the labour market, making them more likely to engage in informal work or leave the country for better opportunities abroad. This can in part be attributed to the fact that Lebanon lacks a comprehensive labour market information system to aggregate, analyse, and anticipate labour market needs and trends. Labour market information is crucial to match workers to job opportunities and identify emerging trends. Improving the way this data is collected and disseminated will feed into skills anticipation strategies, enabling labour market actors (employers, employees, training providers and policymakers) to make informed educational and training decisions, enhance human capital development and help reduce skills gaps by meeting future demand for skills.

This study analyses skills in the Lebanese agri-food sector, focusing on the status and trends in demand for skills in formal and informal occupations identified in two selected agri-food subsectors,¹ (1) dairy production, and (2) non-alcoholic beverages. The two subsectors were selected in collaboration with a reference group comprising representatives of the trade unions CGTL and FENASOL, the Association of Lebanese Industrialists (ALI), the ministries of labour, agriculture and industry, and the Ministry of Education Directorate General of Technical and Vocational Education and Training (DGTNET). Five occupations within each subsector were selected to be the primary focus of the study, identified through ten scoping calls held with companies active in the dairy production and non-alcoholic beverages subsectors. A total of 22 interviews (11 per subsector) were later conducted with companies in the subsectors for the purposes of data collection; representatives of six of the nine technical and vocational education and training (TVET) institutes affiliated with the Ministry of Agriculture were interviewed.

While several large players are active in the dairy production subsector, a significant proportion of smallholders in rural areas in Beqaa governorate—the largest agricultural area in the country—rely on agriculture, and specifically milk and dairy products, as a source of revenue.^{2 3} Dairy production companies reached through scoping calls identified **farm managers, delivery stockmen, food safety specialists, milkers and machine operators as occupations in demand; currently, formal skills training is available for only three of them (farm manager,⁴ food safety**

1 Skills that are not provided by formal TVET centres and for which no certification is provided.

2 National Council for Scientific Research in Lebanon (CNRS), “Risk Assessment to Facilitate Planning for Disaster Risk Reduction and Climate Change Adaptation in Agriculture - Technical Report” ResearchGate (2019)

3 Food and Agriculture Organization of the United Nations (FAO), *Agricultural sector review in Lebanon*, (2021)

4 For farm managers, a Bachelor of Science (BS) in agribusiness, equipping students with the skill set required to work as farm managers, is currently offered at the [American University of Beirut \(AUB\)](#).

specialist,⁵ machine operator).⁶ The companies interviewed also cited cleaners, dairy and cheese manufacturers and agricultural engineers as occupations in demand; currently, formal skills training and certification is only available for agricultural engineers.

Interviews with directors of Ministry of Agriculture-affiliated TVET centres revealed that there are only two specialist paths related to the dairy production subsector in public vocational institutes: **assistant veterinarian** and **assistant agricultural engineer**. The directors considered existing curricula to be generally up-to-date and stressed the importance of practical training as much as theory. Many of the occupational specializations that TVET centres were asked about are not covered by the current Lebanese curriculum, however.⁷ For instance, the available specialist paths relevant to the dairy subsector are only linked with milk production, with no path specific to milk transformation (for example, food technician) currently being offered. To make up for this gap, all the companies interviewed—all of which also disclosed that they lacked any established system for collaboration with TVET centres—explained that they provided in-house training, with a skills assessment period prior to hiring workers. TVET centres are currently facing a series of financial challenges preventing them from focusing on practical training, which creates a ripple effect in the market. The companies interviewed said that no job applicants possessed sufficient experience, which was singled out by respondents as the most important factor in the hiring process. Ten of the eleven dairy companies interviewed (91 per cent) also pointed out that their workers in the identified occupations tended not to have certification in their respective line of work, with the exception of food safety. Indeed, the only occupation where properly recognized certification was universally required for hiring was food safety specialist. Informal labour, most commonly in the milker and delivery stockman occupations, was provided by family members, commonly to make up for the lack of adequately skilled labourers. Women play a very limited role in dairy production and processing compared to men, the employers interviewed explaining that women predominantly occupied posts concerned with food safety—though some female workers occupied machine operator and dairy processor positions.⁸

The non-alcoholic beverages subsector encompasses a wide variety of drinks, ranging from fruit and vegetable juices, soft drinks, ciders, etc. to non-alcoholic versions of usually alcoholic drinks (such as beer). It is a highly competitive subsector: while a handful of domestic (such as Bonjus, Balkis, Libanjus, etc.) and international main players (including Pepsi) operate within the Lebanese juice market, smaller producers (such as juice and cocktail shops) distinguish themselves from their competitors through branding. In terms of occupations and skills needed, non-alcoholic beverages companies reached through scoping calls identified **machine operators, labellers and packagers, food safety specialists, cleaners and sorters**, and **fruit harvesters** as occupations in demand, formal skills training being available only for the specialist occupations machine operator,⁹ labeller and packager,¹⁰ and food safety.¹¹ Companies also cited **technicians** and **delivery workers** as occupations in demand.

5 For food safety specialists, a BS in food safety and quality assurance is offered by several universities for those wishing to work in this field. Alternative TVET degrees in this field include a Superior Technician Certificate (TS) in public health and food safety and a Technical Bachelors (LT) as a food inspector. UNESCO, *Work-Based learning study reviewing work-based learning (WBL) programmes for young people in Lebanon* (2018)

6 For machine operators, an LT in “Food Industry Production Management”, a TS in “Food Manufacturing”, “Mechanical Maintenance” or “Production Mechanics”, and a BT in “Food Manufacturing”, “Mechanical Maintenance” or “Production Mechanics” are available for this vocational path. UNESCO, *Work-based learning study reviewing work-based learning (WBL) programmes for young people in Lebanon*

7 Such specializations fall outside the scope of what is currently offered by Ministry of Agriculture-affiliated TVET institutions, and therefore the skills and competencies related to these occupations are not covered by the current curriculum.

8 Only two of the companies interviewed, Elias Baroud Establishments and Miled Bou Akl Establishment, stated that they had female workers as machine operators and dairy processors. In the case of Est. Elias Baroud, four out of five workers in this occupation were female (80 per cent), while at Est. Miled Bou Akl, four out of six workers in this occupation were female (67 per cent).

9 For machine operators, an LT in “Food Industry Production Management” (see Table 14 under Section 3.2 for more information), a TS in “Food Manufacturing”, “Mechanical maintenance” or “Production Mechanics” and a BT in “Food Manufacturing” “Mechanical maintenance” or “Production Mechanics” are available. UNESCO, *Work-based learning study reviewing work-based learning (WBL) programmes for young people in Lebanon*

10 For labeller and packager, a BT in “Food Manufacturing” and a TS in “Food Manufacturing” are available.

11 For food safety specialists, a BS in “Food Safety and Quality Assurance”, a TS in “Public Health and Food Safety” and an LT as “Food Inspector” are available. UNESCO, *Work-based learning study reviewing work-based learning (WBL) programmes for young people in Lebanon*.

Like the dairy companies, responding non-alcoholic beverages companies overwhelmingly stressed the importance of past relevant experience as the most important credential, with two exceptions: (1) food safety inspector, which requires applicants to have a university degree, and (2) machine operators, who, ideally, should have a Superior Technician Certificate (TS) in electronics. Almost all the companies reported a skills gap for the occupation of machine operator, in particular. Again like the dairy companies, linkages between the interviewed non-alcoholic beverages businesses and TVET institutes were weak, with only one company reporting some form of contact with TVET centres. Interviews with Ministry of Agriculture-affiliated agricultural institutes revealed that current curricula lacked specialty paths and expertise related to the production of non-alcoholic beverages. As in the dairy production subsector, companies therefore tended to rely on informal in-house evaluations to determine skill level and employment. Upskilling and reskilling also took place in-house where companies had the resources to do so; however, such training—which usually targeted machine operators, technicians, food safety specialists, and labellers and packagers—tended to be unstructured and unofficial. Informal labour was not very common in the companies interviewed, the only exception being fruit harvesters due to the seasonal nature of this occupation. In terms of gender distribution, women predominantly occupied administrative roles (such as in accounting, human resources, and sales) while male workers were more present at the factory level.

TVET institutes are unable to adequately prepare their students to enter the labour force, and the scarcity of direct linkages between TVET institutes and the private sector acts as an additional bottleneck to their entry due to the skills mismatches these divisions cause. Outside of the LP Dual System programme¹²—which was already facing several challenges even before the crisis, such as lack of skilled personnel and technology—Lebanon lacks structured work-based learning schemes that offer students a framework with rules regarding timeframe, subject matter, role and duties of firms and supervisors, and monitoring programmes. In the same vein, since connections between the private sector and TVET are limited, there is often no organized pathway for students' entry to the labour market, and they lack the knowledge and ability to make informed decisions about which career path to choose. When developing curricula, a sectoral approach is more likely to result in successful skills development. It is crucial to engage the private sector in this process in order to increase the credibility and relevance of curricula.¹³ School advisory boards represent a concrete opportunity to involve private sector employers with staff from TVET institutions and ensure that TVET programmes adhere to actual labour market dynamics. Public-private partnerships (PPPs) are vital for strengthening and managing a national certification system because they may enhance the standard of the procedure and the authenticity of certifications that reflect learning and skills development. None of the employers interviewed in either of the two subsectors offered apprenticeships or a form of work-based learning.¹⁴

Regarding informal occupations, a common theme noted across both sectors is that informal occupations tend to be seasonal or of short duration. Informal oral contracts are common in both subsectors, especially for occupations such as milkers and fruit harvesters, for whom demand is often seasonal. Several policy action are needed to address these underlying issues, such as requiring that all contracts be written and increasing the inspectorate capacities of the various ministries responsible. Creating linkages between Ministry of Agriculture-affiliated TVET centres and businesses to allow TVET centres to receive workers for formal training and certification would also improve the skill sets of seasonal workers and broaden their job opportunities. Another informal occupation, delivery stockman, does not currently have any formal qualification system, despite being in high demand, according to the companies interviewed. Efforts in this case to

12 A system that combines apprenticeships and vocational education in one course.

13 Muriel Dunbar, "Engaging the private sector in skills", UKFIET International Conference on Education and Development (2015)

14 An apprenticeship is a type of workplace learning involving the methodical acquisition of all the skill sets required for a certain job. Apprentices must be able to obtain legitimate accreditation from the private sector attesting to their skills. These credentials may help an apprentice earn more and improve their career prospects.

support the transition to formalization should include organizing training sessions and conducting a skills test to award an occupational practice licence. Involving all concerned parties in the design and implementation of skills tests, especially private sector employers, would allow the skills test to reflect current employers' needs, as well as improve the overall perception of skills recognition and certification programmes in the country. This form of skills testing should not be exclusive to the delivery stockman occupation, but should be extended to other informal occupations, such as fruit harvesters, in the subsectors as well.

In the dairy production subsector, the most notable skills and employability gaps were management, production and distribution skills. For example, farm managers require technical support ranging from training in soft skills, marketing skills, budgeting skills, market studies, and so on. This is because farm managers play an important role in ensuring a decent work environment and proper business operations, and must therefore possess a wide range of skills. On the production side, the dairy subsector has two essential fields, livestock and processing. In the case of livestock, many farmers today lack the knowledge of livestock management and feeding practices necessary to produce good quality milk. As for processing, workers often lack basic technological skills such as how to operate machinery and equipment correctly, the technical skills required for milk pasteurization, cheese moulding, packaging, etc. For distribution, many companies reported having to rely on their personnel and their distribution chains as their main source of exposure, as they cannot afford large marketing campaigns. Delivery stockmen are generally needed across the dairy sector, with companies seeking employees with a high level of emotional intelligence, as well as good marketing and customer service skills.

In the non-alcoholic beverages subsector, the most notable skills and employability gaps were production and repair skills. Production skills are essential in this subsector, as they are in the dairy subsector. Machine operators were among the occupations most in demand by the companies interviewed, there being a significant skills gap. Companies reported difficulty finding skilled labourers with knowledge of the machinery used in their company and/or who possess relevant previous experience in using these machines. Technicians were also much in demand. This occupation requires skills to maintain machine operations, adjust machines before and after use and repair them if necessary, all in accordance with food hygiene regulations to guarantee that food safety standards are met throughout all stages of production.

An emerging theme, observed globally and in the study, is the increasing demand for soft skills in both agri-food subsectors. The most common soft skills in demand by employers in both subsectors, and across nearly all occupations, are communication skills, and specifically the ability to understand instructions, communicate with clients and report back to supervisors. As more companies seek to become certified by the International Organization for Standardization (ISO) and to adhere to international best practices, the emphasis on good hygiene and sanitation skills has also increased. As for future demand for skills in the two subsectors, digitization is increasing at a rapid pace, requiring the next generation of agri-food workers to have both domain expertise and enhanced digital literacy in agri-food systems in order to match the move towards automated manufacturing processes. Strengthening existing modules on entrepreneurial and life skills,¹⁵ as well as introducing modules on digital technology in TVET school and agricultural institute curricula, could foster the building of skill sets that are beneficial and relevant to digital development in the agriculture and agri-food sectors.

15 Representatives of the Ministry of Agriculture TVET centres interviewed stated that recent revisions of the curriculum, made with the technical support of the FAO, emphasized the development of entrepreneurial skills.

Key recommendations

1. Adopt a sectoral approach in the development and updating of TVET curricula in order to increase the credibility, relevance and accessibility of material.
 - a. Build the capacity of school advisory board members and enhance their competencies to improve the performance of boards in Lebanon's TVET institutions.
 - b. Develop partnerships between industry employers and training providers to strengthen curricula, train teachers and provide work-based learning opportunities.
2. Strengthen public employment services in the country to gather recent labour market information through the development of a labour market information system (LMIS) to inform the modernization of Lebanon's TVET education system and develop skills anticipation strategies.
 - a. Establish employment guidance officers in all public and private schools, whose technical capacity to conduct tracer studies will be supported by specialized international organizations.
3. Support the adoption of a competency-based education and training (CBET) system, facilitated by multi-stakeholder collaboration between the Directorate General of TVET and private sector representatives.
 - a. Set up a national quality assurance framework (NQAF) in order to gather information and gain oversight on the competence, performance and standards of practice in TVET institutes.
 - b. Establish mechanisms for the recognition of prior learning (RPL) that officially recognize the skills workers acquire on the job and testify to their experience if they seek a new job.
4. Create a modular system with specialized modules to give opportunities for students to pursue training and courses tailored to their desired specialty.
5. Provide opportunities for businesses to send their workers to receive formal training at TVET institutes by offering short-term training courses.
6. Organize training courses and conduct a skills test to award an occupational practice licence to workers in the informal economy.
7. Strengthen existing modules pertaining to entrepreneurial and life skills and introduce modules on digital technology in TVET school and agricultural institute curricula to foster the building of skill sets that are beneficial and relevant to digital development in the agriculture and agri-food sectors.

PART 1: INTRODUCTION AND OVERVIEW

1. Introduction

This report presents an analysis of the current status and trends in two selected agri-food subsectors in Lebanon, (1) dairy production, and (2) non-alcoholic beverages. It is part of the International Labour Organization (ILO) SOLIFEM project. The general objective of the SOLIFEM project is to support the transition from the informal to the formal economy through tripartite social dialogue in Lebanon and other countries in the region, including Algeria, Egypt and the Occupied Palestinian Territories (OPT). It will pursue this objective by strengthening the capacity of the ILO tripartite constituents to act through social dialogue on two fronts: first, the development of integrated strategies on formalization; and, second, the development of skills training and recognition systems, with a particular focus on women and youth. Developing the capacity of young women and men in the formal and informal labour markets will help them overcome challenges in accessing formal jobs in the sector, and support the national initiative of the Ministry of Industry in responding to food security crises that may arise as a result of the economic and political situation.

More specifically, this study addresses Outcome 2 of the SOLIFEM project, concerning skills development systems that enable young people and women in the informal economy to access formal employment, with a particular focus on the agri-food sector. The SOLIFEM reference group, composed of the ILO tripartite constituents, selected this sector to examine how skills in the sector can be upgraded and recognized to serve as an example of how meaningful change can be brought about to improve levels of decent employment in Lebanon. This report therefore presents the results of an analysis of the skills system of the Lebanese agri-food sector, focusing on the current status and trends in the demand for skills in formal and informal occupations,¹⁶ and the skills needs in the selected subsectors, dairy production and non-alcoholic beverages. It is organized in three parts. Part 1 provides a description of the methodology used, a brief background of the socio-economic context of Lebanon, paying particular attention to the interaction between Lebanon's current education and training systems, labour market mismatches, and the rise of informality; it also outlines national development and employment policies, including labour legislation, social protection mechanisms, and labour market information and employment systems. Part 2 provides an overview of the business environment of the two selected agri-food subsectors, an analysis of regional and world market trends, the position of the subsectors in regional and world markets, and the competencies and skills supplied through national TVET curricula and those most in demand, as reported by the employers interviewed.

¹⁶ This refers to skills that are not provided by formal TVET centres and for which no certification is available.

2. Research design

This report was prepared following the selection of two agri-food subsectors—dairy production and non-alcoholic beverages—with the assistance of a reference group comprising representatives of the trade unions CGTL and FENASOL, the Association of Lebanese Industrialists, the ministries of labour, agriculture, and industry and the Ministry of Education Directorate General of TVET. The data collection process began in August 2023 and ended the following month. Throughout this period, 22 companies working in the subsectors were contacted for the purpose of understanding their demand for skills, industry trends and informality in the subsectors.

In order to narrow down the scope of the study, five specific occupations within each subsector were selected as the primary focus of the study. These occupations were validated at the beginning of each interview conducted with companies (see Annexes 2 and 3), during which interviewees were asked to confirm their relevance and applicability (post-selection validation). The criteria for the pre-selection of the five occupations were as follows:

1. Two or three occupations with specific skills officially recognized by educational institutions, (occupations for which formal skills training and certification is available); and
2. Two or three occupations in the informal economy (skilled work but the occupations have not been recognized and formal skills training is not available).

A total of ten scoping calls (five per subsector) were conducted with companies in order to determine the most relevant occupations in their respective subsector. As there is a limited number of companies operating in the two subsectors, scoping calls were conducted with companies selected on the basis of their presence and visibility in the market and their geographic distribution, to ensure that they were representative. The occupations were then compiled and are tabulated below as follows:

Table 1: Occupations identified in the dairy production and non-alcoholic beverages subsectors.

Subsector	Occupation 1	Occupation 2	Occupation 3	Occupation 4	Occupation 5
Dairy production	Farm manager	Delivery stockman	Milker	Food safety specialist	Machine operator
Non-alcoholic beverages	Machine operator	Labelling and packaging	Cleaners and sorters	Food inspector	Fruit harvester

Additionally, the directors of all nine agricultural institutes and vocational centres operating in Lebanon were contacted for interview (see Annex 1 for questionnaire). Six agreed to respond to the questionnaire, three did not (Table 2). The director of the Technical Institute for Food Industries-Qab Elias was also contacted and interviewed.

Table 2: List of Ministry of Agriculture-affiliated agricultural schools.

Governorate	Name of school	Accepted (✓)
Nabatiyeh Governorate	Khiyyam Agricultural School	✓
	Al-Nabatiyeh Agricultural School	✓
Mount Lebanon Governorate	Baakleen Agricultural School	✓
	Fanar Agricultural School	✗
Beqaa Governorate	Nasriyet Rizk Agricultural School	✓
	Rachaya Agricultural School	✓
	Jeib Jnein Agricultural School	✓
North Governorate	Al-Batroun Agricultural School	✗
Akkar Governorate	Al-Abdeh Agricultural School	✗

2.1. Data collection tools and desk review

Interviews were scheduled with employers and owners of businesses working in the dairy production and non-alcoholic beverages subsectors (Annex 4). The interview guidelines (see Annexes 3 and 4) were structured around the following themes:

- ◆ General overview of the company (size, main activities, annual turnover, export markets, registration status, etc.)
- ◆ Workforce and recruitment (job openings, relevance of the five occupations, desired competencies per occupations, skills gaps, recruitment process, role of certification, etc.)
- ◆ Strategy and skills gaps (proficiency of current staff, educational background, relationship with TVET and training providers, in-house training, anticipated skills needs, future growth, etc.)

The interview questions were drafted and revised in close cooperation with ILO technicians and translated into Arabic. The data collection was further supported by a review of recent publications of the ILO and other international development agencies, such as the World Bank, the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Development Programme (UNDP).

The questionnaire used during the interviews with directors of agricultural institutes and vocational centres (Annex 1), covered the following themes:

- ◆ Available training programmes (for each subsector and occupation, targeted skills, main competencies, potential for recognized qualification, presence of entrepreneurial skills, demographics of students).
- ◆ Curriculum and qualifications (national and internal targets, labour market information dissemination, frequency of updates, post-training support for graduates, correlation between certification, vulnerability, and informality).

Two focus group discussions were held, one with employers in the dairy subsector, the other with employers in the non-alcoholic beverages subsector. Participants were asked questions about skills gaps in different occupations, whether or not they collaborate with TVET institutes and other training providers to upskill and reskill their workers, and what role certification plays in the transition from informal to formal labour.

2.2. Research limitations and challenges

Only a limited number of companies agreed to participate in the study, especially in the non-alcoholic beverages subsector. This could be attributed to the larger size of such companies, and the several administrative procedures that the companies would have to follow to agree to participate. Further complicating the data collection phase, which occurred throughout the month of August 2023, was the fact that the personnel contacted were unavailable, many being out-of-office or unavailable due to summer hours, which hindered scheduling capacity.

3. Socio-economic context of Lebanon

3.1. Financial and monetary crisis

In October 2019, Lebanon entered a state of acute economic and financial crisis due to a sudden halt of capital inflows, which triggered successive crises related to banking, debt and sovereign default, and the exchange rate.¹⁷ Lebanon's protracted economic downturn persisted in 2023, entering its fifth consecutive year. Real gross domestic product (GDP) is anticipated to have fallen by 2.6 per cent in 2022, after a combined four years of GDP loss of 37.2 per cent (2018-2021).¹⁸ The value of the national currency, the Lebanese pound (LBP), is a stark indicator of the absence of economic stabilization: it had lost more than 98 per cent of its value by February 2023.¹⁹ Despite attempts by the Central Bank (Banque du Liban) to stabilize the BNR (the banknote rate/parallel market) starting in December 2021 by using its US dollar reserves, the BNR averaged 31,102 LBP/US\$ in 2022.²⁰ Since the beginning of 2023, the devaluation of the BNR has increased, breaking through 140,000 LBP/US\$ amid escalating tensions, bank strikes and comparatively fewer foreign exchange (FX) interventions by Banque du Liban.²¹ A multiple exchange rate system surfaced to buy and sell currency, set import and other tariffs, and record internal accounts. This has created economic inefficiencies, inaccurate records and opportunities for rent-seeking. Mostly as a result of the depreciation of the Lebanese pound, inflation in 2022 reached 171.2 per cent, among the highest rates ever recorded. According to the Spring 2023 edition of the World Bank Lebanon Economic Monitor, the biggest contributor to inflation in 2022 was the increase in the cost of food and non-alcoholic beverages.²² Throughout 2022, food inflation rose by 240 per cent on average, hitting a high of 483 per cent year-on-year in January 2022.

17 World Bank, "Lebanon's Economic Update", October 2020.

18 World Bank, *Lebanon Economic Monitor, Spring 2023: The Normalization of the Crisis is No Road for Stabilization* (May 2023)

19 Reuters, "Lebanon to sell unlimited US dollars to prop up collapsing pound" (March 2023)

20 For twenty-five years and throughout most of the crisis, the official exchange rate had been set at LBP1,515/US\$1, as set by Banque du Liban in 1997. Although this was updated to LBP15,000/US\$1 in February 2023, the official rate is still below the real market value of the Lebanese pound, which was trading at roughly LBP60,000 to the dollar at the time of the official devaluation.

21 World Bank, *Lebanon Economic Monitor, Spring 2023*

22 World Bank, *Lebanon Economic Monitor, Spring 2023*

3.2. Lebanon's labour market and the rise of informality

Amid the volatile economic and financial conditions, unemployment—of youth in particular—is rising steadily; Lebanon's informal sector, meanwhile, has expanded. A follow-up Labour Force Survey (LFS) to the 2018-2019 *Labour Force and Household Living Conditions Survey* (LFHLCS) conducted by the ILO and the Central Administration of Statistics (CAS) found that Lebanon's national labour force participation rate (LFPR) had plummeted by more than 5 per cent, from 48.8 per cent in 2018-2019 to 43.4 per cent in January 2022.²³ The survey found that almost one third of the labour force was unemployed in January 2022.²⁴ This increase can be explained by low levels of job creation resulting in dwindling employment prospects, and the combined impact on firms of the compounded crises, including the COVID-19 pandemic and the Port of Beirut explosion.²⁵

One feature of the Lebanese labour market is that a significant number of workers operate in the informal sector, which has expanded since the crisis. The spread of informality can be attributed to numerous factors, ranging from understaffed and ill-equipped government enforcement agencies failing to ensure compliance, lengthy and costly registration processes and lack of perceived incentives to register, and the prevalence of oral contracts in certain economic sectors with high levels of seasonal and part-time employment (such as agriculture and construction), to political deadlock and the shift to a cash-based economy.

Table 3: Employment by informality of jobs and informal sector, comparison between the Lebanon LFHLCS (2018-2019) and the follow-up LFS (2022)

	2018-2019 (%)	2022 (%)	% Change
Employment in the informal sector	35.2	48.3	+13.1
Informal employment	54.9	62.4	+7.5

Young people have also been seriously affected by the economic crisis and are struggling with increased unemployment and underemployment. The ILO estimates that about 50,000 Lebanese young people enter the labour market each year,²⁶ but few are actually able to secure a job. While personal factors (such as limited funds and professional networks) play an important role in keeping the youth out of the labour market, structural barriers at the level of the education system and legislation and policy present further obstacles, forcing them either to engage in irregular and informal work or leave the country to find better opportunities abroad.²⁷

3.3. Existing Lebanese education and training system and labour market mismatches

In Lebanon, the education and training system offers various pathways and levels. Education is structured into five cycles, each of which is divided into three main stages: preschool, basic education (split into elementary and intermediate) and secondary education. Preschool education

23 CAS and ILO, *Lebanon follow-up Labour Force Survey January 2022* (2022)

24 CAS and ILO, "Lebanon Follow-up Labour Force Survey – January 2022 Fact Sheet" (January 2022)

25 The World Bank Enterprise Survey, conducted throughout 2019-2020, found that almost one in five of the firms surveyed was assumed to be permanently closed, and one in four doubted that recovery was possible. See World Bank, "What the mega-crises have done to Lebanese firms and workers" (October 2021)

26 ILO and UNICEF, *Synthesis of the crisis impact on the Lebanese labour market and potential business, employment and training opportunities* (June 2022)

27 UNICEF, *Searching for Hope: A grim outlook for youth as Lebanon teeters on the brink of collapse* (January 2022)

(cycle 1) begins when children are three to four years old and prepares them for school by improving their physiological, moral and intellectual capabilities. Elementary education includes grades 1 to 3 (cycle 2), as well as grades 4 to 6 (cycle 3); intermediate education consists of grades 7 to 9 (cycle 4). Education is not compulsory from this point onwards.²⁸

In lower secondary school (grades 7 to 9), students have the option of enrolling in complementary vocational courses (BP), alternatively known as split vocational courses, which are taught in DGTVE institutions. Such students receive the *Certificat d'Aptitude Professionnel* (CAP) upon completion of this vocational track. The CAP is a requirement for the *Brevet Professionnel* (BP), which students must hold in order to continue pursuing TVET at the upper secondary education level²⁹.

In 2012, Decree No. 8590, split TVET into two tracks: technical education and vocational training.³⁰ Once they have received the BP, students can pursue their TVET education in either of the following streams:

- ◆ **Technical education** is for trades that need applied and practical scientific knowledge and advanced techniques. There are three levels of technical education: executive, middle and higher:
 - The executive level leads to a Technical Baccalaureate Certificate (BT) and takes three years to complete.
 - The middle level leads to the Superior Technician Certificate (TS) and takes two years to complete.
 - The higher technical level is divided into two paths:
 - The Technical Bachelor Certificate (LT): Students who already have a Superior Technician Certificate (TS) may enrol in this level to complete the requirements for a Technical Bachelor Certificate (LT).
 - The Technical Educational Bachelor Certificate: Students who have already obtained a General Secondary Certificate or a Technical Baccalaureate can enrol in this level to acquire a Technical Education Bachelor Certificate (LET).
- ◆ **Vocational training** is concerned with manual trades requiring less extensive skill sets than the technical education track. Vocational education is divided into three strands:
 - The complementary level, which ends in the intermediate vocational level and leads to a *Brevet Professionnel* (BP). Programmes at this level last two years.
 - The executive level, which is the secondary vocational level and leads to a secondary certificate LP (DS-Dual System). Programmes take three years to complete.
 - The highest certificate for vocational education in Lebanon is a Meister degree and takes two years to complete.

According to UNESCO figures, as of 2019, there were 168 public TVET providers, and 398 private vocational and technical schools, all of which came under the supervision of the Ministry of

28 UNESCO International Bureau of Education, “Lebanon: early childhood care and education (ECCE) programmes” (2006)

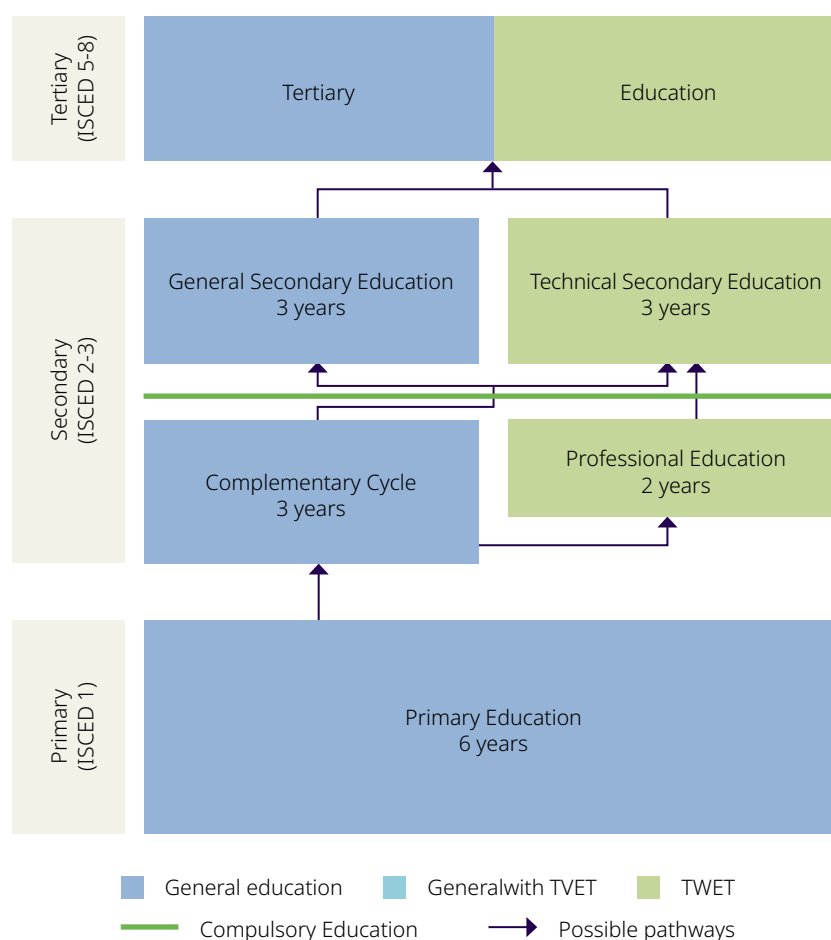
29 Ministry of Education and Higher Education, ILO and others, *National Strategic Framework for Technical Vocational Education and Training in Lebanon 2018-2022* (June 2018)

30 UNESCO, “TVET Country Profiles: Lebanon” (August 2022)

Education and Higher Education.³¹ Of these, only one TVET school specializes in agri-food: the Agro-Food Technical Institute of Qab Elias. The Ministry oversees the administration of TVET services through the Directorate General of TVET. These services include both TVET supply and performance monitoring of commercial educational institutions and training providers, including non-governmental organizations (NGOs). The key tasks of the Directorate General also include issuing diplomas and certificates, the conduct of public TVET examinations, and collaboration with other TVET providers.³²

The dual system/apprenticeship system, often referred to as the LP Level, provides training for eight different trades, including industrial electricians, industrial mechanics, restaurant service, car mechanics, heating and sanitary/plumbing, woodworking, production chef, metal construction, and maintenance.

Figure 1: Education, training, vocational, and career paths in Lebanon. Source: UNESCO-UNEVEC



Only three trades are available for training at Meister level. Only a small handful of institutions offer training at the LP and Meister levels. It is important to note that students who successfully complete their first year of BT are eligible to advance to the second year of their preferred specialization in the LP level.

According to a study on work-based learning in Lebanon published by UNESCO in 2018,³³ other than the LP Dual System programme, the country lacks structured schemes offering a framework with rules on timeframe, subject matter, role and duties of firms and supervisors,

31 UNESCO, "TVET Country Profiles: Lebanon"

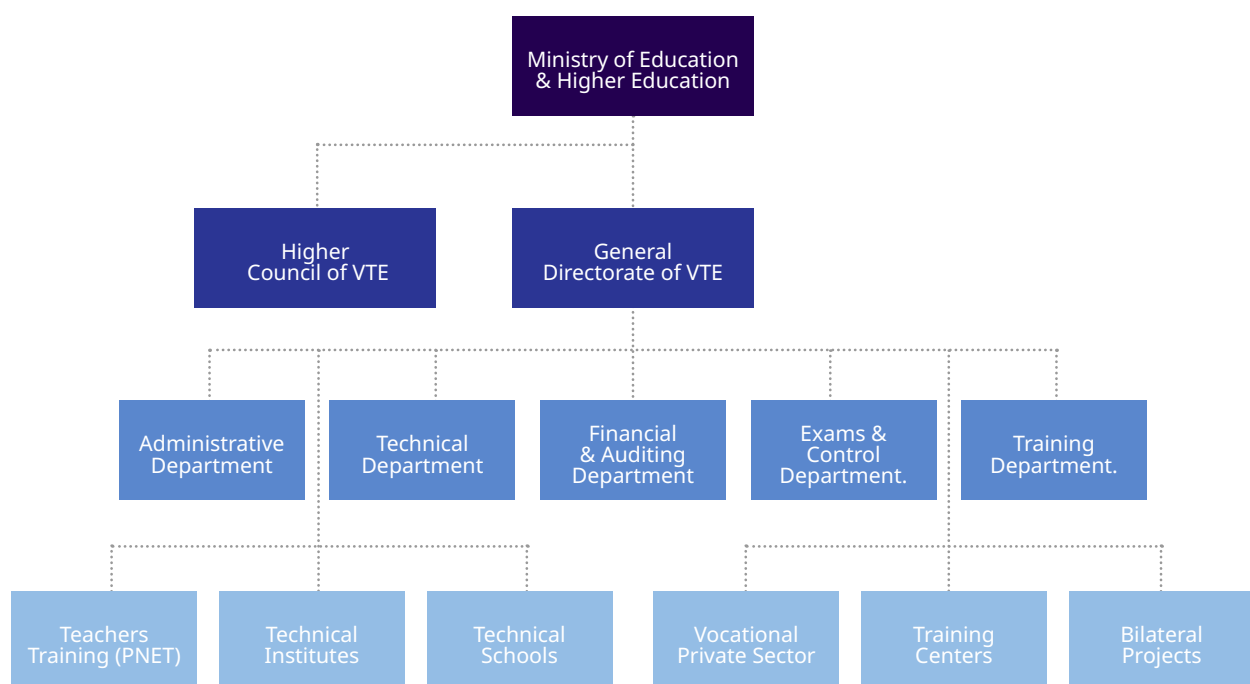
32 UNESCO, "TVET Country Profiles: Lebanon"

33 UNESCO, *Work-Based Learning Study Reviewing Work-Based Learning (WBL) Programmes for Young People in Lebanon*

monitoring programmes, etc. The dual system also faces many challenges of its own, most notably the lack of suitably qualified teachers. Keeping teachers up-to-date with advances in technology in their disciplines is challenging, and this has repercussions on the quality and relevance of their teaching. Companies also face a shortage of qualified trainers who can connect the theoretical education supplied by vocational schools with the practical training delivered by businesses. These two key components of the apprenticeship system create serious gaps in the training provided. The study also noted that first year students are also prone to drop out of their apprenticeship programme due to limited career guidance. Students who drop out tend not to return if they start earning wages, and employers tend to keep students who have not completed their education because they can offer them lower wages. Only a few enterprises participate in work-based learning because these types of programmes depend on connections and personal relations between schools and the private sector and Lebanon does not have an institutional and organized pathway for youth to enter work-based learning.

Ministries other than the Ministry of Education and Higher Education play key roles in TVET provision and governance. For example, the Ministry of Social Affairs provides short informal vocational training courses through NGOs and 220 affiliated social development centres, and provides graduates with certification upon successful completion of courses. The Ministry of Agriculture oversees the management of agricultural schools agricultural programmes provided by public schools.³⁴ NGOs offer non-formal or informal education. Non-formal education usually consists of short-term courses (three months/300 hours), mid-term courses (six months/600 hours), and long-term courses (nine months/900 hours). The distinguishing feature of non-formal education is that it is intended to supplement formal education in the framework of an individual's lifelong learning. A certificate is given by the school and the Directorate General of TVET after the course is finished. Informal education tends to be less structured and takes place in the family, workplace, or at the community level. Those who complete this form of training usually receive an unofficial certificate of attendance.³⁵

Figure 2: Administrative structure of the Directorate General of TVET. Source: UNESCO-UNEVEC



34 European Training Foundation (ETF), *National Qualifications Framework - Lebanon*, July 2021

35 UNESCO, *Work-Based Learning Study Reviewing Work-Based Learning (WBL) Programmes for Young People in Lebanon*

4. National development and employment policies

4.1. Labour Law, employment contracts and minimum wage policies

The main purpose of the Lebanese Labour Law (1946) is to safeguard the rights of workers in the employer-employee contractual relationship. Structural and context-specific loopholes can impede its application, however, particularly in relation to oral contracts. The Labour Law stipulates that oral and written contracts are equally valid so long as they respect “the authority of Common Law” (Article 12).³⁶ Oral contracts, or verbal agreements, are generally more common in sectors with high levels of seasonal and part-time employment such as agriculture. However, there are several challenges associated with oral contracts, most stemming from the difficulty of verifying them. There are ways of verifying an oral contract, notably witnesses to the agreement, and evidence of continuous wage payments, but payments are frequently made in cash without paperwork, especially since the financial crisis in Lebanon and the expansion of the cash economy.³⁷ An ILO survey assessing informal employment among vulnerable Lebanese citizens and Syrian and Palestinian refugees,³⁸ found that 46.5 per cent of eligible workers in the sample had no work contract, and 20.9 per cent had a verbal agreement.

The Labour Law also covers the minimum wage, requiring an employee’s remuneration to reflect the nature of their work and to be sufficient to meet their basic needs and those of their family, provided that it does not fall below the legal minimum wage (article 44).³⁹ Article 45 further provides that the statutory minimum wage shall be set by a committee composed of representatives of the Ministry of Labour, employers and employees, and shall be subject to periodic revision depending on the state of the economy. Accordingly, in May 2022, President Michel Aoun signed Decree No. 9129, which increased the cost-of-living allowance for employees and workers subject to the Labour Law.⁴⁰ The criteria used to decide increases in compensation have historically been ambiguous, however, while implementing the already low minimum wage has traditionally proven difficult, particularly in informal enterprises, where it is particularly vital due to the socio-economic and legal vulnerability of workers engaged in informal employment.

4.2. Social protection systems

Lebanon’s main social insurance mechanism, the National Social Security Fund (NSSF), is severely burdened. It is responsible for providing formally employed workers in the private and public sectors with health insurance, family allowances, and end-of-service indemnities (EOSI). The depreciation of the Lebanese pound and the dollarization of healthcare costs have caused serious disruption to the system as NSSF revenues are unable to cover the dollarized medical expenses.⁴¹ A large proportion of the Lebanese population has no health care coverage, and the bulk of health care expenses are borne by households.⁴² Access to health insurance therefore remains a major concern for workers and employers alike, as companies are compelled to pay a 23 per

36 [Lebanese Labour Law \(1946\)](#)

37 World Bank, *Lebanon Economic Monitor, Spring 2023: The Normalization of the Crisis is No Road for Stabilization* (May 2023)

38 ILO, *Assessing Informality and Vulnerability among Disadvantaged Groups in Lebanon: A Survey of Lebanese, and Syrian and Palestinian Refugees* (August 2021)

39 [Lebanese Labour Law \(1946\)](#)

40 National News Agency, “President signs decree to set cost of living allowance for employees and workers subject to Labor Law” (12 May 2022)

41 The market rate in October 2023 is 89,700.

42 ILO, *Extending Social Health Protection in Lebanon: The role of the National Social Security Fund (NSSF) in achieving Universal Healthcare Coverage* (October 2020)

cent contribution to the NSSF, along with other private benefits to try to retain their workforce. An additional challenge for the NSSF is the underreporting of salaries, which significantly decreases its revenues and thus limits its capabilities and benefits.⁴³ Tackling social security challenges is a fundamental step towards the transition from informal to formal employment.

Moreover, the NSSF does not provide key social protection benefits such as unemployment insurance,⁴⁴ and excludes large categories of workers, such as the self-employed, agricultural workers not in permanent employment, domestic workers, and foreign workers from countries with no bilateral social security agreement, and its healthcare scheme does not cover work-related injuries.⁴⁵ This is particularly concerning in relation to construction workers and other occupations highly prone to work-related injuries.

4.3. Labour market information and employment systems

Lebanon still lacks a comprehensive labour market information system to aggregate, analyse, and anticipate labour market needs and trends. There is a dearth of information concerning supply/demand dynamics within the Lebanese labour market, which can be attributed to certain recruitment practices used by enterprises and job-seekers. While several channels offer employment services, such as the Ministry of Labour National Employment Office (NEO), NGOs and donor-funded agencies, enterprises seem reluctant to use them. Instead, businesses prioritize other means, including newspaper advertisements, online job postings on web portals and word-of-mouth referrals by friends, family and co-workers. They reject employment service providers and public employment offices on the grounds that they allegedly fail to send them adequately qualified employees, sometimes on purpose.⁴⁶ These recruitment practices prevent the collection and analysis of crucial data on supply and demand in the labour market, and in so doing impede employment services from promptly and efficiently meeting demand and offering accurate advice and insights. There is no centralized authority in charge of aggregating, analysing and disseminating labour market data outside the Central Administration of Statistics. The result is that the main sources of labour market information are a cluster of household surveys, sector studies, and data collected by organizations such as CAS and national and international NGOs.⁴⁷ Labour market information is crucial to matching workers to job opportunities and identifying emerging trends and opportunities. Improving the way this data is collected and disseminated would feed into skills anticipation strategies, enabling labour market actors (employers, employees, training providers and policymakers) to make informed educational and training decisions, enhance human capital development and help reduce skills gaps by meeting future skills demand.⁴⁸

43 A recent financial assessment of the NSSF conducted by the ILO found that the sickness and maternity liability backlog (representing the estimated backlog for hospitalization and out-patient medical dues was estimated at LBP300 billion for 2020. Unaccounted for in-hospital dues and claims were LBP600 billion as long ago as the end of 2019. EOSI liabilities were estimated at LBP9.218 billion, including approximately LBP1,469 billion worth of employer settlement liabilities. The impact of the recent decree increases this liability by LBP3.6 trillion, of which nearly LBP3.5 trillion are additional employer settlement liabilities, significantly worsening the NSSF's financial sustainability.

44 A draft law has been prepared with the support of the ILO to address this issue.

45 ILO, *Extending Social Health Protection in Lebanon*.

46 ILO, "Matching skills and jobs in Lebanon: Main features of the labour market - challenges, opportunities, and recommendations" Policy Brief (April 2017)

47 ILO, "Towards coordinated efforts for effective labour market information and employment services in Lebanon" Policy Brief (April 2017)

48 ILO, "Matching skills and jobs in Lebanon"

PART 2: AGRI-FOOD SUBSECTOR STUDIES

1. Focus one: Dairy production

1.1. Background and economic contribution of the subsector

Lebanon could have a competitive advantage in the production of its national dairy products, such as yoghurt, labneh and double-crème cheese.⁴⁹ Lebanese dairy producers produce very little milk due to deficiencies in the local supply chain and high operating costs, making it difficult to make a profit.⁵⁰ According to the Investment Development Authority in Lebanon (IDAL), dairy goods accounted for 18 per cent of total imports in 2019. In the following year, exports of dairy products, eggs, honey and other edible products totalled US\$4.98 million.⁵¹ Dairy intake makes up approximately 11 per cent of the average Lebanese diet; in 2017, Lebanon produced an estimated 5,809 tonnes of yoghurt and imported 469 tonnes.⁵² The retail price of labneh has been driven up by the crisis conditions, as well as enduring deficiencies in the local supply chain. In particular, operating costs, including refrigeration, storage, cooling and transportation costs, and markup increases by middlemen selling milk from producers to processors, reduce farmers' profits.⁵³ The increase in overall operating costs has prevented the dairy sector from using its full capacity.

The country features a limited range of small ruminants (sheep and goats) and cattle breeds, with domestic "baladi" breeds predominating in milk and dairy production. In 2014, Beqaa governorate, which possesses the largest share of livestock in Lebanon, was home to an estimated 190,442 sheep and 206,305 goats (accounting for 72 per cent and 51 per cent of sheep and goats nationwide in 2014, respectively).⁵⁴ The sheep are predominantly of the Awassi breed—the most widespread in the Middle East—and are raised for mutton, wool and ewe's milk.⁵⁵ ⁵⁶ The main goat breed is the local "baladi" kind, which in 2016 was raised by around 92 per cent of goat breeders surveyed in areas across the North and Mount Lebanon governorates, as well as in the Beqaa valley. Damasquine, Saneen, and alpine goats are sometimes imported for intensive production, although

49 Blominvest Bank, "Lebanese Dairy Sector" (May 2016)

50 David Wood, Jacob Boswall and Sami Halabi, *Going Hungry - The Empty Plates and Pockets of Lebanon: The Fight to Prevent Hunger Amidst Pandemic and Recession, The Pandemic Papers, Triangle* (May 2020)

51 United Nations Sustainable Development Group, "Dreaming of dairy farms: Bringing agricultural skills to Lebanon's Bekaa Valley" (October 2022)

52 David Wood, Jacob Boswall and Sami Halabi, *Going Hungry - The Empty Plates and Pockets of Lebanon*.

53 David Wood, Jacob Boswall and Sami Halabi, *Going Hungry - The Empty Plates and Pockets of Lebanon*.

54 European Union and MercyCorps, *Small Ruminant Dairy Value Chain Assessment* (June 2014)

55 M. H. Fahmy, "Sheep Breeds" *Encyclopaedia of Dairy Sciences* (Third Edition), Academic Press (2022).

56 Ministry of Agriculture and FAO, *The National Report on the Status of the Animal Genetic Resources in Lebanon* (2004)

such cases are limited.⁵⁷ Cattle fall into two types: domestic “baladi” cattle, typically used as draft animals and characterized by low yields,⁵⁸ and cattle imported for breeding and the production of milk; popular choices include Friesian and Holstein Friesian cattle.⁵⁹ IDAL estimates that 26 per cent and 38 per cent of cattle and sheep, respectively, were available in the Beqaa for dairy production in 2018.⁶⁰ Cow’s milk generally accounts for the largest share of milk production (95 per cent), while goat’s and ewe’s milk production represented 3 per cent and 2 per cent of total production, respectively, in 2017.⁶¹

Lebanese producers use several livestock production systems: extensive and semi-extensive, and intensive and semi-intensive, extensive systems being generally associated with smallholders. Extensive production systems require low inputs of labour, capital and fertilizers in relation to land area.⁶² Semi-extensive systems account for around 90 per cent of small ruminant dairy production in the Beqaa, where small ruminant herding is concentrated.⁶³ These systems are characterized by flocks of sheep or goats and occasionally herds of cattle, relying entirely on grazing throughout the yearly grazing period (April to October), with little or no supplemental feed.⁶⁴ Local herders winter their animals at lower altitudes and provide them with feed purchased from input suppliers.⁶⁵ The main breeds used in semi-extensive production systems are Awassi sheep and “baladi” goats.⁶⁶ Intensive livestock production systems differ from extensive systems in their emphasis on maximizing production and profits while minimizing costs; this is achieved by closely monitoring, refining and optimizing the environment in which animals are reared (water, feed, health, temperature, etc.).⁶⁷ Larger small ruminant dairy farmers tend to be high-input, and typically use this approach in conjunction with other advanced production techniques, including better breeds (such as Damasquine, Saneen and alpine goats),⁶⁸ routine health checks and the use of suitable milk-collecting containers (such as stainless steel).⁶⁹ The European Union (EU) and MercyCorps estimated the relative proportion of semi-extensive to semi-intensive production in the Beqaa to be 90:10 in 2014, although this ratio was sensitive to shocks (such as lack of greenery for foraging and grazing and declining precipitation).⁷⁰ In 2016, milk production from local goats was around 145 litres per animal per year, compared to more than 400 litres per year in intensive production systems; milk production from sheep, meanwhile, averaged between 250 and 300 litres per ewe per year.⁷¹ As for cattle, in semi-intensive smallholder systems consisting of one to nine cows, about 3,750 litres per cow is produced annually; for medium-sized producers with herds of 10 to 40 cows, intensive production systems yield over 5,000 litres per cow per lactation, primarily sold to the industrial processing sector.⁷²

57 C. Hosri, E. Talbet and M. Nehme, “Goat and sheep products value chain analysis in Lebanon”, Centre International de Hautes études agronomiques méditerranéennes (CIEHAM) (2016)

58 A draft animal is an animal that has been trained to perform certain labour-intensive tasks, specifically the pulling or drawing of loads. The most frequent types of draft animals are oxen and horses.

59 Ministry of Agriculture and FAO, *The National Report on the Status of the Animal Genetic Resources in Lebanon*.

60 IDAL *Investment Opportunities in Bekaa - Fact Book* (2018)

61 International Fund for Agricultural Development (IFAD), *Harmonised Actions for Livestock Enhanced Production and Processing (HALEPP) Detailed Design Report* (May 2017)

62 Dictionary of Agroecology, “Extensive Livestock Production” (December 2018)

63 Ministry of Agriculture and FAO, *The National Report on the Status of the Animal Genetic Resources in Lebanon*.

64 EU and MercyCorps, *Small Ruminant Dairy Value Chain Assessment*.

65 EU and MercyCorps, *Small Ruminant Dairy Value Chain Assessment*.

66 C. Hosri, E. Talbet and M. Nehme, “Goat and sheep products value chain analysis in Lebanon” in M. Napoléone and others (eds.). *The value chains of Mediterranean sheep and goat products. Organisation of the industry, marketing strategies, feeding and production systems*, CIEHAM Options Méditerranéennes: Série A. Séminaires Méditerranéens; n. 115 (2016)

67 Irvin Mpofu, *The Role of Ecosystem Services in Sustainable Food Systems*, Chapter 7 – “Ecosystem services from different livestock management systems” Academic Press (2020)

68 C. Hosri, E. Talbet and M. Nehme, “Goat and sheep products value chain analysis in Lebanon”

69 Ministry of Agriculture and FAO, *The National Report on the Status of the Animal Genetic Resources in Lebanon*.

70 EU and MercyCorps, *Small Ruminant Dairy Value Chain Assessment*.

71 Chermonics International Inc., *Agriculture and Rural Empowerment (ARE) Activity: Target Value Chain / Sub-Sector Prioritization and Selection. Submitted to USAID Lebanon*. USAID (November 2020)

72 IFAD, *Harmonised Actions for Livestock Enhanced Production and Processing*.

The dairy production subsector has been exposed to numerous shocks and constraints that impeded its productivity, growth and sustainability, even before the October 2019 crisis.

According to the Ministry of Agriculture, the Lebanese agri-food sector is only able to satisfy 20 per cent of local demand.⁷³ As a result, agri-food imports account for a significant share of total imports, an estimated 18 per cent, or US\$2.9 billion between 2014 and 2018, and include animal products, grains and sugar. In spite of subsidies on wheat imports introduced by the Central Bank in 2020, flour hoarding by bakeries, skyrocketing prices of basic food commodities,⁷⁴ increased smuggling, the Beirut Port explosion of August 2020 and the additional weight of the war in Ukraine have severely disrupted supply across dairy value chains.^{75 76} With respect to the dairy subsector, production capacities are sensitive to social and political upheaval (such as the July 2006 conflict). Income from goat and sheep milk production has fallen as a result of limited resources, shortage of skilled and experienced workers, and a tumultuous regional political climate. The dairy subsector has therefore been the subject of numerous recovery and rehabilitation efforts, most recently following the outbreak of the economic and financial crises beginning in October 2019.⁷⁷

For Lebanon's underdeveloped rural villages, the agricultural sector—and in particular the milk and dairy subsector—is a significant source of revenue. This is especially true for households without land ownership. According to the FAO, over 70 per cent of dairy farmers in Lebanon are classified as poor or very poor, and nearly 60 per cent of livestock farmers in Lebanon rely primarily on dairy production for their livelihood.^{78 79} According to IDAL, there are around 100 dairy factories in Lebanon, most of which are located in the Beqaa (45 per cent) and Mount Lebanon (31 per cent).⁸⁰ Beqaa governorate is the biggest agricultural area in the country, representing 49 per cent of total used agricultural areas, along with Baalbek-Hermel governorate.⁸¹ Eleven per cent of all agri-food companies produce dairy goods.⁸² Some 75 to 80 per cent of Lebanon's cows, 45 per cent of its goats and 35 per cent of its sheep are raised in the region, which produces an average of 188 tons of milk a day. Milk production is seasonal, with peak production periods from April to July for sheep's milk, and from May to November for goat's milk.⁸³ Cow's milk production is permanent.⁸⁴ The Beqaa region has 1,500 dairy cow farmers, over 18,000 cows and approximately 150 creameries, small traditional dairy operations predominating.⁸⁵

73 Ministry of Agriculture, *Lebanon National Agriculture Strategy (NAS) 2020-2025* (2020)

74 The multiple crises Lebanon has experienced since 2019 have severely devalued the Lebanese pound, and increased poverty, unemployment and inflation exponentially. The prices of basic food commodities (cereals and tubers, meats, dairy products, oils and fats, produce, sugar and salt) have been highly volatile, particularly following the removal or reduction of subsidies by the Government and Central Bank in March 2021. AUB, "The Extreme Price Variation of Basic Food Commodities Across Markets in Lebanon: Data Visualisation" (November 2022)

75 Save the Children, "Lebanon: Bread shortages fuelling tensions with Syrian refugees" (August 2022)

76 Ukraine is a major exporter of grains and oilseeds, including maize, which is a key ingredient of many animal feed products (particularly for cattle) due to its high energy and starch content. Before Russia invaded Ukraine in February 2022, grains accounted for more than half of Ukraine's exports to Lebanon (56.3 per cent), followed by fats and oils of animal or vegetable origin (14.5 per cent), ferrous metals and their byproducts (11.5 per cent), and seeds and fruits of oil plants (9.7 per cent). Embassy of Ukraine in the Lebanese Republic, "Trade and economic cooperation" (March 2023)

77 For example, by the FAO, the Rene Moawad Foundation (RMF), the ILO, the International Finance Corporation (IFC), UNHCR, UNICEF, and the World Bank through the Partnership for improving prospects for forcibly displaced persons and host communities (PROSPECTS) programme.

78 National Council for Scientific Research in Lebanon (CNRS), *Risk Assessment to Facilitate Planning for Disaster Risk Reduction and Climate Change Adaptation in Agriculture - Technical Report* (2019)

79 FAO, *Agricultural sector review in Lebanon* (2021)

80 IDAL, *Agri-Food Sector in Lebanon – 2020 Factbook* (2020)

81 IDAL, "Bekaa Governorate" (2018)

82 IDAL, *Agri-Food Sector in Lebanon – 2020 Factbook*

83 AUB, Environmental and Sustainable Development Unit (ESDU), *Overview on local agriculture and food heritage: Case of West Bekaa and Shouf in Lebanon - Desk Review* (2020)

84 IFAD, *Harmonised Actions for Livestock Enhanced Production and Processing*

85 BlomInvest Bank, "Lebanese Dairy Sector"

1.2. Employment in the subsector

This subsector is one where skills gaps can have a significant effect on the quality of the end products, and the companies interviewed mentioned gaps in the use of specialized equipment and sector-specific production processes. Under Ministry of Industry Decision No. 8676/2020, all agri-food businesses and slaughterhouses are required to employ a food safety specialist to supervise the manufacturing process inside the factory, including production methods and product quality, beginning with the entry of raw materials into the factory and ending with the final product. A food safety team with a production manager and quality assurance, quality control and food safety specialists may be employed to fulfil this requirement.⁸⁶ Decision No. 1/529 regarding the registration of cows, sheep and goats on farms intended for milk production requires such dairy operations to be registered with the Ministry of Agriculture, provided they are compliant with the technical and health requirements detailed in the Decision.⁸⁷

Similarly, training and skills development are needed in several aspects of farming, including: hygiene and quality control; better milk production practices; livestock healthcare; business licensing, compliance with health and safety regulations, product marketing and communication; and innovative methodologies in production and technology integration. Improving the skills of farmers, especially more marginalized ones, could expand their market reach and improve overall livelihoods.⁸⁸ Small processors usually own cattle, or purchase raw milk from local producers, which is then processed into yoghurt, labneh and baladi cheeses in small, local facilities that use outdated equipment and where hygiene standards cannot be guaranteed. The dairy industry also includes numerous semi-artisanal production plants, many of which do not have adequate control over milk quality—as artisanal production methods use raw milk subject to improper storage or processing—and which have low innovation capacity in terms of cheese and dairy products.⁸⁹

The dairy production subsector in Lebanon is in its infancy, but there is significant potential for growth given the availability of agricultural land in the Beqaa and North Lebanon. Before the crisis, dairy was identified as a promising subsector with more than 1,000 companies operating, formally or informally. A handful of brands control 75 per cent of the market, with many new small-scale producers entering the subsector informally since the onset of the crisis in 2019. Around 80 per cent of the milk produced is further processed and marketed through informal and artisanal small-scale processors in the Beqaa and Akkar. Some processors are substantial, own their own farms and purchase additional milk to increase production. They either have their own channels of distribution or work out agreements with distributors for certain regions. Their products are innovative and always come in premium packaging with their brand. Large processors are less price-sensitive and willing to pay high prices for good quality milk because of their high standards. Conversely, small-scale dairy producers are poorly integrated into the market, which is hard for them to penetrate as a result of several challenges, including: limited working capital; poor access to credit;⁹⁰ ignorance of basic farm management, such as cooling, handling, storing, and hygiene practices; weak linkages between small producers and Ministry of Agriculture extension services; and lack of branding or difficulties in marketing milk and dairy products.⁹¹ Smaller processors

86 Ministry of Industry and PSDP, *Pre-Feasibility Study: Fresh Juices Industry* (January 2022)

87 Requirements include: animals are free of brucella and tuberculosis; animals may not be treated with dangerous materials that may be transferred to milk; milking areas are built to meet the requirements necessary to avoid contamination of milk; general health conditions for milking are guaranteed (including washing and sterilizing animal nipples, tightly sealed buckets, etc.); application of special health conditions for the storage and cooling of milk at a temperature of 8 degrees Celsius maximum; ensuring special health conditions for workers involved in milking and farm management are met (regular testing for contagious diseases), etc. Ministry of Agriculture, “Milk and Cream Production: Farm-Related Regulations” (June 2011)

88 FAO, *Recovery and rehabilitation of the dairy sector in Lebanon* (2016)

89 EU and MercyCorps, *Small Ruminant Dairy Value Chain Assessment*

90 BlomInvest Bank, “Lebanese Dairy Sector”

91 FAO, UN Development Group, UNDP, *Lebanon Recovery Fund Final Programme Narrative Report September 2012-July 2015*

generally obtain milk directly from local farms or from collectors. They frequently experience working capital issues and have difficulty qualifying for bank loans, which limits their capacity to invest in better storage and production facilities. They are very price-conscious and more likely to buy milk of inferior quality to keep up with larger producers. Usually, these dairies do not prioritize promoting or branding their goods in order to save costs.

Women are active in the subsector, particularly at the small-scale processing level. Many women produce dairy products and their byproducts in their homes (Kishik, baladi cheese and other cheeses, including halloumi, double-crème, etc. and artisanal cheeses).⁹² Female cooperatives in the subsector are primarily processing-oriented. Recently, UNICEF, in collaboration with the Ministry of Agriculture and in partnership with the Lebanese Organization of Studies and Training (LOST), inaugurated the Dairy Incubator “Al Qaria” in Laa’t, Baalbek. The incubator is a social enterprise offering training to build the skills of the youth and women and create employment opportunities. Training and skills development is provided on hygiene, lactation, quality control, new products, better milk farming practices, livestock healthcare, licensing, regulations, marketing and communication, and other administrative aspects of farming, including innovative production methods and technology integration.⁹³

1.3. Industry trends in international trade and innovation

Consumer trends are rapidly changing, with a growing demand for ‘clean label’,⁹⁴ ‘healthy,’ and ‘functional foods’, and rising protein consumption, which will propel innovation in the market. While strong technology capabilities are essential for responding to these trends, they are insufficient. A Deloitte study points out that, to create more value for consumers and higher margin products for producers, the capacity to identify, monitor, and capitalize on consumer behaviours, trends and demand from local and regional marketplaces is crucial.⁹⁵ There is room for innovation in the subsector, given the availability of opportunities to offer: (1) organic products; (2) products targeting children; and (3) healthier products.⁹⁶ Before the 2019 crisis, Lebanon imported almost half of its dairy consumption needs.⁹⁷ Today, the dairy subsector in Lebanon is burgeoning, but there is significant potential for growth, especially in the manufacture of organic dairy products and products targeting children,⁹⁸ provided major hurdles constraining growth in the agri-food and agriculture sectors are addressed. The constraints include: the poor integration of farmers into food and agricultural value chains; the division of the majority of agricultural land into small and widely fragmented plot properties (avg. 1.3 ha, with 75 per cent <1 ha); poor access to finance and low investment in technology and innovation by micro and small establishments; the informal status of agricultural workers; the informality of agri-food and agriculture establishments; lack of a social safety net for Lebanese and foreign farmers and agricultural workers; limited ability of the Government to offer agricultural extension services to farmers; and the weakness of the cooperative system.^{99 100 101}

Most dairy production is consumed in the form of fresh dairy products that have undergone minimal or no processing (such as pasteurization or fermentation). It was forecast that fats

92 USAID, *Agriculture and Rural Empowerment (ARE) Activity - Target Value Chain: Sub-Sector Prioritization and Selection* (November 2020)

93 FAO, *Recovery and rehabilitation of the dairy sector in Lebanon*

94 The “clean labelling” of food products refers to the practice of tailoring the packaging of foods to present them as “all-natural” or free from artificial colouring, additives and preservatives, for the purpose of catering to consumers’ demand for healthier foods that are not heavily processed.

95 Deloitte, *Global Dairy Sector - Trends and opportunities* (January 2017)

96 BlomInvest, “Lebanese Dairy Sector”

97 IFAD, *Harmonised Actions for Livestock Enhanced Production and Processing*

98 FAO, *Recovery and rehabilitation of the dairy sector in Lebanon*

99 USAID, *Financing Lebanon's Agro-Food Sector: An Analysis of the Sector Before and After October 2019* (April 2021)

100 FAO, EU and CIRAD, *Food Systems Profile - LEBANON: Catalysing the sustainable and inclusive transformation of food systems* (2022)

101 ILO, *The Cooperative Sector in Lebanon: What Role? What Future?* (2018)

and oils, and dairy products, would expand at the fastest rates in Asia Pacific, at an estimated 8.3 per cent and 4.4 per cent respectively throughout 2018 and 2023.¹⁰² The FAO expects demand for fresh dairy products to develop significantly in India, Pakistan and Africa over the next ten years as a result of rising income and population levels in these regions.¹⁰³ Per capita consumption is anticipated to increase only slightly in affluent countries (from 23.6 kg milk solids in 2018-2020 to 25.2 kg by 2030) compared to developing countries (10.7 kg to 12.6 kg, over the same period).

The dairy products subsector shows promise, as evidenced by the support and funding from public, private and donor interventions it has received over the years, but its productivity, growth and ability to compete in foreign markets remain limited. Such focused interventions have included projects by the FAO,¹⁰⁴ the René Mouawad Foundation, (RMF),¹⁰⁵ and the USAID Lebanon Agriculture and Rural Empowerment (ARE) project.¹⁰⁶ The Ministry of Agriculture National Agriculture Strategy for 2020-2023 calls for the development and support of the cheese and dairy subsectors and offers farmers in-kind and financial support for inputs.¹⁰⁷ The USAID ARE project has recommended prioritizing investment in the dairy products (with a focus on small ruminants) and fodder crops value chain, citing the above average availability of local skills and processes to match the prospective requirements of the value chain.¹⁰⁸ The growth and potential of the dairy products subsector is nonetheless hindered by several bottlenecks, including the prevalence of low-yield traditional production methods, shortages of animal feed and grains, and the high cost of imported agricultural inputs (including fodder and packaging materials). Furthermore, intensive livestock production systems generate significant amounts of animal waste,¹⁰⁹ while the manufacturing of dairy products in Lebanon is linked to inappropriate wastewater management with harmful implications for the environment and waterways.¹¹⁰ However, if environmental and agricultural best practices that enhance waste management and proper hygiene and post-harvest practices were implemented, the dairy sector could improve its exports, particularly of goat cheeses, especially to Gulf countries.¹¹¹ Farmers could also benefit from financial support to invest in cold storage facilities to improve milk quality and storage conditions.

1.4. Research and consultation findings

1.4.1. Skills demand in the job market: analysis of occupations and competencies in demand

The occupations were selected on the basis of the scoping calls according to the following criteria:

1. Two or three occupations officially recognized by educational institutions as having specific skills (occupations for which formal skills training and certification is available); and
2. Two or three occupations in the informal economy (skilled work but the occupations have not been recognized and formal skills training is not available).

102 IDAL, *agri-Food Sector in Lebanon Factbook*

103 Organisation for Economic Co-operation and Development (OECD) and FAO, *Agricultural Outlook 2021-2030* "Chapter 7: Dairy and dairy products"

104 FAO, *Recovery and rehabilitation of the dairy sector in Lebanon*

105 RMF, "Enhancing Dairy Sector in North Lebanon"

106 USAID, *Agriculture and Rural Empowerment (ARE) Activity - Target Value Chain*

107 Ministry of Agriculture, *Lebanon National Agriculture Strategy (NAS) 2020-2025*

108 USAID, *Agriculture and Rural Empowerment (ARE) Activity - Target Value Chain*

109 FAO, *World livestock production systems: Current status, issues, and trends* (November 1995)

110 Council for Development and Reconstruction and UNDP, *Business Plan for Combating Pollution of the Qaraoun Lake: "4.1.2 Pollution Pressure from Solid Waste Disposal Practices"* (2020)

111 USAID, *Agriculture and Rural Empowerment (ARE) Activity - Target Value Chain*

Based on scoping calls, the three occupations in dairy for which formal skills training is available are: (1) farm manager;¹¹² (2) food safety specialist;¹¹³ and (3) machine operator.¹¹⁴ The two occupations that lack skills training recognition are delivery stockman and milker.

Interviews with employers demonstrated that additional occupations are in demand, as illustrated in figure 3. These were cleaners, dairy and cheese manufacturers, and agricultural engineers, the last of these being the only one for which formal skills training and certification are available.

Figure 3: Occupations in the dairy production subsector identified through scoping calls and interviews subsector.



1.4.1.1. Insights on status of occupations and skills needed by the private sector

Of the eleven dairy companies interviewed, the majority were microenterprises; only two were exporters of products, respondents pointing out that the short shelf life of dairy products makes them more difficult to export. Those that exported their products (such as laban, labneh yoghurts, Akkawi, halloumi, and other Lebanese cheeses) did so to Iraq and Canada. One company stated that they used to export to the Gulf, but have stopped since the beginning of the crisis in 2020.

Table 4: Size of interviewed dairy production companies.

Agri-food subsector	Company size	Number of companies in the sample
Dairy	Micro (fewer than 10 employees)	6
	Small (fewer than 50 employees)	3
	Medium (fewer than 100 employees)	1
	Large (+100 employees)	1
Total		11

¹¹² For farm managers, a Bachelor of Science (BS) degree in agribusiness, equipping students with the skill set required to work as farm managers, is currently offered by the [American University of Beirut \(AUB\)](#).

¹¹³ For food safety specialists, a BS in “food safety and quality assurance” is available at several universities for those wishing to work in this field. Alternative TVET degrees in this field include a Superior Technician Certificate (TS) in public health and food safety”, and a Technical Bachelor (LT) as a “food inspector”. UNESCO, “[Work-based learning study reviewing work-based learning \(WBL\) programmes for young people in Lebanon](#)”

¹¹⁴ For machine operators, an LT in “Food Industry Production Management”, a TS in “food manufacturing”, “mechanical maintenance” or “production mechanics”, and a BT in “food manufacturing”, “mechanical maintenance” or “production mechanics” are available. UNESCO, “[Work-Based Learning Study Reviewing Work-Based Learning \(WBL\) Programmes for Young People in Lebanon](#)”

Companies noted a skills gap in all occupations, with two occupations standing out as being much in demand but for which skilled workers are scarce: machine operator and delivery stockman.¹¹⁵ This gap is consistent with the types of job openings that businesses advertised throughout the past year (table 5). It was very important for potential delivery stockmen to have a driving licence, and all the companies stressed that they need good negotiating and people skills and a keen knowledge of the dairy market in order to be able to increase potential sales. The majority of the companies interviewed were small family-run businesses selling mainly to mini markets, supermarkets and restaurants. They rely on the delivery stockman as their key salesperson. One company owner worked as the delivery stockman himself because he said he could not find anyone suitably qualified to do the job for him.

Table 5: Job openings of interviewed dairy production businesses in the past year.

Occupation	Number of companies
None	4
Dairy and cheese industry specialist	1
Assistant specialist in the dairy and cheese industry	1
Delivery stockman	4
Machine operator	3
Cleaner	2
Salesperson	1

EXAMPLE

Skills gaps can have significant repercussions on productivity and costs. For example, one company stated that a skills gap with one of the production department employees resulted in the company having to throw out a large amount of produce. This was because the employee, who was working as a machine operator responsible for pasteurizing raw milk, did not follow procedures correctly, resulting in a batch having to be discarded.

The role of women in dairy processing is significantly smaller than that of men. According to employers, women work almost exclusively in food safety. While some women occupied machine operator and dairy processor positions,¹¹⁶ the majority of these positions are filled by men. The reason for this, according to employers, is that women are less likely to work in labour-intensive jobs. In addition, employers prefer to employ men as delivery stockmen because the job requires a certain amount of strength to carry heavy loads. Security is also a concern, employers saying that they would fear to send out a woman alone on work that involved dealing with money and customers.

¹¹⁵ Based on interviews, a delivery stockman is responsible for transporting and supplying dairy products to identified customers (either households, supermarkets or restaurants) in vans or trucks.

¹¹⁶ Only two of the companies interviewed, Elias Baroud Establishments and Miled Bou Akl Establishment said they had female workers as machine operators and dairy processors. In the case of Est. Elias Baroud, four of the five workers in this occupation were female (80 per cent), while at Est. Miled Bou Akl, four of six workers in this occupation were women (67 per cent).

Table 6: Gender and age distribution of workers, as reported by employers interviewed

Gender		Age range	
Male	Female	Male	Female
62%	38%	20-60	21-35

Some micro companies processed milk and cheese manually rather than using mechanical and technological means, and had their own farms. Four of the six micro companies said they needed a dairy production expert. When asked what skills this expert would need, the most important was knowledge of the techniques, tools and ingredients needed to produce a variety of Lebanese cheeses and dairy products.

EXAMPLE

Mr. Elie Baroud, owner of Elias Baroud Establishments, needs a delivery driver, a food safety specialist and machine operators. His factory currently employs five full-time workers, four of whom are Syrian women. All five lack any form of qualification. The women were registered, but did not receive any form of social security cover because of their nationality. Elie Baroud performs the role of delivery stockman himself and often relies on his family's support for both delivery and the production process. He said it was difficult to find workers with experience of dairy production work. He hopes to have his own farm one day, as, currently, he buys the milk to make dairy products. When he had a farm, what he would need most would be an agricultural engineer. He said the agricultural engineer should have management skills to enable him to manage the farm, computer skills to record all relevant information and knowledge of computerized and automated machinery and the ability to use and repair it.

Informal labour was often used in these occupations as adequately skilled workers were lacking. The most common form of informal labour was relying on family members to fill in the gaps in some occupations. For example, the owner of Skaff Farm, Mr. Kamil Skaff, is the farm manager and stressed that this role is the most important one, as it ensures that everything runs smoothly on the farm. He also said that it was very difficult to find anyone with the leadership and communication skills to whom to delegate this role. He often relies on one of his most trusted employees to help out with the farm management; the employee is a regular farm worker and not someone with any particular degree or qualification.

The most common recruitment method cited by interviewees was advertising on social media and social networking sites, including LinkedIn, Facebook and Instagram. Only one company stated that it used the Ministry of Labour's official website to advertise, and that was done concurrently with a listing posted on Facebook. The second most common reply was that they did not advertise at all. They explained that some workers came to factory premises and presented their CVs directly. Employers in this situation would later put such applicants through a trial period to assess their competencies on the job. If their performance was satisfactory, the trial period would be followed by further evaluation or recruitment. One company said they do not need to advertise because they find workers in neighbouring villages (see section 4.3).

As for the role of certificates, the only occupation that all respondents agreed needed recognized certification was food safety specialist. A university degree was the preferred qualification. For the remaining occupations, most companies valued experience over certification. None of the companies said that all of their workers were fully proficient at their job, but 10 of 11

companies reported that none of those who were proficient had any form of certificate related to their line of work.

A recurring theme throughout the interviews was that none of the applicants and recruits companies receive have sufficient experience or certification in their line of work, in spite of the importance of relevant past experience for employers. Experience was by far the most important factor when companies considered hiring a candidate. Ten of the eleven companies (91 per cent) stated that their workers in the identified occupations (except for food safety) did not have any form of certification. However, the one company (Skaft Farms) that did have a machine operator with a TVET degree said that this person was more skilled and was relied upon more than others in the production process. The reason was that this person possessed more skills relating to the production process and was more reliable in terms of reporting to the supervisor.

The linkages between businesses and TVET schools and centres ranged from extremely weak to non-existent. None of the employers interviewed reported having established systematic collaboration with TVET schools or training centres. A common complaint was that there are no specialized programmes in dairy and cheese manufacturing in Lebanon. This was confirmed by interviews conducted with Ministry of Agriculture TVET schools, which only provide training in two fields, assistant veterinarian and assistant agricultural engineer. Although training courses do cover some of the skills needed at the farm level, they do not cover skills needed at the production and processing levels, where a higher skills gap was noted. One of the employers interviewed, Imad Mansour from Dairiday said his company had contacted seven TVET schools (some unaffiliated with the Ministry of Agriculture) to employ their graduates but had received no response.

All the companies provided on-site training, a skills assessment period taking place before workers were hired. All the interviewees said they had considered upskilling and reskilling their workers, but not all of them currently have the means to offer such support. Only two companies, Dairy Danny and Greta Dairy, stated that they outsourced training and relied on NGOs, academic institutions and development agencies such as GIZ (German Cooperation), the American University of Beirut, the Economic and Social Commission for Western Asia (ESCWA) and Berytech. The remaining companies all performed the upskilling and reskilling in-house. Three of the eleven companies said that they currently do not have the ability to provide adequate training, and the remaining companies provided in-house training ranging from three to six months. ISO-certified companies, such as Skaft Farm and Dairiday, said they have to do constant training in order to keep up with international standards.

1.4.1.2. Existing formal and non-formal TVET programmes: Analysing skills demand and supply gaps

All the responding Ministry of Agriculture-affiliated TVET centre directors said that the specializations they were asked about went beyond what the Lebanese curriculum currently offered. They said that the reason agricultural training is exclusively linked to public vocational institutes is that these vocational institutes receive support from the Ministry of Agriculture. The vocational institutes also offer scholarships, cheaper tuition and, to a certain extent, some financial support to students.

Key insights from the interviews included:

- ◆ Only two specialty paths exist in public vocational institutes: assistant veterinarian and assistant agricultural engineer (table 7).
- ◆ For the dairy subsector, there is no complete subject that specializes in the occupation of “Milker” in Lebanese educational curricula or training programmes.

- ◆ There is no material related to delivery stockman; the only competencies offered relevant to this occupation are courses on marketing.
- ◆ Regarding the curriculum and the manner of training of assistant veterinarians and assistant agricultural engineers, five out of six respondents stated that the curriculum was up-to-date, while the Rashaya school director said it needed to be updated.
- ◆ For some of the centres, practical training is as much part of the curriculum as theory. For example, the Al Khiyyam school explained that practical training takes place in cooperation with institutions concerned with agriculture and some farms. However, some schools, such as Baakleen, said the capacity for practical training was limited due to the unstable economic situation.

Table 7: Occupations and associated competencies taught by vocational institutes related to the dairy production subsector.

Occupations	Assistant veterinarian	Assistant agricultural engineer
Competencies focused on by vocational schools	Knowledge and ability to use different techniques and equipment to implement the requirements of veterinarians	Knowledge of and ability to use different techniques and equipment to implement the requirements of agricultural engineers
	Ability to manage dairy farms	Knowledge of and ability to use the techniques and tools necessary for increased agricultural production
	Expertise in examining animal health and detecting diseases and disorders	Knowledge of market trends and ability to network
	Experience with medication, vaccines and animal health follow-up	Proficiency in project management and good leadership skills
	Ability to identify problems, brainstorm and implement the best solutions	Proficiency in using fertilizers and pesticides to ensure the safety of food crops
	Knowledge of market trends and ability to network	Knowledge of and ability to apply agronomic techniques, including on improved seeds, soil quality, tools, water management, crop protection, agricultural practices.
	Proficiency in project management	Ability to evaluate and solve complex and unexpected problems.
	Attention to detail.	Attention to detail
	Logical reasoning	Logical reasoning

Further insights:

- ◆ The TVET programme offers an official qualifications certificate, the BT agricultural technical baccalaureate certificate. Al-Khiyyam was the only institute that stated that the trainee obtains an experience certificate from the entity with which they trained. This certificate is not recognized by the Government, however.
- ◆ The age of trainees ranges from 15 to 40, with an educational level of either middle school diploma or university degree.
- ◆ The answers regarding the socio-economic background of students varied from school to school, Al-Khiyyam and Baakline stating that they did not notice any particular difference in skills between different demographics, while Rashaya, Nabatieh and Jeb Jnein all said that students from rural backgrounds tend to have more experience than those from urban backgrounds.
- ◆ Five of the six schools have some sort of connection with the private sector (Jeb Jnein being the exception), but none of the vocational institutes receive trainees from businesses and contacts with the private sector are limited to asking business and farm owners to receive students so they can receive practical training.
- ◆ None of the vocational institutes interviewed had access to any form of labour market information. Nabatieh said that, before the crisis, they had kept track of the market. Similarly, none of the institutes have a department responsible for collecting and analysing national and international labour market data and skills development.
- ◆ The main challenges facing these institutes today are high costs of transportation and heating, limited resources from the private sector and limited opportunities for practical training for their students. Rashaya also pointed out that curricula needed to be further developed.
- ◆ As for the lack of formal qualifications and its relation to the presence of workers in the informal economy, there were conflicting points of view, with Al-Khiyyam and Baakleen saying there was a link, while the other four schools saw no link.
- ◆ As for a high correlation between being a member of a disadvantaged group and working in the informal economy, only one response from Baakline said that there was a correlation, while the remaining five respondents did not see any.

1.4.2. Competencies needed for identified occupations and difficulties in hiring

Based on the 11 interviews conducted with dairy companies, the skills and competencies identified as in demand are set out below.

A. Farm manager

Managerial skills	Prepares work and milking schedules
	Maintains the cleanliness of the workplace and the farm
	Prepares budget for the farm
	Manages farm equipment and ensures that all equipment is maintained

Computer skills	Maintains records of sales and supplies using basic applications such as Microsoft Word and Excel
	Has the knowledge and ability to use computerized machinery on the farm
	Keeps up-to-date with new farm technologies
Leadership skills	Assigns staff roles and responsibilities
	Manages and solves problems, adapting to any changes that might occur
	Takes responsibility and makes tough decisions on behalf of the farm and the workers
	Has the experience to mentor and train new workers
Communication skills	Has enough marketing knowledge to draft a marketing plan for the farm
	Listens to and works with farm workers respectfully
	Negotiates with customers and suppliers
	Has knowledge of foreign languages (English, for example)

B. Delivery stockman

Managerial skills	Has thorough knowledge of the market and customer preferences
	Has the ability to identify target markets
	Has the ability to think critically and innovatively to widen market scope
Computer skills	Maintains records of sales and supplies using basic applications (Microsoft Word and Excel)
Organizational skills	Has the knowledge and ability to maintain milk temperature and quality during transportation
	Has enough knowledge of bookkeeping and maths to keep records of all moneys received during delivery
	Is able to lift and carry heavy loads while maintaining product quality
	Has a driving licence and a good knowledge of Lebanese towns and roads
Communication skills	Has good listening skills and is able to understand customer needs
	Has the ability to communicate customer needs and preferences to managers
	Able to negotiate with customers and suppliers

C. Milker

Veterinarian skills	Able to identify certain diseases in farm animals
	Able to treat farm animals suffering from diseases (such as teat damage, clinical mastitis, lameness, etc.)
	Knowledge of cattle care, breeding, feeding, medications, and milking times
	Able to think critically and innovately on how to widen market scope
Practical skills	Able to operate all milking equipment (automated or not)
	Able to maintain records of milk and dairy supplies by using basic applications (Microsoft Word and Excel)
Organizational skills	Supports farm manager in managing the farm
	Maintains cleanliness of milk equipment and farm area
	Performs tasks such as feeding, washing, breeding, and medicating animals in an organized manner
Communication skills	Able to communicate the needs of animals and of the farm to managers

D. Food safety specialist

Scientific skills	Thorough knowledge of microbes and bacteria that need to be tested for and able to ensure basic food safety and nutrition standards
	Monitors storage conditions of food samples to ensure longevity
	Familiar with lab work and able to perform necessary analyses on food samples
	Able provide necessary medication or solutions to any food safety issues
Practical skills	Able to develop procedures on food handling, cleanliness standards and employee health measures
	Able to train employees on how to make all processes and procedures compliant with health standards
	Maintains records of milk and dairy samples and any problems that may arise by using basic applications such as Microsoft Word and Excel
Production skills	Familiar with dairy production process, methods and techniques
	Able to apply dairy production processes, methods and techniques
Communication skills	Able to advise businesses on how to improve food standards
	Able to prepare written reports, and to report unsafe practices to management if necessary
	Proficient in foreign languages (English, for example)

E. Machine operator

Mechanical skills	Thorough knowledge of computerized and automated machines used in the company (keen understanding of thematic lines)
	Maintains, repairs and cleans machines (including ability to check pressure systems, ensure proper air distribution, cleanliness of pumps, etc.)
Practical skills	Able to receive and implement instructions from managers and supervisors regarding machine operations and/or production methods
	Maintains hygienic workspace throughout the production process
Production skills	Familiar with manual dairy production processes, methods and techniques of different dairy products, particularly Lebanese cheeses
	Able to manually apply dairy production processes, methods and techniques in the production of different dairy products
Communication skills	Collaborates with fellow workers in a professional manner to ensure smooth production process.
	Reports and communicates problems to supervisors.
	Is fluent in multiple languages in order to understand machine operations (Arabic, English, French)

Cleaners are needed to maintain the overall hygiene and cleanliness of dairy factories and/or farms. The main competencies listed for cleaners were experience using specific cleaning products for different materials and machines and a thorough knowledge of the use of detergents in different places and for different parts of machines. Some companies simply said that they looked for cleaners with no experience. Companies usually train their cleaners on the types of detergents used for the cleaning of floors, equipment, general workspace areas and machines, and instruct them on the quantity to be used. Companies also stated that it is important for cleaners to work with food inspectors and quality assurance to make sure that they comply with health and safety rules.

Some of the microenterprises interviewed had no sophisticated machinery for the production of dairy and cheese, and instead relied on manual labour. Dairy Batloun, for example, was looking for skilled dairy and cheese makers able to produce different Lebanese cheese products by hand. They complained of the lack of specialized programmes in dairy manufacturing in Lebanon. Workers in this occupation are often informal and, according to the company, there is a high turnover of workers. The owner stated that family members often have to fill in.

As for agricultural engineers, only one company, Ets. Elias Baroud, stated that it needed an agricultural engineer. The owner said that they currently do not have the means to expand and obtain a farm, but plan to do so in the next two or three years. Once they have a farm, the first occupation they would look for is an agricultural engineer. When asked what certification, skills and competencies an agricultural engineer would need, the owner stated that they would look for someone with a university degree but would be open to hiring someone from a TVET institute if they had the requisite skills, the most important being: **management of the farm, including monitoring water usage and disposal of waste; care of animals, including managing their feeding times, portions, food quality, and medications; and leadership skills, including the ability to lead a team and assign tasks and roles in an organized manner.** Language skills, such as knowing a foreign language, and negotiating skills were also listed as important.

1.4.3. Repercussion of skills gaps on business performance

The impacts of skills gaps on business performance most commonly reported by employers were the creation of an additional workload for other staff members, delays in innovating their products and services, and difficulties in meeting quality standards and introducing new work practices.

Table 8: Employers' responses to possible impacts of skills gaps on the performance of their business.

Impacts on business	Answered "Yes"
Loss of business or orders to competitors	2
Delay in developing new products or services	3
Difficulty meeting quality standards	3
Increased operating costs	2
Difficulty introducing new work practices	3
Increased workload for other employees	4
Outsourcing of work	1
Complete withdrawal of some products or services	2
Difficulty achieving customer service goals	2
Difficulty introducing technological change	1
None	2
Others	0

All the companies agreed that opportunities for growth in the subsector were dependent upon diversification of production and a wider market reach. For example, Elias Baroud Establishment wants to start producing yoghurt, but the company currently lacks the means and the skills necessary to do so. Other companies such as Baladi Foundation and Dairy Batlun said that organic products are the best way to expand one's market. Al Baraka Dairy and Baladi Foundation also said that the main problems faced by the milk processing subsector today include lack of a high quality milk supply.

2. Focus two: Non-alcoholic beverages

2.1. Background and economic contribution of the subsector

"Non-alcoholic beverages" is a category that encompasses a wide variety of drinks, including fruit and vegetable juices, soft drinks, ciders and non-alcoholic versions of beverages that are generally alcoholic, such as beer. According to the FAO, non-alcoholic beer is among the exports in greatest decline. The size of the fruit juice industry is between US\$130 and US\$150 million. There are three main players in the juice market in Lebanon, in addition to other producers and a niche market player. The economic crisis continued to put huge pressure on demand across soft drinks in 2022, but demand for bottled water is rising because the tap water in Lebanon is not safe to drink,¹¹⁷

117 Euromonitor International, *Soft Drinks in Lebanon* (December 2022)

while concentrates are benefiting from their image as an economical alternative to carbonates and juice. Lebanon's market share in this area is modest. The country's juice exports increased between 2015 and 2020 at a compound annual growth rate (CAGR) of 25 per cent, compared to a global CAGR of -1 per cent, while reaching higher values over the preceding 20 years. At US\$8.2 million, the subsector's exports have risen to their highest level since 2011, valued at US\$8.2 million and with an annual growth of 39 per cent in 2020. Given that Lebanese juice exports stood at US\$13.8 million in 2010, they clearly have unrealised potential.¹¹⁸ The production of fruit juice is a stable and price-sensitive subsector of the economy, affected by global industry trends and local demand. The market is highly competitive, with numerous firms offering the same target customers a wide range of brands. The main areas of rivalry are brand recognition (reputation) and, to a lesser extent, product distribution or exposure across the country.¹¹⁹

2.2. Employment in the subsector

In total, 25 juice companies are operating in Lebanon, the majority located in Mount Lebanon (60 per cent), followed by the Beqaa (16 per cent), Baalbek-Hermel (8 per cent), North Lebanon (8 per cent), Beirut (4 per cent) and South Lebanon (4 per cent). There are also many smaller scale juice and cocktail shops in the local market. The trade balance has changed radically from a deficit of US\$8.1 million in 2015 to a surplus of US\$4.6 million in 2020, indicating that Lebanon has turned into a net exporter of juices. The Lebanese juice subsector also has an unrealised export potential of US\$1.7 million, according to the International Trade Centre (ITC) trade map.

All agri-food businesses and slaughterhouses are required by Ministry of Industry Decision No. 8676/2020 to employ a food safety specialist to supervise the manufacturing process inside the factory, including production methods and product quality, beginning with the entry of raw materials into the factory and ending with the final product.¹²⁰ This could create job opportunities for women and youth and be an area where improved skills and skills recognition could contribute to overall improved decent work opportunities. Workers are also needed to sort, wash, and cut the vegetables and fruits, and to pack and label the final product.

The most important skill sets needed for the non-alcoholic beverages subsector are food safety and quality control, with improved performance likely to have a significant impact on decent employment. According to the Ministry of Industry, the size of the labour force employed in the processing phase, including those employed to sort, wash, and cut the fruits and vegetables, and pack and label the finished product, will vary according to the degree of automation.

2.3. Industry trends in international trade and innovation

The non-alcoholic beverages market is extremely susceptible to the depreciation of the Lebanese currency, as most production depends on the importation of fruit concentrates. Prices remained stable in 2019 with few changes, but since 2020 have been significantly impacted by the fluctuating currency rate. One of the fresh juice companies interviewed by the Ministry of Industry claimed that the impact of the local currency depreciation had caused a more than 60 per cent decline in sales.¹²¹

Producers of fruit juices are very competitive, and tend to differentiate themselves by relying on branding. Libby's, Tropicana and Candia are brands produced 'under licence', which means their sales could be boosted by the reputation of the multinational companies they represent.

¹¹⁸ Ministry of Industry, *Pre-Feasibility Study: Fresh Juices Industry* (January 2022)

¹¹⁹ BlomInvest Bank, "Can Fruit Juices Keep the Doctor Away? Dissecting the Lebanese Juice Market" (March 2018)

¹²⁰ Ministry of Industry, *Pre-Feasibility Study: Fresh Juices Industry*

¹²¹ Ministry of Industry, *Pre-Feasibility Study: Fresh Juices Industry*

Others rely on the strength of their distribution channels and points of sale. There is potential for companies to diversify their manufacturing techniques and rely less on concentrates and more on fresh fruits in order to reduce costs and create more job opportunities across the value chain.

While consumer trends have indicated a shift towards wellness, health and increased interest in lowering alcohol intake, demand for non-alcoholic beverage has risen worldwide, and Lebanon's exports in this area totalled US\$11 million in 2022, according to the ITC Trade Map. According to Fitch Solutions projections in 2018, the greater focus on health was expected to boost sales of fruit and vegetable juices and non-alcoholic drinks in Lebanon.¹²² In 2022, the global non-alcoholic drinks market was estimated to have surpassed US\$11 billion, up from US\$8 billion in 2018.¹²³ Growing awareness of health and wellness in Lebanon has put pressure on the sugared mainstays of the non-alcoholic drinks business, including carbonated soft drinks, such as cola beverages and lemonades. Spending is shifting towards healthier, less-sugary products like bottled water, artificially sweetened soft drinks and fruit juice.¹²⁴

As more people shift towards healthier and low-calorie products, the demand for fresh juice rather than fruit concentrate is expected to rise. This in turn will help further reduce dependence on imports and create greater linkages across the value chain as farmers and producers become more interconnected. When procuring inputs, fruit juice producers should ideally aim to minimize the risks of obtaining damaged or contaminated goods and should therefore look for GAP-certified farmers,¹²⁵ who will work in accordance with Lebanese standard NL 811 on good agricultural practices for vegetables and fruits.¹²⁶ There is potential for skills training and certification in this area. Training is also needed for personnel whose activities have an impact on food safety and quality. There are opportunities for greater participation by women as food safety managers. Staff must be aware of the relevance and importance of their individual activities in complying with the Good Manufacturing Practices (GMP) system to safeguard product consistency and quality. In terms of informality, greater research is needed to determine how skills development could help small, informal vendors shift towards formality. Informality among machine workers also needs to be determined.

2.4. Research and consultation findings

2.4.1. Skills demand in the job market: analysis of occupations and competencies in demand

The occupations were selected on the basis of the scoping calls according to the following criteria:

1. Two or three occupations officially recognized by educational institutions as having specific skills (occupations for which formal skills training and certification is available); and
2. Two or three occupations in the informal economy (skilled work but the occupations have not been recognized and formal skills training is not available).

122 BlomInvest Bank, "Insights on Lebanon's F&B Industry" (April 2019)

123 Forbes, "The No-Alcohol Drinks Market Surpassed \$11 Billion In 2022" (December 2022)

124 Statista, "Non-Alcoholic Drinks - Lebanon Market Insights" (August 2023)

125 According to the FAO, Good Agricultural Practices (GAP) are a "collection of principles to apply for on-farm production and postproduction processes, resulting in safe and healthy food and non-food agricultural products, while at the same time taking into account, economic, social and environmental sustainability".

126 Ministry of Industry, *Pre-Feasibility Study: Fresh Juices Industry*

The three occupations in non-alcoholic beverages production for which formal skills training is available are: (1) machine operator;¹²⁷ (2) labeller and packager;¹²⁸ (3) food safety specialist.¹²⁹ The remaining occupations that lack skills training recognition are cleaners and sorters, and fruit harvesters.

It emerged from interviews with employers that technicians and delivery workers were also in demand.

Figure 4: Occupations identified through scoping calls and interviews for the non-alcoholic beverages subsector.



2.4.1.1. Insights on status of occupations and skills needed by the private sector

Most companies reported some form of skills gap in all professions, but one was singled out as particularly important, almost all companies reporting a skills gap for machine operator. All the companies stressed that experience was the most important credential for all occupations, except for the food quality control inspector, where a university degree was necessary. None of the companies said that experience and skills were needed by cleaners and sorters.

Table 9: Size of interviewed non-alcoholic beverages companies.

Agri-food subsector	Company size	Number of companies in the sample
Non-alcoholic beverages	Micro (fewer than 10 employees)	2
	Small (fewer than 50 employees)	2
	Medium (fewer than 100 employees)	4
	Large (+100 employees)	3
Total		11

As in the dairy subsector, the companies interviewed advertise vacancies through social media platforms such as Facebook and LinkedIn and often rely on in-house evaluations and a trial period to determine skills level and decide whether or not to hire.

¹²⁷ For machine operators, an LT in “food industry production management”, a TS in “food manufacturing”, “mechanical maintenance” or “production mechanics”, and a BT in “food manufacturing”, “mechanical maintenance” or “production mechanics” are available. UNESCO, *Work-Based Learning Study Reviewing Work-Based Learning (WBL) Programmes for Young People in Lebanon*

¹²⁸ For labellers and packagers, a BT in “food manufacturing” or a TS in “food manufacturing” are available.

¹²⁹ For food safety specialists, a BS in “food safety and quality assurance” is available for those looking to work in this field, or receive a TS in “public health and food safety”, or an LT as “food inspector” *Work-Based Learning Study Reviewing Work-Based Learning (WBL) Programmes for Young People in Lebanon*

Table 10: Job openings of interviewed non-alcoholic beverages production businesses in the past year.

Occupation	Number of companies
None	3
Technical operator/ technician	3
Delivery worker/cash van	2
Laboratory specialist	2
Tetra Pak machine operators	1
Production specialist	2
Sales representative	3

Certification played an important role in the hiring process for the companies interviewed, especially for food safety specialists and machine operators. All the companies required food safety candidates to have a university degree, while the most common and sought after certificate for candidate machine operators was a TVET certificate, particularly a TS in electronics. In the case of Innovation Beverages, all the newly employed machine operators had TVET certificates, as did those working as labellers and packagers, whereas the older employees did not. In the case of Kassatli Chtoura, occupations such as supervisor, warehouse manager and maintenance technician all required a university degree or TVET qualification in mechanical or electrical engineering in order to be considered for the job. The interviewee commented that only around 25 per cent of the current workforce was fully proficient at their job.

Linkages between businesses and TVET institutes were weak and the Ministry of Agriculture-affiliated agricultural institutes noted that no areas of expertise relevant to non-alcoholic beverages are offered by the current curriculum. The interviews with the companies clarified that this subsector is more in need of a TS degree than a BT degree offered by the Ministry of Agriculture-affiliated agricultural institutes. Only one company, Junet, had any form of contact with TVET schools, namely Zahle, Qab Elias School, and Dar El Sada'a. Baladi Foundation and Al Rabie Food Products Company mentioned that they cooperate with local incubators and international NGOs, such as Berytech and ESCWA, and some universities, such as AUB, Lebanese American University (LAU) and Saint Joseph University (USJ) to provide training for their employees.¹³⁰ As for how relevant TVET programmes are to market needs, most companies said they had no real insight into the TVET programmes. Al-Rabie Food Products Company stated that their machine operator applicants who hold professional certificates from TVET centres do not necessarily possess the required competencies. Junet mentioned that, because the machine they use (Tetra Pak) is not widely used in Lebanon, only three companies – Junet, Pepsi, and Top Juice – having these machines, it was difficult to find technicians skilled in their use, and therefore the schools and the programmes are not well equipped.

All of the companies considered upskilling and reskilling their workforce, the training being done mainly in-house. In the case of Kassatly Chtoura, training for food quality assurance SSST

¹³⁰ Candidates who benefitted from such programmes were awarded certificates of attendance and/or completion upon graduation.

22000 and ISO 22000 was necessary, and the workers would receive an unofficial certificate after the completion of their training. Junet stated that they would like to be able to provide routine training, but currently do not have the resources to do so. The other companies all provided informal and unstructured training. The occupations targeted in this training are machine operator, technician, food safety specialist and labeller and packager. For cleaners and sorters, as well as fruit harvesters, the companies interviewed did not see a need to provide ongoing training.

EXAMPLE

Super Juice said that those with formal certification from TVET institutes, particularly in the machine operator occupation, did not have sufficient skills and required additional training from the company to meet industry standards. On the other hand, Yamama's representative said that those with official certificates often have good qualifications and skills compared to those without any form of certification.

EXAMPLE

Some businesses reported working on specific types of machines (Krones and CHS) and quality management software (such as Q-Pulse) and rely on training the people who install the machines to upskill and reskill their workforce. Others, such as Junet, use Tetra Pak machines, a need specialized or Tetra Pak trainers or someone with specialized knowledge of this machinery to work full-time to perform consistent upskilling and reskilling of the workforce.

Unlike most of the companies interviewed in the dairy subsector, all of the non-alcoholic beverages companies interviewed were exporters, with markets in the Gulf (Saudi Arabia, Qatar, United Arab Emirates (UAE), Kuwait), Europe (France, Germany, Denmark, Belgium), the United States; Canada; Australia; China; Iraq; and some African countries (including Libya and Morocco). The long shelf life of non-alcoholic beverages allows for flexibility and has higher export potential than the more perishable foods in the dairy subsector. Junet, for example, said that the subsector needed a market specialist, someone capable of opening up opportunities for companies in new markets.

Informal labour was not common in these companies, fruit harvesters being the only occupation with a level of informal labour. The companies explained that fruit harvesters tend to be seasonal workers and are therefore only employed for a short period of time. Fruit harvesters were almost exclusively of Syrian nationality, which is an additional barrier to their transition to formality. The challenging working conditions and low wages make fruit-picking and harvesting jobs unattractive to unemployed Lebanese, who often seek more skilled employment opportunities. Arrangements with fruit harvesters were often made orally and for a specific period of time. None of the other occupations in the companies interviewed involved informality.

In terms of gender distribution, women tended to perform administrative and managerial tasks, such as accounting, human resources, sales, etc., while male workers were more present on the factory floor. The machines can be physically difficult to operate, which is why the companies prefer males in those positions. In other listed occupations, women were most commonly found as food safety specialists, while machine operators, labellers and packagers, cleaners, and fruit harvesters were male-dominated occupations.

Table 11: Gender and age distribution of workers, as reported by the employers interviewed

Gender (average)		Age range (average)	
Male	Female	Male	Female
67%	33%	17-70	20-60

2.4.1.2. Existing formal and non-formal TVET programmes: analysing skills demand and supply gaps

Ministry of Agriculture-affiliated TVET institutes do not cater for jobs in the non-alcoholic beverages subsector. Companies in the subsector prefer job applicants, particularly for occupations such as machine operator and technician, to have a Superior Technician (TS) certificate in electronics or mechanics. Only one company, Junet, had any form of contact with TVET schools, namely those in Zahle, Qab Elias and Dar El Sadaah.

The TVET school in Qab Elias, in the Beqaa region, focuses on teaching food safety to those seeking to work in the food and beverage manufacturing industry. The school is intended as a hub with advanced technology and pilot plants and is currently managed by the Ministry of Education, but lacks the necessary maintenance and support. With only 10-20 students graduating each year, the school faced enrolment challenges even before the crisis, indicating a careers guidance mismatch. A phone conversation with the principal of the school was conducted in order to understand its current status. The principal pointed out that the school currently lacks adequate funding, while the rise in fuel prices made it difficult to operate the modern machines, so teaching had to be far more theoretical than practical. The teachers were in any case not adequately trained to use the machinery.

The company representatives expressed dissatisfaction with the graduates of TVET schools, saying that they often lacked the know-how and work ethic to do labour-intensive jobs. Lebanese graduates, in particular, were unpredictable. The representative of Innovation Beverages went so far as to say that the Lebanese graduates they received were none too enthusiastic about physical labour on the machines and were quick to leave if they found work opportunities abroad. The companies interviewed said they were unable to offer competitive salaries for Lebanese workers, which is why many workers in the listed occupations were Syrian.

2.4.2. Competencies needed for identified occupations and difficulties in hiring

The competencies for each occupation are as follows:

A. Machine operator

Mechanical skills	Familiar with automated machinery used in the non-alcoholic beverages sector (such as Kroner and Tetra Pak© machines)
	Able to operate automated machinery (safely and efficiently set up and shut down the machine; control and adjust machine settings)
Repair skills	Able to identify any problems with machinery
	Able to replace damaged parts, repair machine and clean installed appliances
Communication skills	Able to share ideas and give instructions to fellow workers if necessary
	Able to receive and implement supervisors' instructions

Physical skills	Has the endurance to complete tasks without injury
	Able to lift heavy items and perform necessary movements to produce results

B. Labeller and packager

Mechanical skills	Familiar with automated machinery used for labelling and packaging.
	Able to monitor quality of products to detect any machine-related mistakes
Organizational skills	Attention to detail to ensure that the right quantities and products are packed into the correct package and are handled with the necessary caution
	Maintains cleanliness of workspace and of labelling and packaging machinery
	Able to label things correctly and in accordance with guidelines, including date, shipment, price and quantity
	Able to maintain records of all material packaged using basic computer applications (Microsoft Excel, Word, PowerPoint)
Communication skills	Able to identify and report back to supervisors in the event of mishaps or issues with packaged items
	Able to receive and implement supervisors' instructions
	Able to inform supervisors of batch work completion
	Works with other team members to complete the necessary tasks
Physical skills	Has the endurance to transport packaged items to designated areas
	Able to lift heavy items and perform necessary movements to produce results

C. Cleaner and sorter

Hygiene skills	Familiar with quality control standards used in the company when cleaning workspaces and machinery.
	Maintains clean workspace areas throughout and after the production process.
Organizational skills	Attention to detail, making sure machinery is treated with care and the appropriate cleaning products
	Able to sort items based on specific factors, such as fruit quality, shape, texture, in order to dispose of material that does not correspond to company standards
Communication skills	Able to receive and implement supervisors' instructions

Note: Several companies stated that they do not look for workers with any particular skills as cleaners and sorters.

D. Food safety specialist

Scientific skills	Possesses the knowledge and ability to ensure the basic food safety and nutrition standards required by the Ministry of Industry
	Monitors storage conditions of food samples to ensure longevity
	Familiar with lab work and able to perform necessary analysis of food samples
	Able to provide solutions to any food safety-related issues
Practical skills	Has administrative and inspection skills to accept/reject incoming shipments of food and food ingredients based on food safety requirements
	Able to train employees on all processes and procedures to comply with health standards
	Able to ensure that food handlers maintain personal hygiene
	Maintains records of all incoming food shipments and ingredients acquired by using basic applications such as Microsoft Word and Excel
Production skills	Familiar with non-alcoholic production processes, methods and techniques
	Ensures that all food handling tasks are properly and safely carried out
Communication skills	Able to advise businesses on how to improve food standards
	Prepares written reports and communicates with management in the event of bad practices
	Is proficient in a foreign language (either English or French)

E. Fruit harvester

Harvesting skills	Able to identify fruits that are ripe based on size and texture
	Familiar with methods and tools used in harvesting (specifically hand tools, not machines, as highlighted by companies).
	Is able to harvest fruits while maintain quality and limiting damage to fruit.
Physical skills	Packs fruits into boxes while maintaining quality and loads heavy boxes into trucks.

***Note:** As with cleaners and sorters, some companies stated that they did not require fruit harvesters to possess any particular skills and looked for unskilled labourers.*

Technicians were in particular demand to maintain and repair expensive machinery. Companies such as Junet and Innovation Beverages stated that it was very difficult to find certified skilled technicians to handle the maintenance of specialized equipment. The technicians Junet has currently are skilled, but lack formal training and certification and had to be trained in-

house before being able to do the job. The representative of Innovation Beverages said that they had great difficulty finding good technicians, and that experience working with the machines and knowing how to repair them were the most important skills. They looked for TVET-certified technicians, but such candidates often lacked the required experience of working with the German machinery they have.

As in the dairy subsector, when recruiting delivery workers, companies looked for workers with skills and competencies in addition to having a driving licence, such as good negotiating skills, basic maths skills in order to keep track of all payments and issue appropriate receipts, and preferably knowledge of a second language (in particular English). Delivery workers in this subsector also tend to be men because of the physical strength needed to carry heavy loads, and for overall safety reasons, companies expressing concern about women handling payments, receipts and customers with no support.

2.4.3. Repercussion of skills gap on business performance

In terms of the skills and competencies needed in the subsector, 7 of the 11 companies interviewed stressed the need for technicians specialized in food and beverage machinery. According to Yamama's representative, the reason the subsector lacks specialists in this field is that no relevant courses are available. Yamama was asked about the Qab Elias school, which should primarily focus on graduating skilled workers and technicians in the food and beverages industry. Yamama simply said that they did not have any contact with TVET schools. They only had connections with exhibition holders (such as SIAL Paris; Gulf Food Dubai, etc.).

Table 12: Employers' responses to possible impacts of skills gaps on the performance of their business.

Impacts on business	Answered "Yes"
Loss of business or orders to competitors	4
Delay in developing new products or services	4
Difficulty meeting quality standards	3
Increased operating costs	2
Difficulty introducing new work practices	3
Increased workload on other employees	4
Outsourcing of work	4
Complete withdrawal of some products or services	1
Difficulty achieving customer service goals	4
Difficulty introducing technological change	3
None	2
Others	0

Technology plays an important role in the subsector, companies stating that they constantly seek to automate and streamline their processes. The interviewees believed the subsector had tremendous potential to generate substantial revenue for Lebanon given its high export potential, but the instability in the country was a primary hindrance to the development of the subsector. Companies are shifting towards healthier options, and going organic and chemical-free, especially those exporting to markets such as the EU and North America. Overall, the subsector is growing and is in great need of skilled labourers to maintain and increase its competitive edge.

3. Analysis and key takeaways

Employers have little confidence in the current certification system, the majority of interviewees in both subsectors indicating that prior experience is more important than a formal certificate. This is mainly because employers often lacked contact with TVET schools, were unaware of the programmes they offered and did not contribute to the development of those programmes, thus widening the gap between market demand and supply.

It also emerged from the interviews that employers do not necessarily perceive TVET-certified applicants as more skilled or capable than those who are not certified. This may be indicative of employers' overall perception of the TVET system in Lebanon as a whole, but may also be the result of the gulf between training institutions and the private sector, which was confirmed by Ministry of Agriculture TVET institutes. Most stated that they had some connection with the private sector, but none of the vocational institutes receive trainees from businesses, and contacts with the private sector are limited to asking business and farm owners to receive students so they can receive practical training. The employers interviewed either performed upskilling and reskilling of labour in-house or in collaboration with NGOs and universities. **None of the vocational institutes interviewed had access to any form of labour market information, or a department responsible for collecting and analysing national and international labour market data and skills development. The result is a lack of knowledge of the market demand for skills.**

In many developed countries, reforms in TVET in recent decades have increased the focus on labour market analysis in order to increase the relevance of training, evaluation, curriculum creation and delivery and to forge partnerships with industry. International experts agree that training initiatives by themselves are insufficient to solve potential skills gaps and mismatches as they cannot ensure retention, use of skills, or employment. **When developing curricula, a sectoral approach is more likely to result in successful skills development. It is crucial to involve the commercial sector in curriculum creation in order to increase the credibility and relevance of curricula.**¹³¹ Public-private partnerships (PPPs) are vital to strengthen and manage a national certification system because they may enhance the standard of the procedure and the relevance of certificates that reflect learning and skills development. None of the employers interviewed in either subsector provided apprenticeships, or any form of work-based learning, and only one Ministry of Agriculture TVET institute–Al Khiyaam–stated that trainees obtain an experience certificate from the entity with which they trained. This certificate is not recognized by the Government, however.

The interviews highlighted that a type of informal apprenticeship does take place in many of the companies in both subsectors. Due to the shortage of skilled labourers in occupations such as machine operators, an occupation found in both subsectors, employers often take on new recruits and give them on-the-job training. Each company relies on its own informal training criteria for monitoring the learning progress of the employee or potential employee, making the assessment of the skills level primarily dependent on the subjective judgement of the company, rather than

¹³¹ "Engaging the Private Sector in Skills", UKFIET International Conference on Education and Development (2015)

a common standard. As a result, workers receive varying sets of skills that remain unrecognized. **A competency-based certification system is needed that could officially recognize the skills that these workers receive on the job and testifies to their experience if ever they look for a new job.** This is why it is vital to strengthen collaboration between TVET institutes and the private sector. Establishing a system of recognition of prior learning (RPL) could help address skill shortages and worker adaptability, fostering access to higher education and decent jobs, contributing to the shift from the informal to the formal economy at the local level.

Another key takeaway from the interviews with employers is that Lebanon needs to diversify its specializations in different TVET trades. A common complaint was that workers were not conversant with the equipment or techniques used in either of the subsectors, and that the fully trained workers with specialized skills they needed were in very short supply. A modular system with specialized modules needs to be created to enable students to pursue training and courses tailored to their specialty.¹³² Specialization is crucial for Lebanese enterprises as it improves productivity and can give businesses a competitive edge, which in turn can assist in growing exports.¹³³ The flexibility of a modular system allows it to adapt to the needs of the market. If, in addition, there were an apprenticeship programme in which students were fully integrated into businesses thus recognizing market needs, students would be able to make informed choices as to which course or modules to pursue. Because in such a system students' demands would become much more visible and relevant, solutions would become much more practical, creating a teaching method that enabled instruction to become extremely responsive to market needs and the possibility of responding to problems with some speed. Increasing specialization and direct linkages to the labour market would help secure formal job opportunities for skilled individuals, particularly women and youth, across both subsectors.

A common theme regarding informal occupations in both subsectors is that informal occupations tend to be those that are of short duration and/or seasonal. In the dairy sector, milkers were often brought in when farmers needed additional support and were paid on a daily basis. In the non-alcoholic beverages sector, fruit harvesters were hired on a seasonal basis, and worked for a specific period of time. In both cases, employers stated that agreements were usually oral and not official. In Lebanon, the law does not require employment contracts to be in writing, they can be oral and also part-time.¹³⁴ Oral contracts predominate in sectors such as agriculture, which also tends to have a high level of seasonal and part-time employment.¹³⁵ The lack of an effective labour inspection system allows informal work agreements to proliferate. An effective labour inspection system with consistent follow-up is essential to guarantee adherence to labour law standards.

A further reason for informality in these occupations is that many of the workers performing them in both subsectors are Syrian.¹³⁶ In order to address these underlying issues, several policy actions need to be taken, such as requiring all contracts to be written, and increasing the inspection

132 Modularization is "breaking down of whole educational qualifications into useful sub-units (a module), each of which has measurable outcomes which are assessed in their own right, as well as contributing to a larger overall educational outcome". John Stanwick, "Modularization and Modular Delivery of TVET", *International Handbook of Education for the Changing World of Work* (2009)

133 Charles A. Diamond and Curtis J. Simon, "Industrial Specialization and the Returns to Labor", *Journal of Labor Economics* (1990)

134 Article 12 of the Labour Code states that an employment contract may be oral or written, and in both cases, must adhere to the norms of ordinary law.

135 LEADERS, "The Labour Sector in Lebanon: Legal Frameworks, Challenges, and Opportunities" (2019)

136 Article 5 of the NSSF's enrolment and registration system requires foreign workers in Lebanon to make payments to the Fund, but ties their eligibility for NSSF benefits to "reciprocity". According to the principle of reciprocal treatment, foreign workers who are officially registered and have valid work permits only qualify for NSSF benefits if their country of origin accords Lebanese workers the same privileges. The indemnities and compensations listed under branches 1, 2, and 3 of the Fund are guaranteed to foreign workers by article 9. However, the fourth branch, which deals with end-of-service compensation, deprives them of these advantages. This creates extra costs for the employer and provides the employee with no benefits. Because of their legal status, many Palestinian and Syrian refugees do not have valid work permits and, consequently, do not receive any benefits. The NSSF medical plan receives significant contributions on behalf of non-Lebanese employees, but does not accord them any corresponding benefits. As a result, a considerable proportion of actively contributing employees is unfairly left without health insurance coverage. Based on official data from the Ministry of Labour, a conservative estimate indicates that approximately 50,000 foreign workers with regular work permits (excluding Palestinian and refugee workers) should have been subject to the NSSF contribution as of December 2019. However, at least 93 per cent of them would be ineligible for benefits due to the absence of a reciprocity agreement.

capacities of the various ministries responsible.¹³⁷ Many of the skills employers look for in candidate milkers are similar to those offered by Ministry of Agriculture TVET institutes, particularly for the ‘assistant veterinarian’ occupation. The employers interviewed preferred milkers with a certain set of veterinary skills currently being offered by the Ministry of Agriculture TVET institutes. **In an effort to formalize existing occupations, the Ministry of Agriculture could enable businesses to send their workers for formal training. This would give seasonal workers often recruited for milking jobs the opportunity, not only to gain specialized skills in milking, but also additional skills that would help to broaden their job opportunities.**

Delivery stockmen in the dairy sector tend to be informal because of the lack of skilled labour available. The companies interviewed remarked that this occupation often had to be performed by unpaid family members to fill the gap, or that owners had to do the job themselves. This is an occupation that does not have any formal qualification system, as the skills required include a mix of both marketing and communication skills, as well as a thorough knowledge of the dairy sector and dairy products in order to identify target markets and maintain product quality throughout transportation, requiring a certain type of specialization. As almost all the dairy companies interviewed were in need of this occupation, short-term efforts could be made by training providers and different ministries (such as the Ministry of Labour, the Ministry of Agriculture and the Ministry of Education and Higher Education) to develop specialized courses for this occupation. **In this case, efforts to support the transition to formalization should include organizing training courses and conducting a skills test to award an occupational practice licence. Involving all concerned parties, especially private sector employers, in the design and implementation of skills tests would allow those tests to reflect current employer needs and improve the overall perception of skills recognition and certification programmes in the country.** This form of skills testing should not be exclusive to the occupation of delivery stockman, but should be extended to other informal occupations in the subsectors, such as fruit harvesters.

¹³⁷ The lack of enforcement can be attributed to the ineffective implementation and to the inadequate resources provided to key agencies established in law. The Ministry of Labour inspectorate responsible for ensuring compliance with legal requirements for working conditions and employee protection, including working hours, wages, safety and health, and child labour, has long suffered from staffing and resource shortages, which are likely exacerbated by the ongoing crisis. The increase in fuel prices also hampers inspections, as conducting inspections across different regions incurs significant costs. The Ministry of Finance also lacks the resources to conduct its own inspections, so there are few repercussions for those who choose to engage in informal economic activity.

PART 3: GAP ANALYSIS AND MAPPING

1. Employability gaps for workers in two selected agri-food subsectors

1.1. Employability gaps by occupation in the dairy production subsector

1.1.1. Management skills

The dairy production subsector is very dynamic and competitive, and is subject to high levels of regulation, technological progress and changing consumer preferences that create a constant need for new ideas. The dynamism of the sector requires the farm to be transformed and looked at through a business lens. Several of the employers interviewed for this study were farm managers and said that technical support would help them to manage their farms more profitably. Such technical support includes soft skills training, marketing training, budgeting, market studies. Farm managers have an important role to play in ensuring a decent work environment, as well as efficient business operations. Employers said they often felt overwhelmed, and found little support and few management skills among their employees to ease the burden. Farm managers and assistant farm managers would therefore benefit from training in business management and leadership, communication, strategic planning and development, and production management and planning. Currently, TVET institutions do not offer any specific vocational path specifically geared to farm management. The American University of Beirut offers a Bachelor of Science degree in agribusiness that should equip students with the necessary knowledge and skills to become farm managers.¹³⁸ Alternatively, international institutions and NGOs collaborate with the Ministry of Agriculture to provide training in the dairy sector. The FAO, for example, recently held a training session for facilitators, most of whom were from the Ministry of Agriculture, to enable them to guide dairy farmers in managing and transforming their farms into profitable agricultural businesses. In the long term, these training initiatives should be transformed into full-scale vocational pathways.

1.1.2. Production skills

According to focus group participants, the dairy sector has two basic aspects: livestock management, and processing. Many farmers do not have the necessary livestock management and feeding

¹³⁸ It is important to note that, although this university degree is available, focus group participants said that university graduates tend to lack practical experience working on farms, despite having good theoretical knowledge, further highlighting the need for greater cooperation between educational institutions and the private sector.

knowledge to produce good quality milk, which creates additional costs on the production side. For example, according to focus group participants, farmers are unaware of how animal feed can damage milk quality. Many farmers feed their cows low quality, cheaper animal feed, assuming that milk quality will be unaffected. Consequently, dairy producers are forced to bear the high costs of milk quality assessments in order to ensure that the milk they are purchasing from farmers is fit for consumption. When asked how this issue could be tackled, participants replied that many companies are opting to use powdered milk rather than fresh cow's milk. This is because the quality of powdered milk is constant, while the milk they purchase from farmers may vary in quality across different batches from the same farmer. They supported the idea of cooperatives and farmers working together. Farmers often complain of low milk prices, which in turn drives them to purchase cheap, low quality animal feed. If they were to come together in a cooperative, milk prices might increase and stabilize. Focus group participants said that they would be prepared to pay more for milk, if it met the quality standards they required.

On the processing and production side, dairy processing in Lebanon can be automated or manual. In either case, workers require technical skills to operate at full productive level to produce high-quality, standardized products. For dairy manufacturers, production skills are therefore necessary, either the ability to operate machinery and equipment, or familiarity with the process of manual transformation of milk into alternative dairy products. For example, technical skills are required for milk pasteurization, where every particle of milk is heated to a specific temperature for a specific period of time, and later cooled, at the same time avoiding re-contamination. In the homogenization phase, raw milk is pushed through an atomizer to disperse the fat evenly throughout the milk in order to prevent it from floating to the top of the container. Milk is then spun through a centrifuge to separate the cream from the milk. Following the separation process, the leftover milk and cream are combined to achieve the appropriate fat level for the various milk varieties. Further processing steps depend on the type of dairy product. An additional step is moulding and packaging, which also require skilled labour. Most dairy companies have a machine that simplifies the process, but skilled workers are needed who understand what different milk pH levels and temperatures mean, what fat and protein levels are needed, how to operate the machines, and how to maintain a hygienic environment. It is difficult for enterprises to find staff with the qualifications and experience required in this field. According to focus group participants, it is very difficult to find workers with experience of dairy processing, but even more difficult to find workers who are willing to perform such tasks. Companies have to rely on foreign workers to fill the gap.

This skill gap among dairy manufacturers and machine workers prevents many companies from developing new products. Focus group participants said that traditional Lebanese white cheeses face a lot of illegal competition from informal businesses so companies are seeking to create cheaper versions of imported yellow cheeses. However, this form of production requires skilled dairy workers. The lack of dairy production specialization in TVET institutions was a common concern, and a central recommendation was the need for apprenticeships and specialized modules. When asked about the availability of alternative training specifically for dairy production, respondents stated that the training offered by NGOs was more tailored to small-scale home production than industrial production. If training were offered by an international company, many companies could not afford to send their workers. According to Mr. Sari Bou Karam, owner of 'La Belle Blanche', his company has recently signed a partnership with the Batloun Vocational Institute to design a 20-day training course for those wishing to learn more about dairy processing. This form of partnership is the first of its kind and Mr. Sari hopes to expand the 20-day training into a fully-fledged course and diploma.

1.1.3. Distribution skills:

Delivery stockmen are essential to the smooth and timely delivery of orders, as well as to secure and effective storage and distribution. The limited shelf life of most dairy products makes efficient distribution and robust logistical abilities essential. As many companies cannot afford large marketing campaigns, they often rely on their personnel and their distribution chains as their main source of exposure. According to the companies interviewed and focus group participants, delivery stockmen need proficiency in marketing to adapt to shifting market conditions, build strong client relationships and sales alliances, and create a tactical sales plan. Crucially, they need to have very good communication skills (such as negotiating and persuading, advertising, sales promotion and publicity, and good customer relationships). This includes having high emotional intelligence to understand future customer preferences, identify potential customers, develop solutions to customer needs, and contribute to product development. Although Ministry of Agriculture TVET institutes and Qab Elias school offer marketing courses as part of their curriculum, no course specializes in distribution and logistics. As there is a great need for such skilled labour, developing this vocational pathway would create job opportunities and reduce informal labour.

1.2. Employability gaps by occupation in the non-alcoholic beverages subsector

1.2.1. Production skills

Production skills are essential in this subsector, as they are in the dairy subsector. Machine operators were among the employees most in demand by the companies interviewed, with a notable skills gap existing. According to respondents, machine operators are mainly responsible for checking on the working and performance of all machinery (for example fruit pulper, juice extractor, clarifier, filter, pasteurizer, packaging machines, etc.) and using the tools required for the processing phase. The companies interviewed and focus group respondents said it was rare to find skilled workers familiar with the machinery used in the company, much less with previous experience of using the machines. All workers tend to require in-house training before they are able to operate the machines unsupervised. Moreover, companies require specific hygiene standards to be maintained, such as cleanliness of the work area by using company approved cleaning materials to keep machines free from dust, waste and other unhygienic material.

In 2023, the Ministry of Education and Higher Education, the Ministry of Industry and the Association of Lebanese Industrialists signed a memorandum of understanding on cooperation to advance technical and vocational education and training to prepare a skilled workforce for the industrial labour market,¹³⁹ the ILO Regional Office for the Arab States providing technical assistance in its development. The aim is to strengthen ties between training facilities and industry in order to provide higher-quality education and a supportive environment for an inventive, competitive and productive industrial sector. In support of a national recovery strategy, the memorandum of understanding establishes a strategic framework for a public-private collaboration that encourages lifelong learning. The three parties committed to working together on skills planning, competency-based curriculum upgrades, technology exchange, real-world work experience, cofinancing skills delivery, and supporting opportunities for lifelong learning and the transition from education to employment. As a pilot project for this collaboration, the Technical Institute for Food Industries, Qab Elias, is set to serve as a model for TVET centres and future skills systems for entrepreneurship, production and training.

¹³⁹ ILO, "New cooperation set to prepare a better skilled industrial workforce in Lebanon", Press Release, 25 June 2023

The Qab Elias school offers a BT certificate in food manufacturing and hotel management, a TS certificate in food manufacturing, health control and food safety, hotel management, and heating and cooling system operation, and an LT certificate in food industry production management and health control and food safety.¹⁴⁰ Qab Elias is unique in offering agro-industrial training. It has small-scale industrial machinery, which has enabled it to set up a dairy plant, a bakery, a butchery and a manufacturing line for fruits and vegetables. These allow students to replicate working conditions found in the agri-food sector.¹⁴¹

In theory, this collaboration is on the right track, but it emerged from an interview with Mr. Issam Mehyedine, the principal at Qab Elias, that the school struggles with challenges similar to those faced by other TVET institutes interviewed, including lack of funding and high fuel prices. Moreover, although the school has a good relationship with the private sector, with well-established communication channels, only one of the companies interviewed, Junet, had any form of contact with it. If it is to help to fill the skills gap in the non-alcoholic beverages subsector, particularly among machine operators and technicians, Qab Elias school needs increased financial and technical support so that it can provide students with practical training and attract new students.

Focus group participants asserted that the general public knew little of the reality of manufacturing today. To combat this, an awareness campaign was needed to inform people how manufacturing and other vocational paths can be fulfilling employment choices for young people. Educators and counsellors must be prepared to advise pupils about a variety of educational and professional paths, highlighting the importance of and demand for specialized machine workers.

1.2.2. Repair skills

In the non-alcoholic beverages sector, machines are becoming more advanced and are frequently software-based, requiring a larger skill set. In theory, the Qab Elias school is equipped with some of the latest technology in food manufacturing, allowing students real work experience. Interviews with employers suggested that almost all companies have a skills gap in relation to machine operators. Companies such as Junet and Innovation Beverages said it was very difficult to find certified skilled technicians to handle the maintenance of specialized equipment. The representative of Junet said that their current technicians are skilled, but lack formal training and certification and had to be trained in-house. The representative of Innovation Beverages said it was very difficult to find good technicians, and that experience of working with the machines and the ability to repair them were the most important skills. Candidates with a TVET degree often lacked the required experience of working with the German machinery the company used.

According to focus group participants, the acquisition of skills in the maintenance of industrial equipment and machinery would enable employees to work in a range of manufacturing enterprises in numerous sectors, as maintenance is a key competency requested of machine operators in both subsectors and could be considered a separate occupation. An emerging need in the non-alcoholic beverages subsector, in particular, was for technicians for machinery and wastewater treatment plants, for example. Employees in this field are responsible for ensuring machinery operates correctly, adjusting machines before use, and ensuring that machinery is constantly operational. For focus group participants hygiene was a key issue. In order to guarantee food safety when production is restarted, for example, maintenance and repairs must be performed in accordance with food hygiene regulations. The lack of qualified staff also results in inefficient output. All the companies needed additional training for machine maintenance and repair technicians, many resorting to outside assistance in this matter, which created an additional cost burden for companies. It is vital to train people to maintain and repair the machinery unique to various industries.

¹⁴⁰ Based on an interview with Qab Elias School Principal, Mr. Issam Mehyedine.

¹⁴¹ Ministry of Education and Higher Education, ILO and other, *National Strategic Framework for Technical Vocational Education and Training in Lebanon 2018-2022*

1.3. Common employability gaps for workers in the two selected agri-food subsectors

Many employers complain of workers' lack of soft skills. The most common soft skills in demand by employers in both subsectors, and across nearly all occupations, were communication skills: the ability to understand instructions, communicate effectively with clients and report back to supervisors. Being respectful and adhering to confidentiality were also considered important. Employers also want workers with foreign language skills, time management and analytical skills, and a degree of emotional intelligence. For example, one employer said that what ultimately matters most is an employee's dependability, including punctuality, dedication and successful integration in the culture of the company. This extends to all occupations, and was a sentiment shared by other focus group participants, especially the representatives of non-alcoholic beverages companies.

2. Consolidated mapping tables

2.1. Skills needed and skills gap by occupation

Table 12: Skills needed and skills gaps by occupation in the dairy production subsector.

Agri-food subsector	Occupation	Skills needed										
		Managerial skills	Computer skills	Leadership skills	Communication skills	Marketing skills	Organizational skills	Veterinary skills	Scientific skills	Production skills	Practical skills	Mechanical skills
Dairy production	Farm manager	✗	✗	✗	✗							
	Delivery stockman		✗		✗	✗	✗					
	Milker				✗		✗	✗			✗	
	Food safety specialist				✗				✗	✗	✗	
	Machine operator				✗					✗	✗	✗

- ✗ Skill essential to their role
- ✗ Training not provided by TVET and required
- ✗ Training provided by TVET but not sufficiently
- ✗ Training provided by TVET and basic training improvements required
- ✗ Sufficiently skilled by existing programmes

Table 12 shows that farm manager, delivery stockman and milker are all occupations not currently covered in any official TVET curriculum, although some aspects of their work are provided. For

example, the emphasis on cattle health, hygienic approaches and milk quality leads employers to prefer milkers with veterinary skills similar to those offered by the Ministry of Agriculture TVET schools in “assistant veterinarian” courses. As many dairy processors do not own their own livestock, providing Ministry of Agriculture-backed training for people working with livestock would help improve milk quality overall, increase milk prices, and ultimately improve farmers’ livelihoods. Dairy processors that are also producers face similar problems of workers lacking hygienic practices and knowledge of livestock health. Providing formal training and certification to seasonal workers recruited for milking would give them, not only the opportunity to gain specialized milking skills, but additional skills that would help broaden their job opportunities.

Farm management is another specialization not currently offered by TVET institutes. Although universities offer a bachelor’s degree in agri-business and farm management, employers complained that university graduates did not have the skill set needed for this position. While these graduates tended to have good theoretical knowledge, they often lacked the ability to apply it in practice. Specialized dairy farm management was not an option offered in all schools, and employers said there was a compelling need to introduce such a module, as farm management requires a thorough understanding of livestock, as well as proficient managerial skills. As for delivery stockmen, focus group participants pointed out that workers in sales usually avoid the dairy subsector because it is seen as not as profitable as others. They also lack an understanding of the products they are trying to sell, especially if these products are ‘baladi’ and what this label means in terms of taste, texture, etc. Therefore, it is important to expand the scope of TVET and to strengthen existing aspects that fall below market expectations.

Table 13: Skills needed and skills gaps by occupation in the non-alcoholic beverages subsector.

Agri-food subsector	Occupation	Skills needed									
		Mechanical skills	Repair skills	Physical skills	Communication skills	Hygiene skills	Organizational skills	Scientific skills	Production skills	Practical skills	Harvesting skills
Non-alcoholic beverages	Machine operator	✗	✗	✗	✗						
	Labeller and packager	✗		✗	✗		✗				
	Cleaners and sorters				✗	✗	✗				
	Food safety specialist				✗			✗	✗	✗	
	Fruit harvester			✗							✗

✗ Skill essential to their role

Training not provided by TVET and required

Training provided by TVET but not sufficiently

Training provided by TVET and basic training improvements required

Sufficiently skilled by existing programmes

In the non-alcoholic beverages subsector, no TVET programme specifically dedicated to cleaners and sorters or fruit harvesters is currently offered. Focus group participants pointed out that training is often aimed at farmers, who are then expected to transmit the knowledge they have acquired to their fruit harvesters. Participants also pointed out that informality is ubiquitous for fruit harvesters, as agreements are usually oral and may be for a day, a week or a month, depending on the season. Companies often liaise with farmers directly, and those that are ISO-certified require the fruit they purchase to comply with certain standards of quality. Focus group participants said it was important for fruit harvesters to be aware of certain harvesting techniques for different fruits, which is why companies favoured farmers with whom they had established relationships of trust. They also explained that the economic crisis had increased the number of Lebanese willing to work as fruit harvesters, cleaners and sorters, jobs previously undertaken almost exclusively by foreign workers. This situation has created a need for targeted training, especially for those who are looking for additional income and do not have prior experience in the agricultural or agri-food sectors. As for the remaining occupations, most notably machine operators, the programme currently provided by the Qab Elias school is comprehensive and should be replicated in other TVET schools. The current socio-economic circumstances and minimal resources at the Directorate General of TVET have prevented the school from achieving its full potential, however, which is why building on the memorandum of understanding already established to provide additional technical and financial support to Qab Elias is needed.

2.2. Skills currently offered by TVET training programmes

Table 14: Overview of existing TVET programmes offered for the dairy production and non-alcoholic beverages subsectors.

Existing TVET programmes for the two agri-food subsectors					
Agri-food subsector	Official TVET training programme	TVET training provider	Occupational qualifications	Skills covered	Additional skills needed
Dairy production	The official vocational programme for Lebanese agricultural professionals and institutes.	Public vocational institutes and schools / Official and contractual public sector teachers	• BT as Veterinary Assistant • BT as Assistant Agricultural Engineer	Veterinary skills Managerial skills Marketing skills Leadership skills Technical skills Organizational skills	Production skills Computer skills Mechanical skills Communication skills
Non-alcoholic beverages	The official vocational programme instituted by the Industrial Research Institute	The Technical Institute for Food Industries – Qab Elias	BT: • Food manufacturing • Hotel management TS: • Food manufacturing • Health control and food safety • Hotel management • Heating and cooling LT: • Food industry Production management • Health control and food safety	Mechanical skills Physical skills Hygiene skills Organizational skills Practical skills	Repair skills Communication skills Production skills Harvesting skills

Table 15: Non-TVET training providers identified for the two agri-food subsectors.

Alternative non-TVET training providers:		
Agri-food subsector	Training providers identified during interviews	Training providers identified through desk research
Dairy production subsector	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) Lebanon Berytech ESCWA American University of Beirut	Safadi Foundation Makhzoumi Foundation Rene Moawad Foundation AVSI IECD ILO World Bank UNHCR ANERA FAO
Non-alcoholic beverages subsector	Berytech ESCWA American University of Beirut Lebanese American University Saint Joseph University	ISO Liban Société Générale de Surveillance (SGS) Lebanese American University (LAU)

3. Future demand for skills in the two subsectors

The food industry has recently seen quick and consistent changes as a result of the Fourth Industrial Revolution (Industry 4.0.), which has numerous potential applications in the agriculture and agri-food processing sectors. Industry 4.0 refers to new manufacturing processes that are partly or entirely automated by technology, and machines that communicate autonomously with each another along value chain activities.¹⁴² Industry 4.0 is smart manufacturing built on the interaction of machines and electrical equipment with modern IT systems that enable process optimization and higher productivity of value creation chains.¹⁴³ This includes increased yields, resource efficiency, reduced loss and food waste, and improved prediction and control of crop yields.¹⁴⁴ For example, vineyards and wineries in Lebanon are actively using digitally enhanced precision agricultural technology to monitor growth conditions and vine performance.¹⁴⁵ The expansion of digital agriculture in the region is limited by several factors, including farmers' limited understanding of digital technologies and their applications, which are exacerbated by language barriers, poor accessibility and affordability, and limited access to finance and data. The digital transformation of the agriculture and agri-food sectors is contingent upon numerous factors, including an increased awareness of the application of digital technologies in agriculture and agri-food by users, an enabling policy environment and e-Government systems, and support for the development of digital entrepreneurship ecosystems.¹⁴⁶

¹⁴² Deloitte Insights, "Forces of change: Industry 4.0" (December 2017)

¹⁴³ Grace Karacay, "Talent Development for Industry 4.0" in *Industry 4.0: Managing the Digital Transformation – Springer Series in Advanced Manufacturing* (September 2017)

¹⁴⁴ World Bank, "A Roadmap for Building the Digital Future of Food and Agriculture" (16 March 2021)

¹⁴⁵ AUB and World Bank, *Digital Revitalization of the Agri-food Sector in Mashreq: Focus on Iraq, Jordan, and Lebanon* (2021)

¹⁴⁶ AUB and World Bank, *Digital Revitalization of the Agri-food Sector in Mashreq*

While digital agriculture provides opportunities to generate more productive and remunerative employment prospects, the next generation of agri-food workers will be required to have both domain expertise and enhanced digital literacy in agri-food systems.

For example, as a result of Industry 4.0, the skill sets of the future workforce are expected to place greater emphasis on more sophisticated social, emotional, cognitive and technological skills (such as critical thinking, advanced problem-solving, creativity, teamwork and decision-making) than basic physical and manual skills, and it is suggested that technological skills will be more important than administrative and technical skills.¹⁴⁷ Similarly, the public and private sectors will have to learn to use and disseminate digital data as data-driven business models and solutions expand. This will necessitate a wide spectrum of experts, including data scientists and engineers.¹⁴⁸ The demand for management, communication and organizational skills is also expected to surge.¹⁴⁹ This is corroborated by the responses of the employers interviewed and the focus group participants, who unanimously stressed the need for core soft skills across nearly all occupations and had difficulty finding workers matching their expectations. There is therefore an urgent need to develop relevant skill sets for workers to support their active participation in the digital economy. Strengthening existing modules pertaining to entrepreneurial and life skills and introducing modules on digital technology in the curricula of TVET schools and agricultural institutes could foster the building of skill sets that are beneficial and relevant to digital development in the agriculture and agri-food sectors.¹⁵⁰

The low literacy of smallholder farmers might bar them from using and benefiting from digital tools, and risks alienating them; at the same time, some occupations, particularly the more manual or “low-skilled” kind, might be threatened by the introduction of automated digital technologies. Milkers in the dairy subsector and fruit harvesters and cleaners in the non-alcoholic beverages subsector are the sort of occupations that could be affected by the introduction of specialized robot technology to perform manual tasks (including milking cows and harvesting fruit). This has severe implications for the livelihoods of the manual workers currently hired to perform these tasks, the overwhelming majority of whom this study has found to be foreign informal workers. The possibility that whole swathes of manual labourers will be replaced by specialized technologies is supported by emerging data,¹⁵¹ although this trend is most likely to apply to capital-intensive producers and wealthier farms. Furthermore, the knowledge base for building and maintaining digital technology may create new job prospects, which could be particularly appealing to young people. The modernization of the agriculture and agri-food sectors may generate more competitive, remunerative and productive jobs along agri-food value chains. At the same time, the introduction of digital technologies and solutions in agriculture and agri-food is not necessarily incompatible with the inclusion of smallholder farmers, who can be assisted by such technological solutions to improve their skills as they use them, and ultimately, improve their productivity.¹⁵² Upskilling and reskilling are opportunities for workers to retain their jobs and minimize the risk of being replaced by machinery; human intervention in machine oversight and maintenance is expected to become increasingly crucial.¹⁵³

147 Jacques Bugin and others, *Skill Shift: Automation and the Future of the Workforce - Discussion Paper*, McKinsey Global Institute (May 2018)

148 World Bank, *What's Cooking: Digital Transformation of the Agrifood System* (March 2021)

149 David J. Deming, “The Growing Importance of Social Skills in the Labor Market”, *The Quarterly Journal of Economics*, vol. 132 issue 4 (November 2017)

150 Representatives of Ministry of Agriculture TVET centres interviewed stated that recent revisions to the curriculum, made with the technical support of the FAO, emphasized the development of entrepreneurial skills.

151 World Bank, *What's Cooking: Digital Transformation of the Agrifood System*

152 AUB and World Bank, *Digital Revitalization of the Agri-food Sector in Mashreq*

153 Tugce Akyazi and others, “A Guide for the Food Industry to Meet the Future Skills Requirements Emerging with Industry 4.0” (April 2020)

PART 4: RECOMMENDATIONS

1. **Adopt a sectoral approach to the development and updating of TVET curricula in order to increase the credibility, relevance and accessibility of material.** The importance of involving the private sector in skills development with public and private training providers cannot be exaggerated. UNESCO's TVET Strategy (2022-2029)¹⁵⁴ argues that the private sector plays a crucial role in articulating the demand for skills, and in providing work-based learning, investing in skills and the recognition and certification of acquired skills. Governments therefore need to coordinate skill-building initiatives with the private sector in order to match economic shifts and labour market demands.
 - a. **Build the capacity of school advisory board members and enhance their competencies to improve the performance of such boards in Lebanon's TVET institutions.** Board members include staff of TVET institutions (directors, managers and teaching staff) and private sector employers appointed by decision of the Directorate General of TVET to monitor the functioning of the school or institution and to advise on the competencies needed in the labour market.¹⁵⁵ School advisory boards thus represent a practical means of strengthening the connection between TVET institutions and the private sector and of guaranteeing the quality of TVET programmes and their correspondence to the demands of the labour market, and should be given the necessary support to perform their function.¹⁵⁶
 - b. **Develop partnerships between industry employers and training providers, similar to the one signed between the Ministry of Education and Higher Education and the Association of Lebanese Industrialists, to strengthen curricula, train teachers and provide work-based learning opportunities.** These partnerships can lead to future work placements and provide on-the-job experience for students and teachers, reducing the skills gap within the market. In order to foster connections with industry players, joint training programmes should be made available to instructors and students at TVET institutions and universities. In addition, practical apprenticeships should be offered to supplement the theoretical information taught in the classroom. Training should be tailored to the demands of the workforce and aimed at students who are interested in working in the agri-food sector. A public-private partnership is essential to providing cooperative, outcome-based training. This type of approach would make it possible for educators and students to learn about the technical advances occurring in the agri-food sector.

¹⁵⁴ UNESCO, *UNESCO Strategy for TVET (2022-2029): Transforming TVET for successful and just transitions* - Discussion document (2021)

¹⁵⁵ ILO, *Quality Assurance and Accreditation in Technical and Vocational Education and Training in Lebanon: Towards a National Quality Assurance Framework* (May 2021)

¹⁵⁶ The International Training Centre of the ILO (ITC-IL), in collaboration with GIZ, has already designed a [40-hour eLearning course](#) intended to develop participants' competencies in implementing school advisory board operations, and 55 school advisory board members from 14 TVET institutions took part in the training programme between October and November 2021. See ILO, ["Increasing collaboration and quality in Lebanon's TVET sector"](#) - News (17 November 2021)

2. **Strengthen public employment services in the country to gather recent labour market information through the development of a labour market information system (LMIS) to inform the modernization of Lebanon's TVET education system and develop efficient skills anticipation strategies.** This study found that none of the TVET institutes interviewed had access to labour market information or had a specialized department in charge of disseminating national and international labour market information. The analysis of labour market information is crucial to the development, implementation and evaluation of employment policies.
 - a. **Establish in all public and private schools employment guidance officers with the technical capacity to conduct tracer studies to be supported by specialized international organizations.** Under a 2015 Ministerial Decree, employment guidance officers were to be appointed in public and private schools to support students with one-to-one career counselling and soft skills training (interviews, CV-writing, job search strategies) and to assist TVET students with internships and job placements.¹⁵⁷ The Institute for Entrepreneurship and Careers Development (IECD) estimates that, with its assistance, 23 employment guidance officers had been trained and appointed by 2021—five in private schools and 18 in public schools—and that 10,000 students had been supported by the services of such officers since 2012.¹⁵⁸ With further technical support, employment guidance officers can develop the capacity to begin launching tracer studies monitoring the employment status of graduates, and gather labour market information such as pay, position, primary tasks, and job satisfaction.
3. **Support the adoption of a competency-based education and training system, facilitated by multi-stakeholder collaboration between the Directorate General of TVET and representatives of the private sector.** The competency-based education and training system is a systematic approach to that hinges on students' acquisition of the skills and competencies needed to carry out simple or complex tasks to a predetermined standard.¹⁵⁹ Transitioning to this system in Lebanon is contingent upon active and continued collaboration between the Directorate General of TVET and private sector representatives in carrying out occupational analyses to identify competencies, verify occupational profiles and develop competency standards for different professions to feed into the development of competency-based training programmes.¹⁶⁰
 - a. **Set up a national quality assurance framework (NQAF) to gather information and gain oversight on the competence, performance and standards of practice in TVET institutes.** The relevant government agencies, such as the Directorate General of TVET, the Ministry of Agriculture, the Ministry of Social Affairs, the National Centre for Vocational Training (NCVT) and the National Employment Office must evaluate and consider their current licensing requirements and quality assurance practices in order to implement a quality assurance framework. This would involve establishing clear guidelines for the accreditation of both public and private providers of formal and non-formal TVET. At the very least, the criteria should guarantee the presence of internal quality control systems, competency-based education and evaluation, physical resources (facilities and equipment), human resources (teaching and support staff), student services and relevance to the labour market.¹⁶¹ Establishing a unified framework for quality assurance would boost the TVET system's accountability and direct initiatives towards raising the standard of education.

¹⁵⁷ ILO, *Quality Assurance and Accreditation in Technical and Vocational Education and Training in Lebanon*

¹⁵⁸ IECD, "A trade and a job at your fingertips to ensure your future and the future of your country" (2022)

¹⁵⁹ UNICEF and ILO, *Competency-Based Training (CBT): An Introductory Manual for Practitioners* (2020)

¹⁶⁰ Ministry of Education and Higher Education, ILO and others, *National Strategic Framework for Technical Vocational Education and Training in Lebanon (2018-2022)*

¹⁶¹ ILO, *Quality Assurance and Accreditation in Technical and Vocational Education and Training in Lebanon*

- b. Establish mechanisms for the recognition of prior learning (RPL) that officially recognize the skills workers acquire on the job and testify to their experience if they are in search of a new job.** Within a competency-based education and training system, skills recognition and accreditation of competencies is informed by the formal qualifications listed in the national quality assurance framework. The lack of both a competency-based education and training system and a national quality assurance framework means that the recognition of competencies acquired on the job cannot currently be verified in Lebanon.¹⁶² Establishing recognition of prior learning mechanisms would help address skill shortages and worker adaptability, foster access to higher education and decent jobs and contribute to the shift from the informal to the formal economy at the local level.
- 4. Create a modular system with specialized modules to provide opportunities for students to pursue training and courses tailored to their desired specialty.** Implementing a modular system would enable students to earn credits from specific and recognized units of competency in the labour market.¹⁶³ Currently, the Lebanese TVET system does not allow for modularization, except for the BT in beauty, while students in formal or accelerated training lack the option of obtaining a certificate for the modules they have completed, pending their fulfilment of all requirements leading to certification.¹⁶⁴ The introduction of flexible modular courses supplementary to the standardized curriculum and aligned with current labour market demands would allow students to develop specialized skill sets, earn defined credentials and enter the labour market successfully. Modules also enable TVET providers to be more responsive to labour market developments and provide training for the skills most in demand.
- 5. Provide opportunities for businesses to send their workers to receive formal training at TVET institutes by offering short-term training courses.** These short, certified initial training courses could serve as an alternative to in-company initial training and would serve to enhance collaboration between TVET and the private sector. The design of these short courses should be done in a way that takes into account different levels of training (entry-level, intermediate, etc.) and should enable participants to meet workplace standards.
- 6. Organize training courses and conduct a skills test to award an occupational practice licence to workers in the informal economy.** Involving all concerned parties in the design and implementation of skills tests, especially private sector employers, will allow the skills test to reflect current employer needs and improve the overall perception of skills recognition and certification programmes in the country.
- 7. Strengthen existing modules on entrepreneurial and life skills and introduce modules on digital technology** in the curricula of TVET schools and agricultural institutes to foster the building of skill sets that are beneficial and relevant to digital development in the agriculture and agri-food sectors.

162 Ministry of Education and Higher Education, ILO and others, *National Strategic Framework for Technical Vocational Education and Training in Lebanon (2018-2022)*

164 ILO, *Quality Assurance and Accreditation in Technical and Vocational Education and Training in Lebanon*

ANNEX

1. Questionnaire for Ministry of Agriculture TVET institutes

Training provider	Training programme	Description of training programme	Duration of programme	Number of enrolments and graduates in 2020/2021/2022

Training programme available:

1. Do you have a training programme for the following five occupations in the dairy sector? **Farm manager; Dairy delivery stockman/stockwoman; Milker; Food safety specialist; Dairy Producer/Machine worker.** OR Do you have a training programme for the following five occupations in the non-alcoholic beverages sector? **Machine operator; Labeller and packager; Cleaner and sorter; Food inspector; Fruit harvester?**
2. Can you describe the curricula offered at your establishment? What are the main topics/skills targeted? What is the training process?
3. In the programmes you offer, what are the main competencies that you focus on for each occupation? Please list them.

For The Dairy Sector:

Occupation	Competency
Farm manager	For example: management skills (including coordination across functions, problem solving, and time management); ability to recruit and train new staff; IT skills; ability to organize and coordinate breeding of livestock and raising of replacements; communication skills, etc.
Dairy delivery stockman/ stockwoman	For example: ability to lift and carry heavy loads; basic maths and record-keeping skills (collecting invoices); ability to manage and properly stock shelves, warehouses and storage areas; ability to maintain product quality during transportation; communication skills and negotiating skills.
Milker	For example: ability to identify certain illnesses in cows (teat damage, clinical mastitis and lameness); familiarity with milking procedures: cooling and refrigeration, milking all cows in an orderly, proper and consistent manner; ability to operate all milking equipment; ensure machine sanitation; good with livestock and ability to properly manage livestock, etc.
Food safety specialist	For example: knowledge of and ability to ensure basic food safety and nutrition standards; familiarity with lab work and ability to perform necessary analysis of food samples; ability to monitor storage conditions of perishable foods; leadership and management skills; communication skills, etc)
Dairy producer/ Machine worker	For example: ability to operate different machines (please list names of machines); knowledge of computerized and automated machinery (please name machines); knowledge of and ability to monitor and maintain equipment and ability to perform corrective machine adjustments; knowledge of cleaning materials and processes for sanitizing machines; attention to detail, etc.

For Non-Alcoholic Beverages Sector:

Occupation	Competency
Machine operator	For example: ability to work different machines (please name machines); knowledge of computerized and automated machinery; knowledge of and ability to monitor and maintain equipment and ability to perform corrective machine adjustments; knowledge of cleaning materials and processes for sanitizing machines; attention to detail; etc)
Labellers and packagers	For example: know how to operate machinery; basic math and record keeping skills; organizational skills; ability to maintain product quality during distribution; communication skills; etc.
Cleaners and sorters	For example: knowledge of quality control standards; ability to sort items based on specific factors; basic literacy and numeracy skills; organizational and time management skills; communication skills; etc.
Food inspectors	For example: knowledge of and ability to ensure basic food safety and nutrition standards; ability to perform necessary analysis of food samples; managerial and inspection skills to accept/reject incoming shipments of food and food ingredients on the basis of food safety requirements; leadership and interpersonal skills; communication skills; etc.
Fruit harvesters	For example: knowledge of methods and tools used in harvesting; physical ability to work different harvesting tools and machines; knowledge of post-harvest practices to maintain fruit quality; knowledge of quality control and food safety requirements; attention to detail, etc.

4. Do these training programmes lead to recognized qualifications?
5. Are entrepreneurship skills taught as part of skills development programmes?
6. What are the main characteristics (socio-economic, gender, age, education level) of those who undergo training?
7. What is the average level of education of workers who attend training?
8. Is there a noticeable difference in skill level between different demographics? Please elaborate.
9. Do you have connections with the private sector? Do companies often refer workers to you for upskilling and reskilling training? If so, for what occupations?
10. Do you have access to regular reporting of skills shortages and hard-to-fill vacancies? If so, is anything being done to address these shortages? In other words, what skills are currently in demand in the labour market for which there is no training programme or for which the training programme is outdated? What occupations are most impacted by this shortage?
11. What are the main challenges you face when providing training (financial challenges, competition from other training providers, workers are not serious about the training, curriculum development, etc.)? Which skills are the most difficult to deliver?

Curriculum and qualifications:

12. Are there clear targets in place at the national level for skills development impact, outcomes and output?
13. Are there clear targets in place on the internal (institutional level) for skills development impact, outcome and output?
14. Does your facility have a department responsible for gathering and analysing national and international labour market and skills development data? If so, how is this data used?
15. How often do you update your training programmes? Are there any examples of recent reviews of training programmes? Why were they made?
16. Do training institutions/training providers follow up with their pupils and conduct tracer studies for each batch of graduates?
 - a. If so, does the data gathered have an impact on course design and the design of training materials? Can you give an example?
17. Do training institutions offer post-training support to facilitate the integration of trainees into the labour market? Do you have formal arrangements with local employers?
18. Is lack of formal qualifications a major factor in a worker being in the informal economy?
19. Is there much movement of workers from informal to formal employment after receiving certification?
20. Is there a high correlation between being a member of a disadvantaged group and working in the informal economy?
21. Are initiatives in place to provide training to workers in the informal economy?

2. Questionnaire for dairy production business owners

Objective

The general objective of the SOLIFEM project is to support the transition from the informal to the formal economy through tripartite social dialogue in Lebanon and other countries in the region, including Algeria, Egypt and the Occupied Palestinian Territories (OPT). It will pursue this objective through strengthening the capacity of the ILO tripartite constituents to act through social dialogue on two fronts: first, the development of integrated strategies on formalization and, second, the development of skills training and recognition systems, with a particular focus on women and youth. Developing the capacity of youth, women and men in the formal and informal labour markets, will help them overcome challenges in accessing formal jobs in that sector and support the national initiative of the Ministry of Industry in responding to food security crises that may arise due to the economic and political situation.

To that end, the objectives of this survey are to identify: (a) the **competency demand** of the private sector in five key occupations and skills and competency gaps in current workers; (b) the impact of skills gaps on business performance; (c) the **availability** of the required qualifications for targeted occupations with required competencies; and (d) the importance of formal skills certification for decent jobs.

General overview of the company

1. What is the size of your enterprise in terms of workers (example: Large (100+), Medium (fewer than 100), Small (fewer than 50), Micro (fewer than 10))?
2. What are its main activities, products and services?
3. Can you give an estimate of your enterprise's market sales? How much is sold locally and how much is exported as a percentage of overall sales? (We need to know annual turnover through products and services provided inside and outside the country.)
4. What are your main export markets, and how many countries do you export to in total?
5. Is your enterprise registered? If not, why not? When did you register?
6. Is your enterprise incorporated? (This means that the company is a legal entity that is separate from its owner.)

Workforce and recruitment

7. In the last year, have you had any job openings? For which occupations?
8. Are the following five occupations relevant for your business? Do you currently employ and/or are you looking for workers in these occupations? If not, are there any additional occupations relevant to your business?

1. Farm manager	
2. Dairy delivery stockman/stockwoman	
3. Milker	
4. Food safety specialist	
5. Dairy producer/Machine worker	
6.	
7.	

9. For the following occupations, what are the most relevant competencies you look for when recruiting?

Most relevant competencies			
Farm manager			
Dairy delivery stockman/ stockwoman			
Milker			
Food safety specialist			
Dairy producer / Machine worker			

10. For the occupations you listed as relevant to your business, please state whether the following competencies are relevant when recruiting?

Occupations							
	Farm manager	Dairy delivery stockman/ stockwoman	Milker	Food safety specialist	Dairy producer/ Machine worker	Additional occupation	Additional occupation
Competencies	Management skills (including coordination across functions, problem-solving and time management).	Ability to lift and carry heavy loads.	Ability to identify certain illnesses in cows (teat damage, clinical mastitis and lameness)	Knowledge and ability to ensure basic food safety and nutrition standards.	Ability to work different machines.	Additional competency	Additional competency
	Ability to recruit and train new staff.	Basic maths and record-keeping skills (collecting invoices).	Familiarity with milking procedures: cooling and refrigeration, milking all cows in an orderly, proper and consistent manner	Familiarity with lab work and ability to perform necessary analysis of food samples.	Knowledge of computerized and automated machinery.	Additional competency	Additional competency

Occupations							
Competencies	Farm manager	Dairy delivery stockman/ stockwoman	Milker	Food safety specialist	Dairy producer/ Machine worker	Additional occupation	Additional occupation
	IT skills.	Ability to manage and properly stock shelves, warehouses and storage areas.	Ability to operate all milking equipment.	Ability to monitor storage conditions of perishable foods.	Knowledge of and ability to monitor and maintain equipment and perform corrective machine adjustments.	Additional competency	Additional competency
	Ability to organize and coordinate breeding of livestock and raising of replacements.	Ability to maintain product quality during transportation.	Ability to ensure machine sanitation.	Leadership and management skills.	Proper knowledge of cleaning materials and processes for sanitizing machines.	Additional competency	Additional competency
	Communication skills.	Communication and negotiating skills.	Good with livestock and ability to properly manage livestock.	Communication skills.	Attention to detail.	Additional competency	Additional competency
	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency
	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency
	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency

11. For which of the above occupations have you found a maximum and minimum skills gap (workers did not possess the right type of competencies to perform tasks associated with their job)? Please identify the main competency gaps you have noticed for each of the listed occupations?

Competency gaps	Identified occupations				
	Farm manager	Dairy delivery stockman/ stockwoman	Milker	Food safety specialist	Machine worker
Competency 1					
Competency 2					
Competency 3					

12. For the identified occupations above, please list:

	Number of workers in the core workforce (fixed)	Peak numbers of seasonal workers	Education/ training background of recruits ¹⁶⁵	Method of competency acquirement ¹⁶⁶
Farm manager				
Dairy delivery stockman/ stockwoman				
Milker				
Food safety specialist				
Machine worker				

13. What is the gender and age distribution of your employees at the different levels (management, operation, floor level workers, etc.)?

Gender		Age	
Male	Female	Male	Female

14. How do you go about recruiting workers (for example, by advertising, recruitment process)? How do you assess skills and experience?

15. Does certification play an important role in the hiring process? Do competency-based skills testing and certification help assess the skills of prospective employees?

16. In which of the identified formal occupations does your enterprise have workers who are skilled but not formally trained and certified? (Certified diplomas from qualified institutions not certified by the official institution or recognized by Government or employers)

Strategy and skills gaps

17. How many of your existing staff in the identified occupations would you regard as being fully proficient at their current job?

18. Do those who are proficient all have formal education/certification (by officially recognized government institutions)?

19. Do you have any contact and cooperation with TVET and/or other training providers? Are TVET programmes adapted to market needs?

¹⁶⁵ High school diploma, university degree, etc.

¹⁶⁶ Through training institutions (if so, which), apprenticeships, other forms of work-based learning?

20. Do those with formal certification have all the required skills? If not, do you provide organized apprenticeships? For which types of jobs? Approximately what is the intake each year? If you do provide apprenticeships, are they formal (recognized officially nationwide, contract with a recognized institution) or informal?
21. REPLACE: Do you consider upskilling or reskilling your workforce? Do you have the capacity to provide upskilling and reskilling?
22. If technical support is provided, can you provide suitable training for upskilling and reskilling (do you have the technical and practical capacity)? Can you source suitable training (find trainers and pay them)? If not, who are the main training providers who can provide training for those occupations / qualifications with the required competencies across Lebanon?
23. How do “hard-to-fill vacancies” impact your business? Check all that apply in the table below:

Effects on business	Yes
Lose business or orders to competitors	
Delay developing new products or services	
Difficulty meeting quality standards	
Increased operating costs	
Difficulty introducing new working practices	
Increased workload for other staff	
Have to outsource work	
Stop offering certain products or services altogether	
Difficulty meeting customer services objectives	
Difficulty introducing technological change	
None	
Others	

24. Overall, in your opinion, what kinds of skills or competencies does your sector need, but lack? What is causing this gap, and what could bridge it?
25. What do you see as the best opportunities for growth available to your business and similar businesses over the next two years?

3. Questionnaire for non-alcoholic beverages business owners

Objective

The general objective of the SOLIFEM project is to support the transition from the informal to the formal economy through tripartite social dialogue in Lebanon and other countries in the region, including Algeria, Egypt and the Occupied Palestinian Territories (OPT). It will pursue this objective through strengthening the capacity of the ILO tripartite constituents to act through social dialogue on two fronts: first, the development of integrated strategies on formalization and, second, the development of skills training and recognition systems, with a particular focus on women and youth. Developing the capacity of youth, women and men in the formal and informal labour markets will help them overcome challenges in accessing formal jobs in that sector and support the national initiative of the Ministry of Industry in responding to food security crises that may arise due to the economic and political situation.

To that end, the objectives of this survey are to identify: (a) the **competency demand** of the private sector in five key occupations, and skills and competency gaps in current workers; (b) the impact of the skills gaps on business performance; (c) the **availability** of the required qualifications for targeted occupations with required competencies; and (d) the importance of formal skills certification for decent jobs.

General overview of the company

1. What is the size of your enterprise in terms of workers (example: Large (100+), Medium (fewer than 100), Small (fewer than 50), Micro (fewer than 10)?
2. What are its main activities, products and services?
3. Can you give an estimate of your enterprise's market sales? How much is sold locally and how much is exported as a percentage of overall sales? (We need to know annual turnover through products and services provided inside and outside the country.)
4. What are your main export markets, and how many countries do you export to in total?
5. Is your enterprise registered? If not, why not? When did you register?
6. Is your enterprise incorporated? (This means that the company is a legal entity that is separate from its owner)

Workforce and recruitment

7. In the last year, have you had any job openings? For which occupations?
8. Are the following five occupations relevant for your business? Do you currently employ and/or are you looking for workers in these occupations? If not, are there any additional occupations relevant to your business?

1. Machine operator	
2. Labeller and packager	
3. Cleaner and sorter	
4. Food inspector	
5. Fruit harvester	
6.	
7.	

9. For the following occupations, what are the most relevant competencies you look for when recruiting?

Most relevant competencies			
Machine operator			
Labeller and packager			
Cleaner and sorter			
Food inspector			
Fruit harvester			

10. For the occupations you listed as relevant to your business, please state whether the following competencies are relevant when recruiting?

Occupations							
	Machine operator	Labeller and packager	Cleaner and sorter	Food inspector	Fruit harvester	Additional occupation	Additional occupation
Competencies	Ability to operate different machines.	Ability to lift and carry heavy loads.	Knowledge of quality control standards.	Knowledge of and ability to ensure basic food safety and nutrition standards.	Knowledge of methods and tools used in harvesting.	Additional competency	Additional competency
	Knowledge of computerized and automated machinery.	Basic maths and record-keeping skills.	Ability to sort items based on specific criteria.	Ability to perform necessary analysis on food samples.	Physical ability to operate and use different harvesting tools and machines.	Additional competency	Additional competency
	Knowledge of and ability to monitor and maintain equipment and ability to perform corrective machine adjustments.	Organizational Skills.	Basic literacy and numeracy skills.	Managerial and inspection skills to accept or reject incoming shipments of food and food ingredients on the basis of food safety requirements.	Knowledge of post-harvest practices to maintain fruit quality.	Additional competency	Additional competency

Occupations							
Competencies	Machine operator	Labeller and packager	Cleaner and sorter	Food inspector	Fruit harvester	Additional occupation	Additional occupation
	Thorough knowledge of cleaning materials and processes for sanitizing machines.	Ability to maintain product quality during distribution.	Organizational and time management skills.	Leadership and interpersonal skills.	Knowledge of quality control and food safety requirements.	Additional competency	Additional competency
	Attention to detail.	Communication skills.	Communication skills.	Communication skills.	Attention to detail.	Additional competency	Additional competency
	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency
	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency
	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency	Additional competency

11. For which of the above occupations did you find a maximum and minimum skills gap (workers did not possess the right type of competencies to perform tasks associated with their job)? Please identify the main competency gaps you have noticed for each of the listed occupations.

Competency gaps	Identified occupations				
	Machine operator	Labeller and packager	Cleaner and sorter	Food inspector	Fruit harvester
Competency 1					
Competency 2					
Competency 3					

12. For the identified occupations above, please list:

	Number of workers in the core workforce (fixed)	Peak numbers of seasonal workers	Education/ training background of recruits ¹⁶⁷	Method of acquiring competency ¹⁶⁸
Machine operator				
Labeller and packager				
Cleaner and sorter				
Food inspector				
Fruit harvester				

¹⁶⁷ High school diploma, university degree, etc.

¹⁶⁸ Through training institutions (if so, which?), apprenticeships, other forms of work-based learning?

13. What is the gender and age distribution of your employees at the different levels (management, operation, floor level workers, etc.)?

Gender		Age	
Male	Female	Male	Female

14. How do you go about recruiting workers (for example, by advertising, recruitment process)? How do you assess skills and experience)?
15. Does certification play an important role in the hiring process? Do competency-based skills testing and certification help assess the skills of prospective employees?
16. In which of the identified formal occupations does your enterprise have workers who are skilled but not formally trained and certified?

Strategy and skills gaps

17. How many of your existing staff in the identified occupations would you regard as being fully proficient at their current job?
18. Do those who are proficient all have formal education/certifications (from officially recognized government institutions)?
19. Do you have any contact and cooperation with TVET and/or other training providers? Are TVET programmes adapted to market needs?
20. Do those with formal certification have all the required skills? If not, do you provide organized apprenticeships? For what types of jobs? What is the approximate intake each year? If you do provide apprenticeships, are they formal (recognized officially nationwide, contract with a recognized institution) or informal?
21. REPLACE: Do you consider upskilling or reskilling your workforce? Do you have the capacity to provide upskilling and reskilling?
22. If technical support is provided, can you provide suitable training for the upskilling and reskilling (do you have the technical and practical capacity)? Are you able to source suitable training (find trainers and pay them)? If not, who are the main training providers who can provide training for those occupations/qualifications with the required competencies across Lebanon?
23. How do “hard-to-fill vacancies” impact your business? Check all that apply in the table below:

Effects on business	Yes
Lose business or orders to competitors	
Delay developing new products or services	
Difficulty meeting quality standards	
Increased operating costs	
Difficulty introducing new working practices	
Increased workload for other staff	
Have to outsource work	
Stop offering certain products or services altogether	
Difficulty meeting customer services objectives	
Difficulty introducing technological change	
None	
Others	

24. Overall, in your opinion, what kinds of skills or competencies does your sector need, but lack?
What is causing this gap, and what could bridge it?

25. What do you see as the best opportunities for growth available to your business and similar businesses over the next two years?

4. Focus group discussion guide

Skills gap

In general, would you say your employees skills are well matched to the needs of their current job? Please give your rating on a scale of 1 to 10, where 1 means they have none of the skills required, and 10 means they have all the skills required.

1 2 3 4 5 6 7 8 9 10

List the top three types of skills training you would like your employees to have (per occupation)?

1.

2.

3.

Who are the stakeholders responsible for addressing a skills gap?

What is the ideal solution to address this gap?

Have you provided any training programmes for your employees?

Who were the training providers?

Was the training structure beneficial?

Any good practices adopted because of the training?

Has a particular skills gap prevented your company from growing (for example, being able to export, increase production levels, reach a broader market, etc.)?

Are there skills needs that you feel are not addressed by existing training programmes? If so, what are they? And in what occupations is this skills shortage mostly present?

Does certification play an important role when considering someone for a job?

What kind of certification do you look for in different occupations? (TVET, high school, university, postgraduate, competency training, etc.)

Do businesses recognize the difference between competency training and traditional non-competency training?

Does acquiring new skills through a competency training programme facilitate access to formal jobs?

