



EU PROJECT: DevRAM

**Part I. Increasing the competitiveness  
of the agri-food sector through  
integration to domestic and global value chains, in particular in the soya sector**

# Capacity Needs Assessment Report of Vocational Educational Institutions in agri-food sector

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The views expressed in this study are those of the authors and do not engage in any way the institutions to which they belong, as it does not reflect the position of the institution that funded the project or provided the project management.

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Vera Chilari

Rodica Reșitca

## LIST OF ABBREVIATIONS

|                          |  |
|--------------------------|--|
| <b>ADA</b>               | Austrian Development Agency  |
| <b>ANACEC</b>            | National Agency for Quality Assurance in Education and Research  |
| <b>ANOFM</b>             | National Employment Agency   |
| <b>Brătușeni College</b> | Brătușeni Zootechny and Veterinary Medicine College  |
| <b>Bubuieci VS</b>       | Bubuieci Vocational School   |
| <b>CCI</b>               | Chamber of Commerce and Industry   |
| <b>CEDA</b>              | Centre for Entrepreneurial Education and Assistance in Business  |
| <b>CEx</b>               | Centre of Excellence   |
| <b>CEx Chișinău</b>      | Chișinău Centre of Excellence in Viticulture and Winemaking  |
| <b>CORM</b>              | Classifier of Trades in the Republic of Moldova  |
| <b>CPA</b>               | Central Public Authority   |
| <b>CSFPAIA</b>           | Sector Committee for Vocational Training in Agriculture and Food Industry                                |
| <b>CzDA</b>              | Czech Development Agency   |
| <b>EC</b>                | European Commission  |
| <b>EU</b>                | European Union   |
| <b>GD</b>                | Government Decision  |
| <b>GIZ</b>               | German Agency for International Cooperation<br>(Deutsche Gesellschaft für internationale Zusammenarbeit) |
| <b>Grinăuți College</b>  | Grinăuți Agroindustrial College  |
| <b>GST</b>               | General subjects teachers  |
| <b>HEKS</b>              | Swiss Foundation HEKS  |
| <b>ICT</b>               | Information and Communication Technologies   |
| <b>IF</b>                | Individual Farm  |
| <b>ISCED</b>             | International Standard Classification of Education   |
| <b>LED</b>               | Liechtenstein Development Service  |
| <b>Leova VS</b>          | Leova Vocational School  |
| <b>LPA</b>               | Local Public Authority   |
| <b>MARDE</b>             | Ministry of Agriculture, Regional Development and Environment of the Republic of Moldova                 |
| <b>MDL</b>               | Moldovan Lei   |
| <b>MECR</b>              | Ministry of Education, Culture and Research  |
| <b>MEI</b>               | Ministry of Economy and Infrastructure   |
| <b>MHLSP</b>             | Ministry of Health, Labour and Social Protection   |
| <b>Moldova</b>           | Republic of Moldova  |
| <b>MS</b>                | Managing staff   |
| <b>NBS</b>               | National Bureau of Statistics of Moldova   |
| <b>Nisporeni VS</b>      | Nisporeni Vocational School  |
| <b>NQF</b>               | National Qualifications Framework of the Republic of Moldova   |
| <b>OME</b>               | Order of the Minister of Education   |

|                        |   |
|------------------------|---|
| <b>OS</b>              | Occupational Standard                                     |
| <b>PT</b>              | Practical Training  |
| <b>Rîșcani College</b> | Rîșcani Agro-industrial College                           |
| <b>SocialP</b>         | Social Pedagogue  |
| <b>SP</b>              | Specialized teachers                                      |
| <b>SRL</b>             | Limited Liability Company                                 |
| <b>Svetlîi College</b> | Svetlîi Technical Agricultural College                    |
| <b>Țaul CEx /CEHTA</b> | Țaul Centre of Excellence in Horticulture and Agriculture |
| <b>Ungheni College</b> | Ungheni Agro-industrial College                           |
| <b>VET</b>             | Vocational Education and Training                         |
| <b>VETI(s)</b>         | Vocational Education and Training Institution(s)          |
| <b>VS</b>              | Vocational School   |
| <b>WBL</b>             | Work-based learning                                       |



## EXECUTIVE SUMMARY

This study was conducted under the project *Development of Rural Areas in the Republic of Moldova, Part I: Increasing the competitiveness of the agri-food sector through integration to domestic and global value chains, in particular in the soya sector,*” funded by the EU and implemented by the Austrian Development Agency in partnership with the Education Centre PRO DIDACTICA and the International Association Donau Soja (Austria).

The project aims to contribute to enhancing the capacity of assertion of the sector on the domestic and external markets as well as to strengthening the capacities of agri-food VET institutions so that the education offer meets the labour market requirements and the related quality standards. The expected project outcomes include: strengthened capacities of innovation and education in the agri-food sector, increased access to markets and extended demand of certified and organic agri-food products on the domestic and external markets, use of standards and certification to enhance the performance of value chains, promotion of an environment favourable for ensuring quality standards, in particular in the soya sector, and aligned legal framework and policy papers of the Republic of Moldova to the EU quality standards.

The study aimed to identify the challenges and the needs of VET institutions, teachers, students and economic partners in order to be able to provide initial and continuous vocational education and training in accordance with the labour requirements. The specific objectives of the study were to:

- Identify the needs for strengthening institutional capacities and for developing professional competences of the CEHTA staff, of colleges and vocational schools (managers, teachers, foremen, trainers) in the agri-food area for a better synergy with the labour market requirements;
- Identify the occupational standards, professional qualifications and curricula indispensable for securing the transposition of quality standards in the agri-food sector and for identifying the necessary methodological support with the preparation of annual plans for the matriculation of students for agri-food specialties and trades;
- Establish the essential needs for building the continuous training system from the perspective of introducing quality standards in the area by updating, conceiving new curricula and implementing projects focused on the creation of continuous training systems at local, regional and national levels.

The research specifically delineates the period between 2014 and 2018. The investigation process took place during four months (June-July and September-October 2018). The methodology consisted in the collection of primary data from 7 institutions (one centre of excellence, 3 colleges and 2 vocational schools), interviews (with 27 managing staff), surveys (with 104 teachers, 143 students and 55 businesses partners of the institutions surveyed). Quantitative data collection tools were also used. The 5 sets of indicators were human resources, education and training process, infrastructure and technical-material basis, cooperation with the business and VETI funding. After the collection and processing of quantitative and qualitative data there were organized 2 focus groups with 12 business representatives and 12 students. Aiming at validating the collected data there was conducted a workshop with 23 representatives of the 7 VET institutions (teachers and managers, staff responsible for quality assurance and staff responsible for organizing and conducting WBL/internships). The study was mainly based on specific findings and analysis extracted from primary sources along with a review of line literature and secondary sources.

## KEY FINDINGS

### Human resources

In the academic year 2017-2018, there were 624 members of staff employed in the 7 evaluated VET institutions. The VET system in the agri-food area remains unattractive for young specialists, 24% of teachers being retired or about to retire. The auxiliary technical staff accounts for 56% in colleges and in the centre of excellence and for 45% in vocational schools. The number of teachers with a teaching degree is rather low (56%). In addition, there is a shortage of psychologists.

The study revealed that one-third of respondent teachers have very limited digital competences and an insufficient use of the information technologies in teaching. There is high interest of teachers in professional retraining in innovative models and technologies, use of ICT in teaching, organic farming and climate changes and cultivation of genetically unmodified crops. There was also identified the lack of support with international teacher mobility.

As in other sectors, the turnover of young teachers and their migration abroad in search of a better-paid job persist.

### Vocational Education and Training Process

There is a low preference for agri-food trades and specialties among young people. In the academic year 2017/2018 the agri-food VETIs registered a decrease in the number of students by 5.15% in relation to the previous school year 2016/2017. The number of students in the evaluated institutions indicated a decrease by approximately 6% compared to the previous year. At the same time, there was a large contingent loss, of up to 44% for some specialties/trades. VETI promotion activities have been carried out in the same way in the past ten years, mainly only before the admission period.

In the past 3 years curricula were developed for most agri-food specialties but only a few of them based on qualification standards because only 8 agri-food qualifications for level IV ISCED are approved at the moment. Moreover, the qualifications were not developed based on occupational standards but in their absence. Only 6 occupational standards and 3 qualifications for level 3 ISCED, in the agricultural field are in place up to now.

Since the line curricula have been only recently conceived, specialized textbooks, methodological guides and teaching materials are missing. Specialized teachers use old textbooks or contents of textbooks published in Romania and Russia, or from internet sources in their teaching. The respondents noted that, in the absence of specialized textbooks, 'the content taught differs greatly from one institution to another and from one teacher to another'. As a result, the qualification examination becomes a real challenge for the students.

Furthermore, the curricula for many trades (level III ISCED) were missing (e.g. *Viticulturist, Fruit Grower, etc.*), the education process taking place only based on the Study Plan.

### Cooperation with entrepreneurs

The managers and the teachers specified that the involvement of businesses in agri-food curricula development was difficult since they were not motivated or aware of the need to engage in this process. On the other hand, the businesses representatives, participating in the survey, identified a range of specialties and trades necessary to be included in the education offer, such as Organic Farming Agronomist;

Agriculturist for Organic Field Crops; Apiculturist for Organic Field Crops; Organic Farming Auditor, Operator in Mixed Organic Farms; Ecologist Technician and Environment Quality Protection; Occupational Standards Specialist, Organic Farming Technician, Animal Nutritionist and Human Nutritionist.

Businesses also consider that it is necessary to include in the curriculum the following contents: Quality Standards for Organic Agri-Food Products, Provisions related to organic agri-food production and climate changes risks.

### Continuous Vocational Education and Training (CVET)

The findings of the study revealed that most of the evaluated institutions do not organize continuous training courses for adults, unemployed and/or other categories of job seekers (exceptions were Leova VS and Nisporeni VS) and have a low interest in providing short-term continuous training services. At the same time, the respondent businesses showed significant interest in the continuous training of company specialists in cooperation with the education institutions.

Even though the Framework Regulation of the Centre of Excellence provides in its attributions the continuous professional training of the specialized and managerial teachers from VETI in the field of specialization, as well as the certification of professional competences acquired in formal, informal and non-formal environment, CEx Țaul does not provide such services yet, neither continuous training services for adults nor short-term courses.

### Technical and Material Resources and Institutional Capacity

The findings of the research indicate that the 7 VET institutions have sufficient estate and land which is only partially used for carrying out the education process.

The education buildings are used to their maximum capacity. Practically all 7 institutions had a complete roof overhaul or replacement of the buildings, installed new windows and cosmetically renovated the spaces.

The institutional capacity of the education units (except for Bubuieci VS) considerably exceeds the current number of students and staff. All the institutions have dormitories: of 23, only 10 are used as accommodation for students, while the rest need capital repair and are not functional.

The technical-material basis of the VET institutions that benefited from the support of external technical assistance projects is relevant to the needs of VET process. At the same time, most of the institutions have obsolete vehicles and equipment that needs to be offset. Such vehicles and machinery takes space and generates costs. Therefore, a technical expert examination of VETI infrastructure, equipment and didactic lands plots is needed for a quality education process.

All the institutions have labs for the practical training of students. The laboratories for agri-food trades and specialities are only partially equipped. There are limited capacities for efficient property management, management of the technical-material basis, of space and land. The institutions have excess space and farmland but these does not bring relevant extra-budgetary revenues. The total area of the didactic farms constitutes circa 1078 ha and only a part of them is used for teaching purposes, or rented out, while the other part remains unused.

## Financing of agricultural of VET institutions

Generally, the funding of VETI is adequately provided despite the budget constraints. Nonetheless, we noted a lack of educational priorities, high maintenance costs and other proof of low efficiency, which points out a weak management that does not bear responsibility for the results.

State allocations for colleges Țaul Centre of Excellence gradually increased since 2014, showing a growth of approximately 42% in 2017. Accordingly, the budget allocations per student notably went up from 18,000 MDL (2014) to circa 24,000 MDL in 2017. The budget allocations per student in vocational schools were smaller, varying between 12,000 and 14,000 MDL. The highest share of budget allocations was for wages (59%). The budget allocations are also meant for maintenance costs (maintenance, utilities and current repair), stipends, meals and education process (procurement of equipment, teaching materials, consumables etc.).

VETIs are eligible to generate extra-budgetary revenues and so, two categories of extra-budgetary revenues were identified: i) obtained from services (tuition fees, space rent, continuous training services, cooperation with businesses, accommodation etc.; and ii) obtained from production activities. The extra-budgetary revenues in colleges and in Țaul Centre of Excellence are obtained from the sale of finished products (60%) and from services provided (40%). The revenues from services differ a lot from one institution to another. The annual average of extra-budgetary revenues in colleges and in Țaul CEx is practically triple to the average for vocational schools. At the same time, vocational schools do not show revenues from tuition fees, while some colleges register about 40% of the extra-budgetary revenues for four years.

In conclusion, VETI funding is not based on performance and does not stimulate an efficient administration of resources; it does not take into account the actual needs of the institutions, it is done without a real analysis of the needs but based on previous costs. The per-student funding is not sufficient and favours the lack of performance. Additional funding greatly depends on VETI capacity to develop projects. The generation of revenues from the didactic farm's economic activity is difficult, a challenge being the reduced capacity of agri-food VETI staff to do it. Most of the institutions have reduced capacities of accessing European funds and of applying for technical assistance projects.

## RECOMMENDATIONS

The study presents a number of recommendations for the project team, central and local authorities, VETIs, partners from the associative and private sectors. The recommendations are focused on the following actions:

- Strengthen organizational capacity and human resources capacity of VETIs for promoting innovations in the agri-food sector and for setting up a functional centre for the provision of continuous training services within Țaul CEx
- Develop occupational standards (Fruit and Vegetable Grower, Viticulturist–Wine-Maker, Flower Grower, Agronomist, Quality Assurance Technician, Food Industry Technician, and others).
- Develop professional qualifications ( Viticulturist–Wine-Maker, Fruit Grower, Flower Grower) and review the existing qualifications (Agronomist for the specialties Vegetable Growing, Fruit Growing, Viticulture and Oenology, Quality Assurance Technician, for the specialties Food

Product Safety, Technology of Products of Plant Origin and Technology of Products of Animal Origin)

- Develop curricula for the trades Viticulturist and Fruit Grower as well as revise the curricula for all agri-food specialties after the development of occupational standards and qualifications; develop textbooks, teaching materials for the line subjects and methodological guides.
- Introduce contents related to organic farming in the study programmes, develop the continuous training system and promote the advantages of VET and agricultural professions, especially in economically disfavoured regions.

## INTRODUCTION

### Purpose of research

The *Capacities Needs Assessment of Agri-Food Vocational Education and Training Institutions* aimed to identify the challenges and major problems faced by vocational education and training institutions, and to make an analysis of their needs for being able to provide quality vocational education and training services that would meet the labour market requirements.

This report is an important element for planning further actions under the project funded by the European Union “*Development of Rural Areas in the Republic of Moldova, Part I Increasing the Competitiveness of the Agri-Food Sector in Moldova Through Integration to Domestic and Global Value Chains, In Particular in the Soya Sector,*” especially for the area of intervention of the implementation partner Education Centre PRO DIDACTICA, and namely:

- strengthen the capacities of the Țaul CEX and of VETIs;
- develop occupational standards (OS), qualifications, curricula, and continuous training programmes necessary for improving the education offer in the sector;
- train the managing and teaching staff;
- develop mentoring programmes, programmes of business development in organic farming, and carrier guiding for students of VETIs with agricultural specialties;
- revise the legal and regulatory frameworks on the introduction of EU quality standards in the promotion of organic farming.

In addition, the specific input of the study consists in its conclusions and recommendations for all relevant players (education institutions, line ministries, central and local public authorities, and the business). The study aimed at informing the key players, including the political and business decision makers, about the need for involvement and facilitation of activities aimed at strengthening VETI capacities for improving the process of agri-food vocational training.

### General aspects of the vocational education and training (VET)

The agricultural VETI system includes the total number of education institutions that provide vocational education and training programmes for qualified workers, foremen, technicians and other categories of specialists in accordance with the National Qualifications Framework of the Republic of Moldova<sup>1</sup>, the Nomenclature of Vocational Training Areas and of Trades/Professions<sup>2</sup>, the Nomenclature of Vocational Training Areas, Specialties and Qualifications for the Post-Secondary and Non-Tertiary Post-Secondary Vocational Education<sup>3</sup>, approved by the Government, as well as with levels 3, 4 and 5 of the International Standard Classification of Education<sup>4</sup>.

Vocational education and training in the agri-food area is provided in 20 public VETIs (12 vocational schools<sup>5</sup>, 6 colleges and 2 centres of excellence). These VET institutions provide secondary vocational training programmes (level 3 ISCED) and post-secondary vocational training programmes (level 4 ISCED).

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<sup>1</sup> <http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=372759>

<sup>2</sup> <http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=359703>

<sup>3</sup> <http://lex.justice.md/index.php?action=view&view=doc&lang=1&id=362327>

<sup>4</sup> <https://mecc.gov.md/ro/content/clasificarea-internationala-standard-educatiei-isced-2011-0>

<sup>5</sup> Vocational schools, besides training qualified workers in the agri-food area, also train qualified workers in other areas.

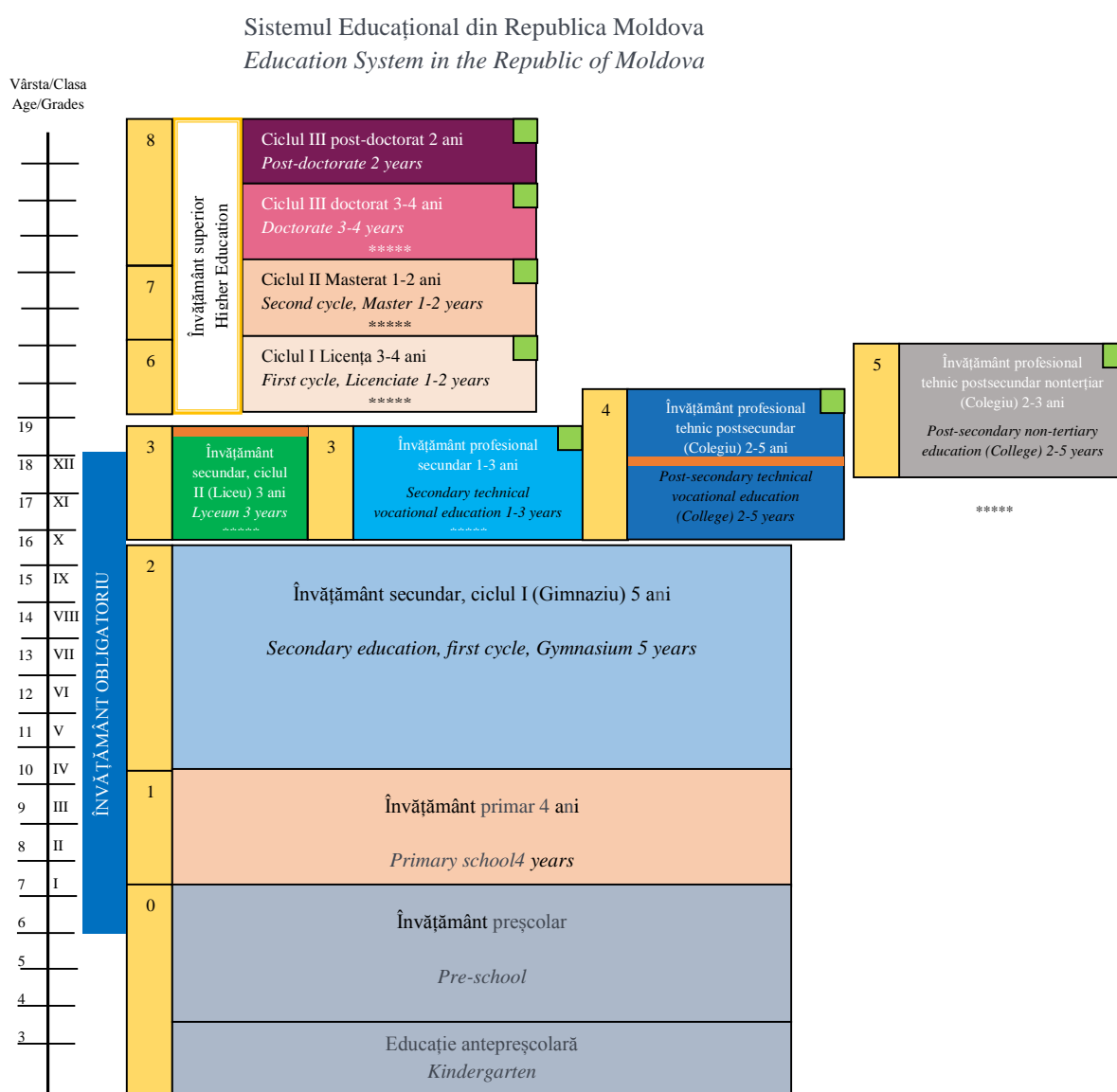
According to the Code of Education, VETIs, especially centres of excellence, may provide non-tertiary postsecondary vocational training programmes (level 5 ISCED). Table 10 shows the educational programmes provided by evaluated VETI. Every year the list of specialities and trades may vary, to extend or restrict the education offer.

Vocational schools fall under the authority of the MECR, while agri-food colleges and centres of excellence have dual subordination, to MARDE and to MECR. Such institutions operate based on their internal regulation, developed in accordance with the framework regulation approved by MECR.

Dual education – in education institutions and in business units – may also take place in agri-food VETIs.

More details about educational system and VET system in Moldova are presented in Figure 1

**Figure 1. Educational System of the Republic of Moldova, according to ISCED 2011**





## Methodology

Chapter 2 contains a description of the research approach, tools used for data collection, methods used and manner in which the respondents were accessed. It also refers to validity, reliability and ethical considerations.

### Collection of data and the population of the VET institutions

The research covers the period from 2014 to 2018. The investigation took place during four months (June-July, September-October 2018). The empiric data were collected in July and October 2018. The sample was made up of 104 specialized teachers, including foremen-trainers, 27 managing staff, 55 business operators, 143 students and other relevant players, representatives of line associations.

The VETIs selection criteria included: type, category, institutional capacity, language of study, environment and geographic location (for details, see Table 11).

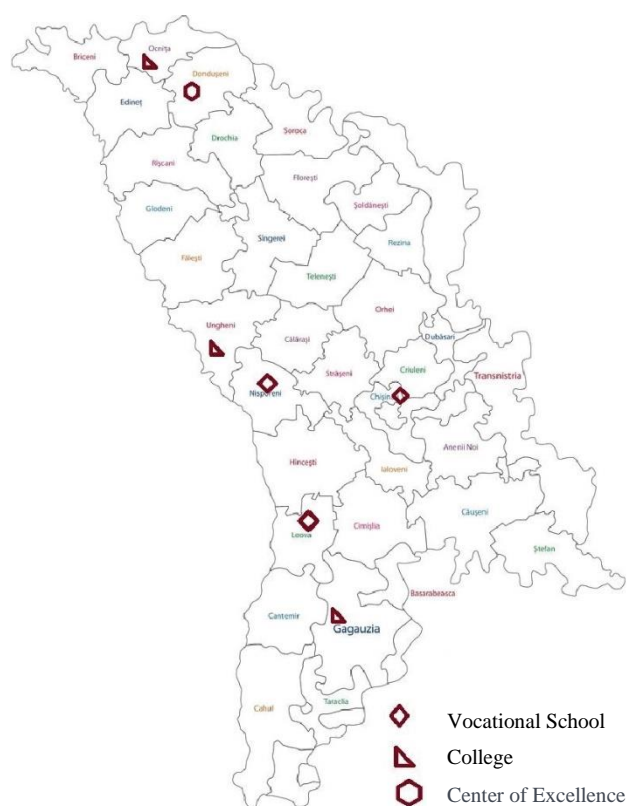
The investigation took place in 7 agri-food VETIs, of which 3 vocational schools out of 12 (25%), 3 colleges, and one CEx (50%) out of the 8 institutions (6 colleges and 2 centres of excellence) in the area.

Thus, the institution sample encompassed all types of VETIs: vocational schools, colleges, and one centre of excellence. They are located in rural and urban areas in four zones – North, South, and Centre and in the city of Chişinău (see Figure 2).

These selection criteria were chosen in order to collect accurate, representative and relevant data, regardless of the type, category, institutional capacity, environment or geographic location of the institution.

Over 75% of all the specialized teachers and foremen-trainers employed with VETIs participated in the investigation. As selection criteria served the teaching of subjects/specialty modules, sex, age and teaching experience. The students who participated in the focus group discussions (12) were selected randomly, based on the following criteria: sex, school year, residential environment, trade/specialty chosen. The selection criteria of business operators for participation in surveys and focus group discussions were based on their working domain, company's geographic location, level of involvement in vocational education and training, and cooperation with line VET Institutions.

**Figure 2: Location of evaluated institutions**





## Research methods

The method of collection and systematization of information was mixed: there were used both quantitative and qualitative tools for data collection, of positivist-explanatory type – direct, selective and questionnaire-based research. The examination and analysis of information and statistics from secondary sources was conducted at the beginning of the research to contribute to and support the quality component.

*Surveys:* Three questionnaires were developed: for the specialized teachers, for the business operators-partners of VETIs and for the students. The questionnaire for the specialized teachers included 38 questions; the one for the business operators – 30 questions; and the one for students – 31 questions. In addition, 24 in-depth interviews were conducted with the institution managers (directors, deputy directors and heads of sections). The interviews were semi-structured with open-ended questions.

We also used quantitative tools for data collection. In this sense, we prepared an Excel form that comprised 5 *sets of indicators*: human resources, education and training process, infrastructure and technical-material basis, cooperation with the business, and VETI funding. However, the quantitative research cannot provide the same number of generalizable answers.

*Focus Group:* In order to reach the purpose of this study, a deep understanding of informants' opinions and experiences was needed. Thus, we resorted to a descriptive method of qualitative research. After the collection and processing of quantitative and qualitative data, we organized 2 focus groups with 12 representatives of the business and with 12 students (Table 1).

*Workshop:* In order to validate the information and the data included in the Report and for their completion, we organized a workshop with 23 representatives of the VETIs (teaching staff, managing staff, staff responsible for quality assurance, staff responsible for organizing and conducting internships).

**Table 1. Categories of participants in focus groups and workshop**

| Event                                     | Category of participants                                 | Number of participants |
|---|--|------------------------|
| <b>Students</b>                           |  |                        |
| 1 Focus group                             | Students of agri-food VETIs                              | 12                     |
| <b>Representatives of businesses</b>      |  |                        |
| 2 Focus group                             | Agri-food business operators                             | 12                     |
| <b>Representatives of agri-food VETIs</b> |  |                        |
| Workshop                                  | Teachers who teach specialized subjects/foremen-trainers | 6                      |
|   | Staff responsible for quality assurance                  | 5                      |
|   | Staff responsible for internships                        | 6                      |
|   | Managing staff   | 6                      |

*Source: Prepared by authors based on the study data*

In addition to the primary sources for the collection of empirical data, the study also implied reviewing line literature and secondary sources. The research was based on qualitative empiric data, especially on the findings and analysis made based on the interviews, surveys, and observations, alongside the analysis of quantitative data provided by the VETIs, as well as on information and statistics extracted from secondary

sources. The participants were fully informed about the purpose and methodology of the research and they consented to participate in the investigation. Ultimately, the participants were given access to the final version of the product.

### Representativeness of data

The study results are representative for the VETIs included in the project as all the informants have adequate and rich personal and professional profiles. Moreover, the sample chosen comprised institutions of all types, varied in terms of geographic location, capacity, potential etc., they accounting for about 35% of the total number of agri-food VETIs from the country.

The analysis and conclusion were generated based on the qualitative and quantitative empirical data that were supported with valuable quantitative data and statistics extracted from valid and reliable national secondary data.

Thus, since the results obtained are representative for the VETIs researched, the recommendations of this study may be used for planning actions and making decisions about strengthening the capacities of agri-food VETIs so that they are able to provide quality vocational education and training services, in accordance with the requirements of the labour market.

### The VETI evaluation included several stages, and namely:

1. Piloting of data collection tools in Chişinău CEx.
2. Collection of quantitative data (the 7 institutions received and completed the Excel form). The internal evaluation was conducted based on 5 indicators.
3. Organization of expert visits to the pilot institutions to complete the questionnaires and conduct interviews with the managing staff.
4. Organization of 2 focus groups with students and businesses for completing the data collected through questionnaires.
5. Validation of the research results by organizing a workshop with the respondents (managing staff, specialized teachers, staff responsible for quality assurance, staff responsible for internships), and sending out of the final draft report to the investigation participants.
6. Analysis of data collected and of information from secondary sources.
7. Modification and finalization of the result analysis based on the comments and proposals made during the validation.
8. Development of conclusions and recommendations based on the research results.

The following chapters are based on findings and analysis extracted from the interviews, surveys, qualitative data supplied by VETIs, as well as data from the secondary sources. The analysis focuses on the diagnosis of the actual situation of the VET process in the 7 VETIs, the needs for increasing the VETI capacities to provide quality professional training relevant to the labor market needs, as well as the challenges faces by the agri-food VETIs

## CHAPTER 1. HUMAN RESOURCES

The human capital is the fundamental force in the development of VETIs, having a higher value than their property. This chapter presents the results of the quantitative and qualitative analysis of the staff, including of the teachers with potential for teaching and training in organic farming.

### 1.1. Staff categories

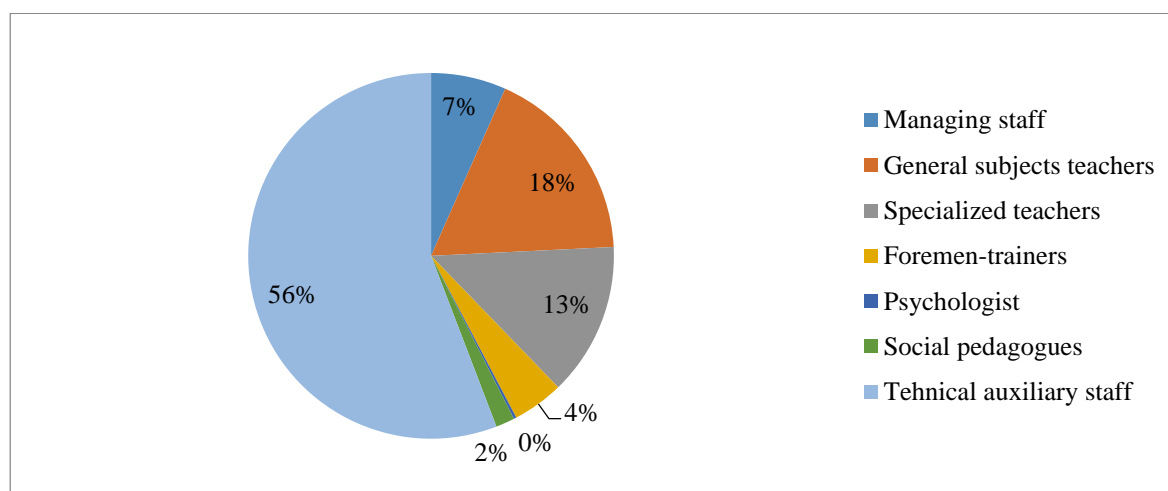
Staff categories analysed include managing staff, general subjects teachers, specialized teachers, foremen, social pedagogues, psychologists, and auxiliary technical staff. In the school year 2017-2018, the 7 VETIs had 624 employees (Table 2).

**Table 2. Distribution of staff employed by categories, 2017-2018**

|                       | TOTAL      | Managing staff | General subjects teachers | Specialized teachers | Foremen-trainers | Psychologist | Social pedagogue | Auxiliary technical staff |
|-----------------------|------------|----------------|---------------------------|----------------------|------------------|--------------|------------------|---------------------------|
|                       | No.        |                |                           | %                    | %                | %            | %                | %                         |
| Țaul CEx              | 123        | 6.5            | 16.2                      | 8.9                  | 0                | 0.8          | 2.4              | 65.5                      |
| Ungheni AI College    | 83         | 7.2            | 21.6                      | 18                   | 4.8              | 0            | 1.2              | 46.9                      |
| Svetlii TA College    | 14         | 1.7            | 16.9                      | 13.3                 | 9.1              | 0            | 1.4              | 53.5                      |
| Grinăuți AI College   | 73         | 8.2            | 16.4                      | 16.4                 | 2.7              | 0            | 1.3              | 54.7                      |
| Nisporeni VS          | 71         | 4              | 11                        | 10                   | 20               | 0            | 3                | 53.0                      |
| Leova VS              | 70         | 6              | 17                        | 3                    | 21               | 0            | 3                | 50.0                      |
| Bubuieci VS           | 62         | 8              | 16                        | 21                   | 20               | 0            | 3                | 32.0                      |
| <b>Total, average</b> | <b>624</b> | <b>5.9</b>     | <b>16.4</b>               | <b>12.9</b>          | <b>11.1</b>      | <b>0.1</b>   | <b>2.2</b>       | <b>50.8</b>               |

In Țaul CEx and the three colleges, of the 421 staff, the managing staff accounts for 7%, general subjects teachers – 7%, specialized teachers – 14%, foremen-trainers – 4%, and social pedagogues – 2%. The technical auxiliary staff accounts for the biggest share (56%). Only one institution of the ones listed have a psychologist employed (Figure 3).

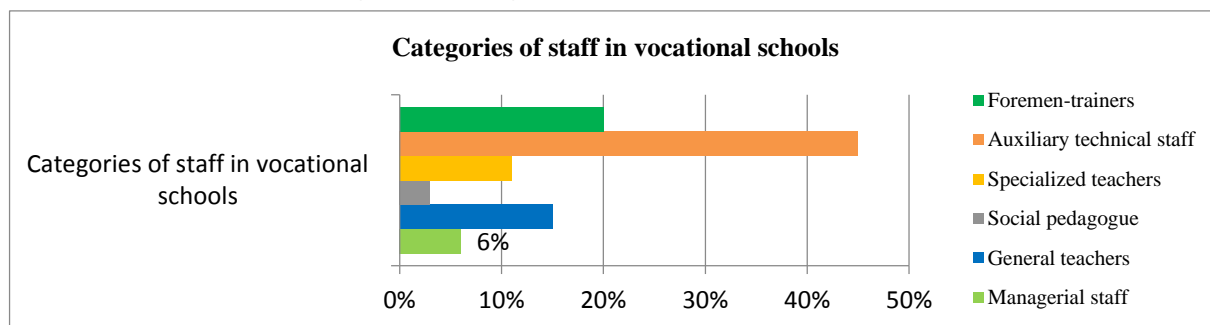
**Figure 3. Share of staff by categories in colleges and Țaul CEx**



Source: Prepared by authors based on the study data

In the three vocational schools, the managing staff accounts for 6%. The shares of specialized teachers and of foremen-trainers are 11% and 20%, accordingly, which exceeds the registered share of general subjects teachers by 16%. The social pedagogues account for 3%, psychologists – 0%, while the auxiliary technical staff, similarly to the colleges and centres of excellence, register the highest share (45%) of the total number of staff (Figure 4).

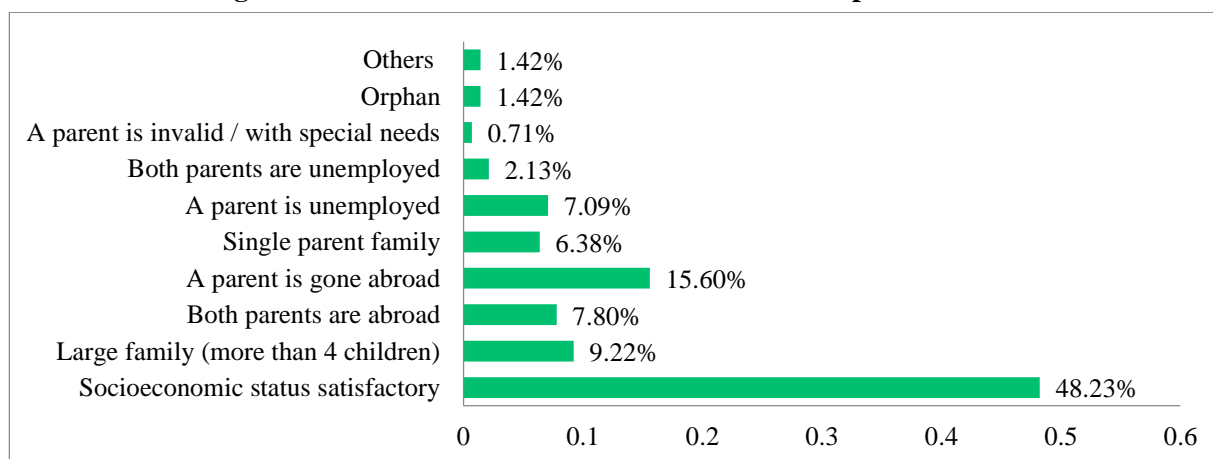
**Figure 4. Categories of staff in vocational schools**



*Source: Prepared by authors based on the study data (Bubuieci, Leova and Nisporeni VS)*

To note that only one institution of the 7 evaluated has employed a psychologist, when these institutions, according to the respondents, have an increased share of students from socially vulnerable families<sup>6</sup> and ‘rather difficult’ children. Proof of this are also the data about the students questioned (Figure 5): 52.0% of them do not have a satisfactory socioeconomic status and come from families where one/both parent(s) are working abroad (23.4%), numerous families (more than 4 children) (9.2%), with one/both parent(s) unemployed (9.2%), single parent families (6.4%), with one/both parent(s) disabled (0.7%), or they are orphans (1.4%).

**Figure 5. Socioeconomic status of the families of respondent students**



*Source: Student survey, 141 respondents*

The managing staff explains the rather high share of technical auxiliary staff (45% in vocational schools and 56% in colleges and in the centre of excellence) through the need for this staff category for maintaining the infrastructure, the farms, experimental teaching stations, farming land plots etc. VETIs capacity and infrastructure in most cases (except for Bubuieci VS) by far exceeds their needs. The infrastructure must

<sup>6</sup> Socially vulnerable family – single parent family, family with one/both parents migrated, family with parents with disabilities, numerous family (more than 4 children), one/both parents unemployed, one/both parents disabled, or orphan children.

be maintained but it is not capitalized to its full capacity. The farming land plots of colleges and Taul CEx have much bigger areas than those of the vocational schools, varying between 100 ha and over 400 ha. This would explain the share by 11% higher of the necessary auxiliary staff of these institutions compared to the same category of staff in the vocational schools.

In the school year 2017-2018, the number of staff in the institutions researched constituted 624 people. Relating the number of students (2595) of the 7 institutions to the number of staff (624), the share of students is of 4.15. A higher indicator is registered in the vocational schools (4.36) and a lower indicator – in the colleges and Taul CEx (4.05).

The student–teacher ratio is 9.2 (9.65 in colleges and Taul CEx and 8.43 in the vocational schools), which is also explained by the specifics of the studies. For comparison, we present the student–teacher ratio in vocational education in other countries<sup>7</sup>: in Germany – 13.96; Austria – 9.93; Finland – 18.52; Estonia – 17.57; Great Britain – 21.55; and Hungary – 12.58.

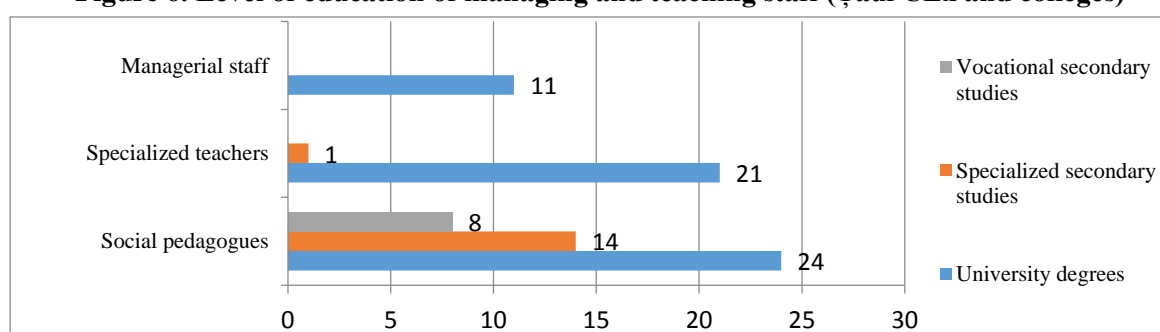
In such a context, we could conclude that in the 7 VETIs, the low ratio of students to employees/teachers should translate to a high quality of the VET process, which was not confirmed in reality.

## 1.2 Level of staff qualification

The analysis of the level of teacher qualification in the evaluated institutions shows that holding a university degree is a condition for being able to work as a teacher. The situation is different for the foremen-trainers, since specialized secondary education is the minimal requirement for them (level 4 ISCED).

In colleges and Taul CEx, 90% of the total number of staff<sup>8</sup> have university degrees; 6% – specialized secondary education diplomas, and 4% – vocational secondary education diplomas (see Figure 6). All general subjects and specialized teachers have university degrees. The foremen-trainers, in proportion of 57%, have specialized secondary education diplomas, 33% – vocational secondary education diplomas, and 10% – university degrees.

**Figure 6. Level of education of managing and teaching staff (Taul CEx and colleges)**



*Source: Developed by authors based on the data collected*

Of 109 staff employed<sup>9</sup> in the VS, 79% have university degrees. Of the total number of foremen-trainers, 46% have university degrees, 34% - specialized secondary education diplomas, and 20% - vocational

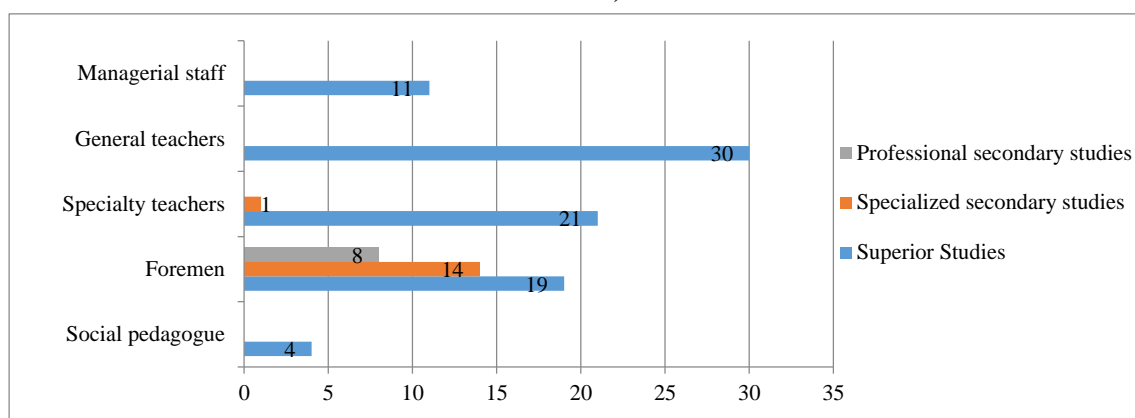
<sup>7</sup> [https://stats.oecd.org/Index.aspx?DataSetCode=EAG\\_PERS\\_RATIO](https://stats.oecd.org/Index.aspx?DataSetCode=EAG_PERS_RATIO)

<sup>8</sup> Except for the auxiliary technical staff.

<sup>9</sup> Except for the technical staff.

secondary education diplomas. The share of general subjects and specialized teachers with university degrees is 100% (Figure 7).

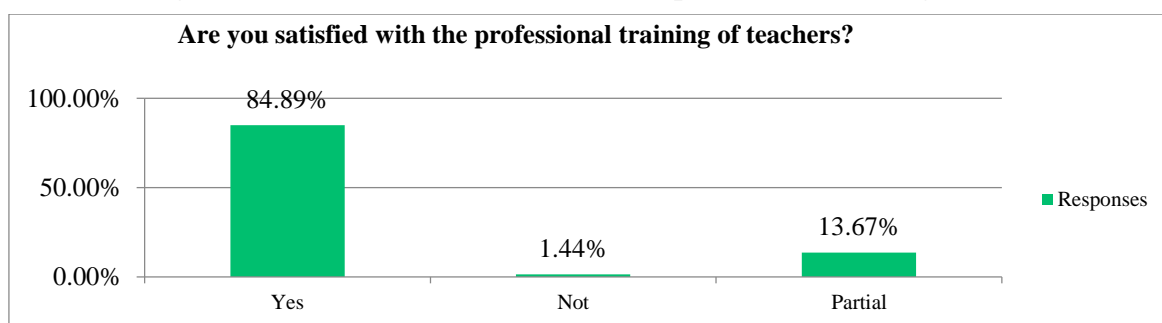
**Figure 7. Level of education of managing and teaching staff in VS (Bubuieci, Nisporeni, Leova)**



Source: Developed by authors based on the data collected

The level of qualification of teachers has direct impact on the education and training of students. The results of student surveys mirror this reality, showing that 85% of them are satisfied with the professional training of the teachers (Figure 8).

**Figure 8. Satisfaction of students with the professional training of teachers**



Source: Student survey, 143 de respondents

### 1.3 Teaching degrees of staff

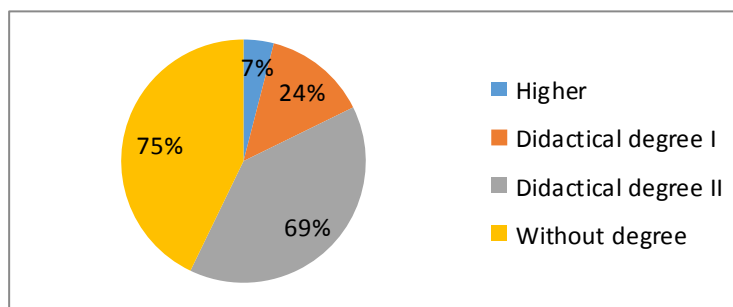
An indicator of the quality of teachers are their teaching degrees. If the level of education of the teaching staff in the VET institutions matches the positions held by them, then the share of those holding a teaching degree is rather small (60%) compared to those without teaching degrees (40%).

Of the total number of 177 teachers from colleges and Țaul CEx, 58.2% have teaching degrees: 4.0% hold the highest degree; 15.0% - first teaching degree, and the biggest share (39.0%) are those holding the second teaching degree. 41.8% of teachers do not have a teaching degree. 17.5% of them are young specialists<sup>10</sup> with up to two years of activity (Figure 9).

<sup>10</sup> According to the provisions of the *Regulation for Certifying Teachers in General and Vocational Education, and in Psychopedagogical Assistance Services*, approved by MECR Order no.62 of 23 January 2018 “young specialists and holders of master degrees in education sciences/ subjects taught with bachelor degrees in the area of activity or in the subject taught are entitled to participation in certification after at least two years of educational activity.”

Of 105 teachers of vocational schools, 62% have the highest or the first or second, teaching degrees. The biggest share (54%) have the second degree, 6% – first degree and only 2% have the highest degree. 38% do not have a teaching degree, 14% being young specialists with up to two years of activity (Figure 10).

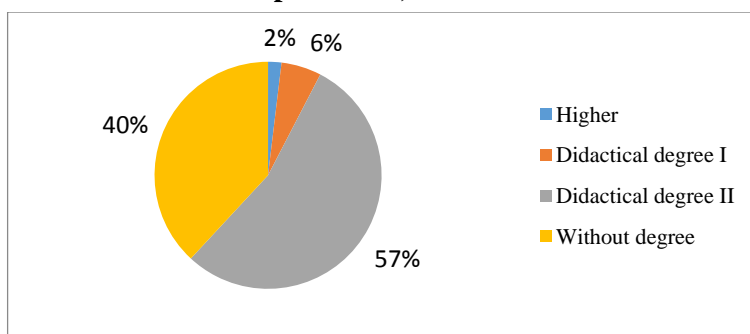
**Figure 9. Teaching level of staff of colleges and Țaul CEx**



Source: Developed by authors based on the data collected

The rather high percentage of teachers without a teaching degree (48.8% in colleges and Țaul CEx and 38.0% in vocational schools) was explained by the institution managers through the fact that the certification of teachers was voluntary and some teachers were not motivated to obtain a teaching degree.

**Figure 10. Teaching level of the staff of Bubuieci VS, Nisporeni VS, Leova VS**

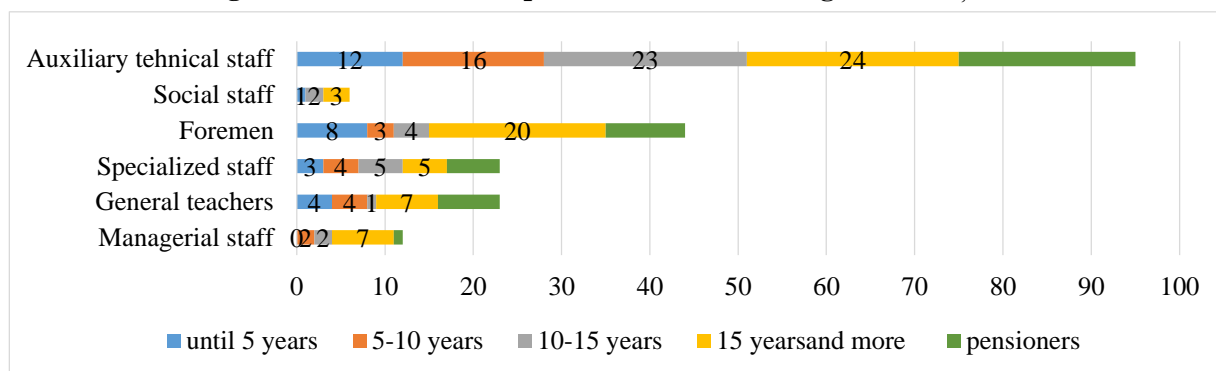


Source: Prepared by authors based on the data collected

#### 1.4 Professional experience in years of staff

The analysis of the professional experience of the staff in colleges and in Țaul CEx shows that the biggest share (40.0%) are the staff with experience of over 15 years, followed by a rather high share of 26.0% of retired staff. Of the 109 pensioners, the auxiliary technical staff accounts for 59.6% and the teachers – 40.4%. The staff with up to 5 years of work experience represents 12.0% and those with 5 to 10 years of experience represents 10.0% (Figure 11).

**Figure 11. Professional experience of staff in colleges and in Țaul CEx**

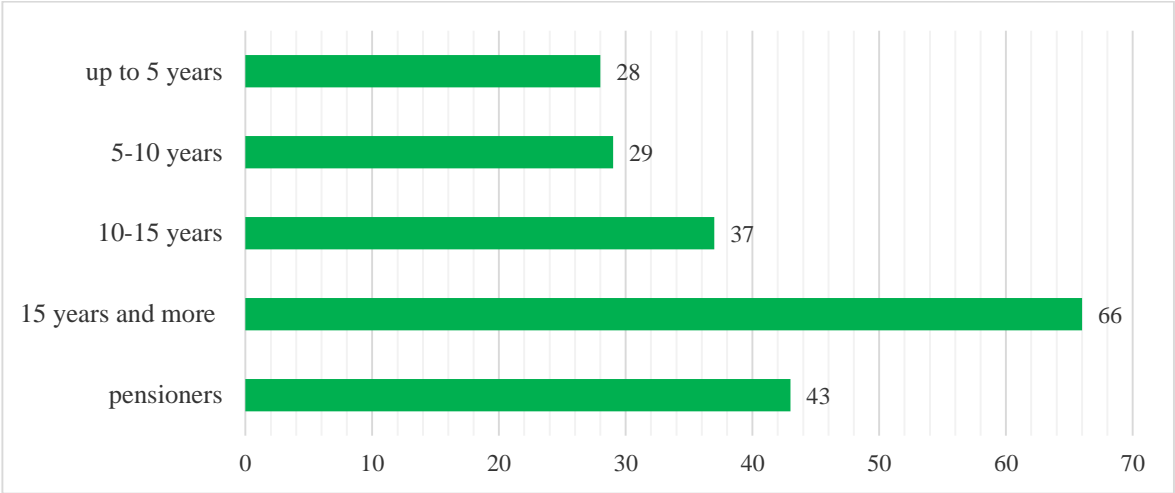


Source: Prepared by authors based on the data collected

In vocational schools, pensioners account for as much as 21%, by 5% less compared to the same category of staff in colleges and in Țaul CEx, which is a rather high share. Of the total number of pensioners, the auxiliary technical staff accounts for 57% and the teachers – 3%. The staff with up to 5 years of work

experience accounts for 14%, which is similar to those working from 5 to 10 years. They are followed by the staff working for 10-15 years (18%). The biggest share (33%) is held by the staff with a length of service of over 15 years (Figure 12).

**Figure 12. Professional experience of staff in Bubuieci VS, Nisporeni VS and Leova VS**



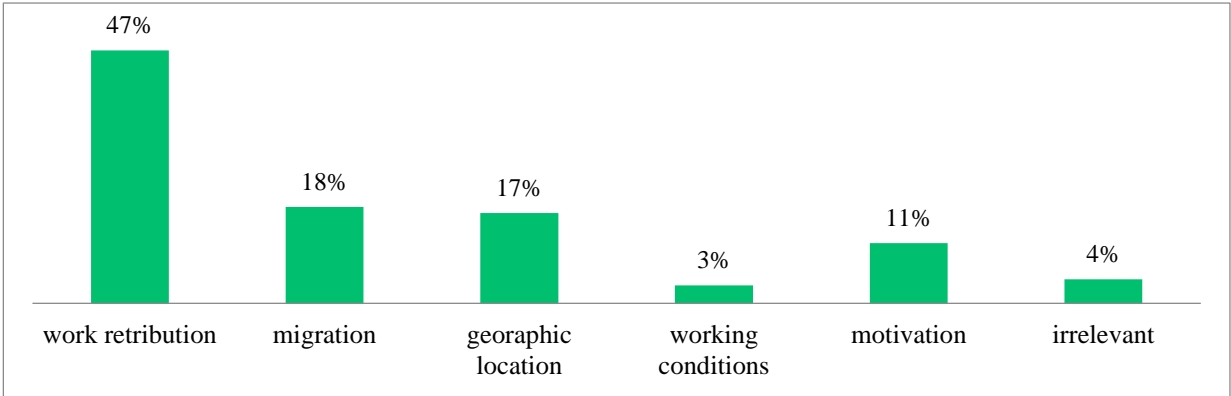
*Source: Prepared by authors based on the data collected*

The research results show that the share of young specialists is rather low in all the evaluated institutions. Only 13% of the total number of teachers are young specialists, with a length of service of up to 5 years. Most teaching staff is made up of persons with professional experience of over 15 years (36.5%) and pensioners (23.5%).

The aging of the teaching staff and the turnover of teachers in VETIs as well as the youth lacking desire to work in the education system, according to the analysis of the information presented by the respondents, are largely caused by the work retribution and the migration abroad.

The main reason for the above-mentioned situation, according to 46.67% of respondents, is the work retribution, followed by migration (17.78%) and geographic location (16.67%). The respondents also identified other reasons: working conditions, motivation etc. (Figure 13)

**Figure 13. Reasons for Teacher turnover**



*Source: Teacher surveys (141 de respondents)*



The workshop participants mentioned other challenges faced by teachers. For financial reasons, “teachers teach up to 6 or even 7 subjects/modules in order to amass 720 hours and to receive a decent salary.” “The preparation for so many subjects is not of quality and it is very tiring,” teachers specify. Another difficulty is the fact that “we work with children with poor performance, who were matriculated with the mark 5, most of them coming from families with problems, with parents gone abroad” and “it is not easy to work with them and have a high performance.”

### 1.5 Continuous teacher training

In view of assuring the quality in VETIs, it is necessary to provide continuous development of pedagogical, psycho-pedagogical and specialized competences of teachers and adapt their knowledge to the new requirements emerging in the educational system, including the use of modern teaching-learning-assessment tools.

The quality of the education process is conditioned to a large extent by the professionalism of teachers. The teacher need to have an overall vision for the education process, develop education projects, organize activities, coordinate students in the learning process, solve conflicts, counsel the students with problems etc. To face all the challenges, the teacher needs continuous training throughout their working period.

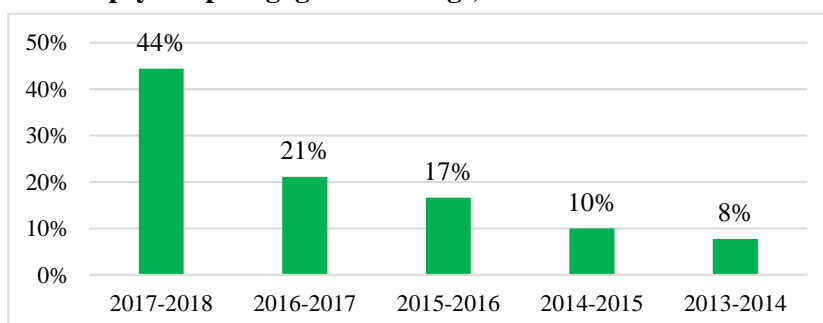
Any recommendation for improving the quality of the education process can be successful only if it is based on good knowledge of the situation. From this perspective, an analysis of the education needs as well as of the individual ones becomes priority in developing a training and retraining plan, which currently does not happen in VETIs.

Based on the above-said, we looked at the continuous training of teachers from the angle of a number of indicators: period of participation, level of participation, offer of continuous trainings, level of satisfaction with the training process, training needs and preferences for further professional training.

An analysis of the data on the *period of participation of teachers in professional trainings* (see Figure 14) shows that, during 2017-2018, of the total number of respondents, 44.5% participated in trainings, thus reaching a maximal share and an increase of over 23% compared to the previous period. In 2015-2016, teachers benefited from trainings and accounted for 16.7%, by 6% more compared to the previous period. In the academic year 2013-2014 only 7.8% of teachers benefited from trainings, indicating the lowest rate throughout the reference period.

VETI managers explained the high number of trainings, especially in the latest years, through the fact that their vast majority was provided free of charge, the cost being covered by international donors, by technical assistance projects, or by the VETI partners.

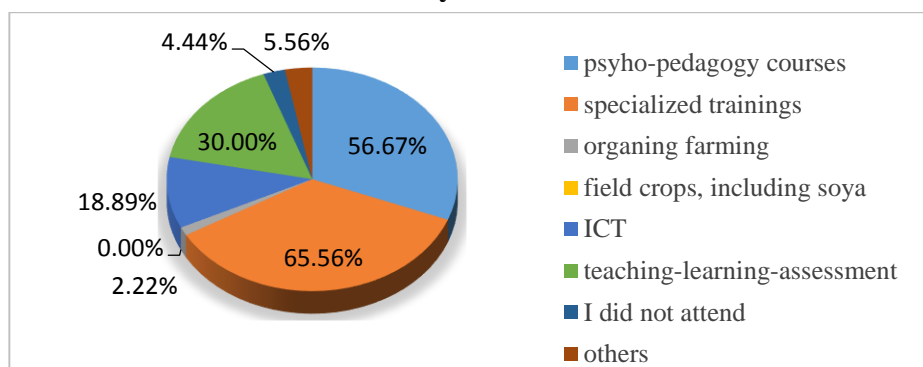
**Figure 14. Participation in professional trainings (except for psycho-pedagogical trainings) between 2013 - 2018**



Source: Teacher survey, 104 respondents

The analysis of the *types of continuous training* (see Figure 15) the teachers benefited in the past two years mirrors that a high number of respondents (56.7%) attended psycho-pedagogy courses.<sup>11</sup> An even higher share (65.6%) of them attended *specialized trainings*. Even though their number specialized trainings is quite high, the survey results show zero respondents participating in trainings in *field crops, including soya*. This result reveals the need for trainings in this area as *field crops, including soya*, is a component of some education programmes.

**Figure 15. Types of continuous trainings, specialised teachers, past 2 years**



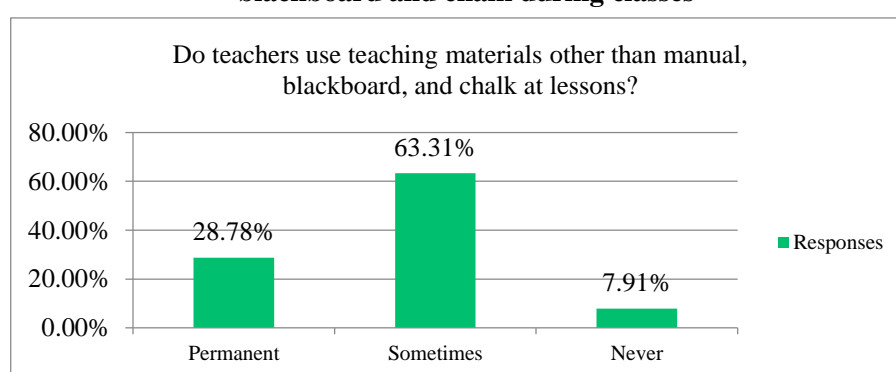
Source: Teacher survey

The beneficiaries of trainings in organic farming accounted for 2.2% (the highest share), and those who attended other trainings accounted for 4.4%; 5.6% of respondents did not attend trainings in the period under research.

The trainings in teaching-learning-assessment methods were attended by over 30% of respondents. The subjects who attended ICT trainings accounted for 18.9%. To note that the teacher survey revealed the need for courses to train their digital competences in order they could use information technologies in the process of teaching. 35.5% of respondents required to fill in the questionnaire on paper, not electronically, the reason being the lack of elementary digital skills.

When asked if teachers used during classes materials other than the textbook, blackboard and chalk, 63.3% of students answered 'sometimes', 7.9% said they did not, and 28.8% answered 'all the time' (Figure 16).

**Figure 16. Teachers use materials other than the textbook, blackboard and chalk during classes**



Source: Student survey

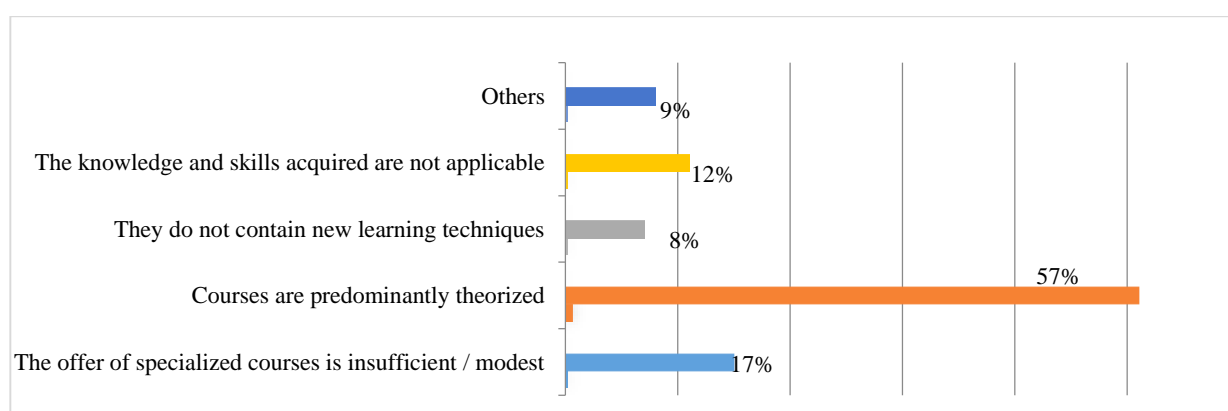
The opinions of specialized teachers on the level of satisfaction with the quality of continuous trainings split, 54.5 % assessing them as satisfactory and 45.5% - as largely meeting their expectations. None of the respondents said the quality of the trainings was inadequate. Regarding the *process of training in continuous*

<sup>11</sup> Psycho-pedagogy trainings are mandatory for teaching degree applicants.

*training courses*, according to 55.0% of the respondents, the contents remain *predominantly* theorized. The knowledge and competences acquired are *not applicative* – according to approximately 12.0%; over 16.0% specified that *the offer of specialized courses was rather modest*, while a lower percentage (9.0%) said that the trainings were not focused on *innovative learning methods*.(Figure 17)

The workshop participants confirmed the survey results: the contents of continuous training courses (mandatory for receiving or confirming one’s teaching degree) and the methods used “have been the same for years,” “sometimes even the trainers are the same as 20 years ago, only older now.” Since the knowledge and skills trained are not applicative, many teachers are not motivated to attend such courses.

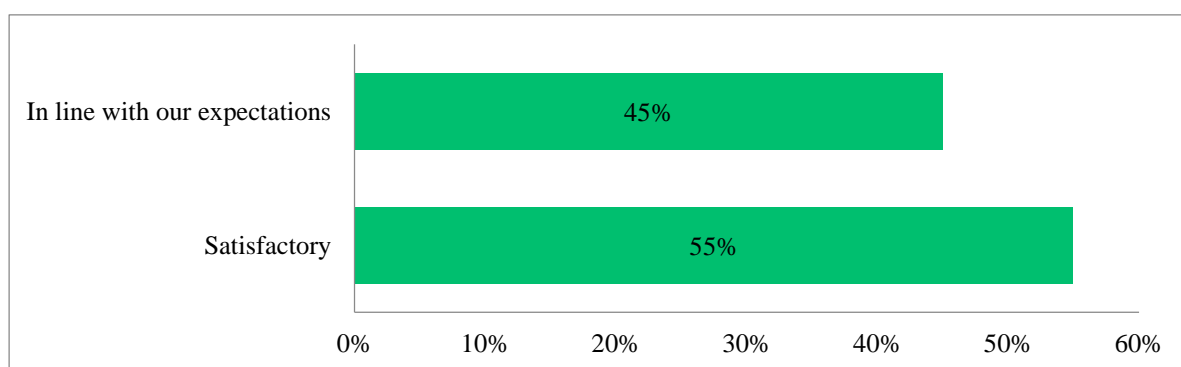
**Figure 17. Analysis of training process in continuous training courses**



Source: Teacher survey

Another aspect researched concerns *the identification of professional training needs in view of reaching personal and system goals*. The respondents, in proportion of 51.1%, indicated the need for trainings in *innovative models and technologies in the subjects of specialization*, and 17.8% chose those focused on *the information technologies*.

**Figure 18. Level of satisfaction of Teachers on quality of continuous training**

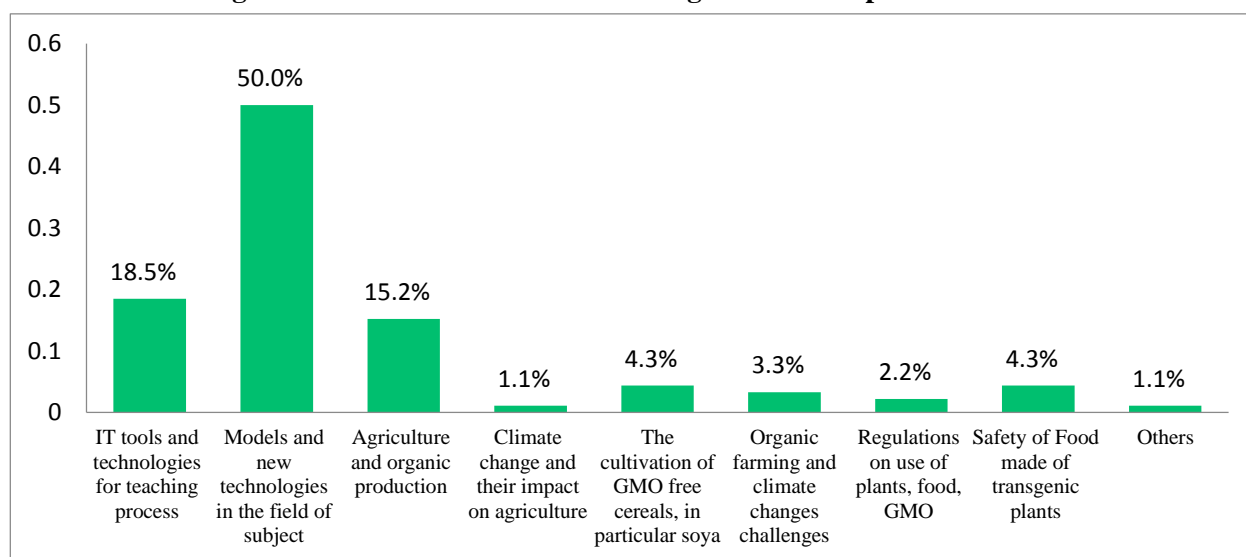


Source: Teacher survey

Another group of specialized teachers (15.6%) advocated for trainings in organic farming. They opted for other continuous training courses: *evaluation of security of food products obtained from transgenic plants* (4.4%), *organic farming practices and confrontations with climate changes* (3.3%), *cultivation of organic crops* (3.3%), *regulation of the use of genetically modified plants, food products and organisms* (2.2%), and *climate changes and their impact on agriculture* (1.1%).

The respondents did not show interest in continuous training courses in *cultivation and irrigation of plants and management of agricultural technologies* or in the *administration and management of nitrogenous fertilizers, regulation of the use of plants*.

**Figure 19. Need for continuous training courses for specialized teachers**



Source: Teacher survey

## 1.6 Conclusions and recommendations, human resources

### Conclusions

- The primary purpose of VETIs is to provide vocational education and training, yet, the auxiliary technical staff accounts for 56% in colleges and in Țaul CEx, and for 45% in Bubuieci VS, Leova VS, and Nisporeni VS.
- The share of general subjects and specialized teachers with university degrees is 100%.
- The number of teachers with a teaching degree is rather low, accounting for only 56.6%.
- The unit of psychologist is missing in 6 out of the 7 institutions.
- The education system in the agri-food area remains unattractive for young specialists.
- There is a turnover of young teachers and their migration abroad in search of a better-paid job.
- There is lack of a system for attracting and promoting teachers, especially young ones.
- There is a high share of teachers close to retirement or pensioners (23.5%).
- There is interest in professional retraining:
  - use of ICT in teaching;
  - innovative models and technologies in the subject of specialization;
  - organic farming;
  - evaluation of security of food products obtained from transgenic plants;
  - organic farming practices and confrontation with climate changes;
  - cultivation of generally unmodified crops;
  - regulation of the use of genetically modified plants, food products and organisms;
  - climate changes and their impact on agriculture.
- There is lack of support with the international mobility of teachers.
- A considerable number of specialized teachers show a very low level of digital competences.

### ***Recommendations***

- Develop an agri-food sector promotion strategy (Țaul CEx could achieve this objective).
- Promote policies, at the central level, for attracting and keeping the young specialists in the agri-food VET and identify methods for reducing the migration of youth abroad for seeking better-paid jobs:
  - develop a strategy and efficient mechanisms for attracting, motivating and promoting the teachers, especially the young specialists in agri-food;
  - grant financial incentives to university graduates who wish to work as teachers in VETIs;
  - develop partnerships with Moldova universities (Moldova Technical University, Moldova State Agrarian University etc.) for organizing the internships of university students in VETI, providing financial support for the travel cost, providing living premises for the students etc.
- Periodically identify the specific training needs of teaching staff in each VETI and develop individual plans for teacher`s development. Present the offer of needs to institutions that provide continuous training programmes for the planned organization of needs-based trainings and in the optimal period for the applicants.
- Organize training courses for specialized teachers to develop and enhance their competences for using ICT in teaching.
- Strengthen the capacities of CEx of providing continuous professional training in the agri-food area.
- Identify the methods for facilitating training courses and study visits abroad for the specialised teachers and managing staff in VETIs in the agri-food area.
- Develop a more efficient, participatory and transparent management.

## CHAPTER 2. VOCATIONAL EDUCATION AND TRAINING PROCESS

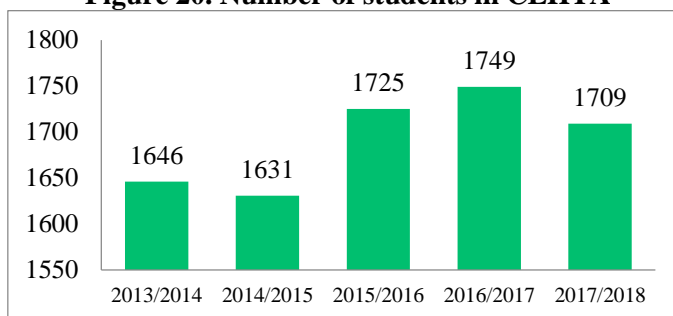
### 2.1 Student contingent

In the academic year 2017/2018 46.6 thousand students studied in VETIs (by 4.5% less than in the academic year 2016/17), of whom 13.8 thousand – in the centres of excellence; 17.4 thousand – in colleges and 15.4 thousand – in vocational schools (source: NBS).

The agri-food VETIs were attended by 776 students, by 5.15% less than in the previous school year. The number of students in the institutions also indicated a decrease by approximately 6% compared to the previous year.

Figure 20. Number of students in colleges and CEHTA2013/2014 – 2017/2018)

**Figure 20. Number of students in CEHTA**



Source: (Prepared by authors based on the study data)

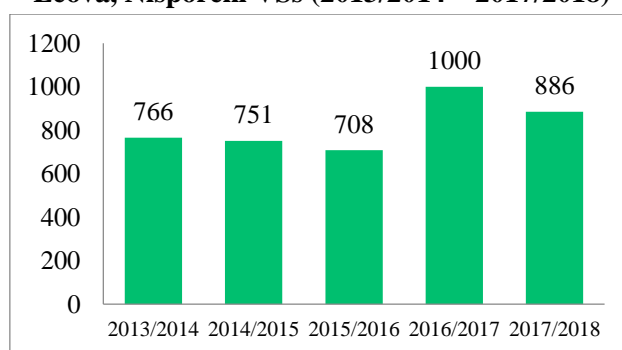
There was made an analysis of the student contingent in the 7 VETI for the period from 2013 to 2018<sup>12</sup>.

The research results demonstrate that in the reference period, the student contingent in the three colleges and in Țaul CEx varied between 1631 and 1749, reaching the highest share in the school year 2016-2017, and the lowest share in the school year 2014-2016. In the reference period, the number of students underwent a slight decrease of circa 3.6%.

One of the factors that catalysed this increase, according to the managers of the institutions, was the updating of the nomenclature of areas for the professional training of specialties and qualifications for post-secondary and non-tertiary post-secondary VET through the GD no.853 of 14 Dec 2015. The areas *Manufacturing and processing* and *Agriculture* were completed with new specialties, requested by the business sector.

Due to this, starting with the school year 2016-2017, the year with the highest increase in the number of students, the education offer of Țaul CEx was competed with 4 vocational training programmes – *Fruit and Vegetable Growing*, *Safety of Agri-Food Products*, *Technology of Products of Plant Origin* and a new trade in dual education – *Fruit and Vegetable Grower*. The contingent increased by 77 students in Svetlîi TA College. According to the institution's managers, the increase was conditioned by the increase in the admission plan for the school year 2016-2017 and completion of the education offer with the specialty *Electrification of Agriculture*.

**Figure 21. Number of students in Bubuieci, Leova, Nisporeni VSs (2013/2014 – 2017/2018)**



Source: Prepared by authors based on the study data

<sup>12</sup> The data for 2013-2017 are as at 1 October of each year, and the data for 2018 are as at 1 July 2018.

The analysis of the evolution of the student contingent in the reference period in Bubuieci VS, Leova VS and Nisporeni VS shows an increase in their number in the past two years by over 29% in 2016/2017 compared to the previous year and an increase lower by 9% in 2017/2018. That growth, as in the case of colleges, was due to the completion and update of the nomenclature of areas of professional training and of trades/professions, approved by GD no. 425 of 3 July 2015. Thus, starting with the school year 2015/2016, the education offer of Nisporeni VS has been completed with five new trades:

- *Viticulturist-Wine-Maker-Fruit Grower*, a complex trade;
- *Tractor Driver-Machinist in Agricultural Production – Tractor Driver*, a complex trade;
- *Computer Technical Support Operator*;
- *Sewer*;
- *Shoemaker of Custom Shoes* (trade through dual education).

Another important factor that has contributed to the increase in the number of students in the past two years is that the entire VETI network has undergone a process of optimization and reorganization in the reference period: the number of institutions has declined and the number of students has increased accordingly in those institutions that continued to function.

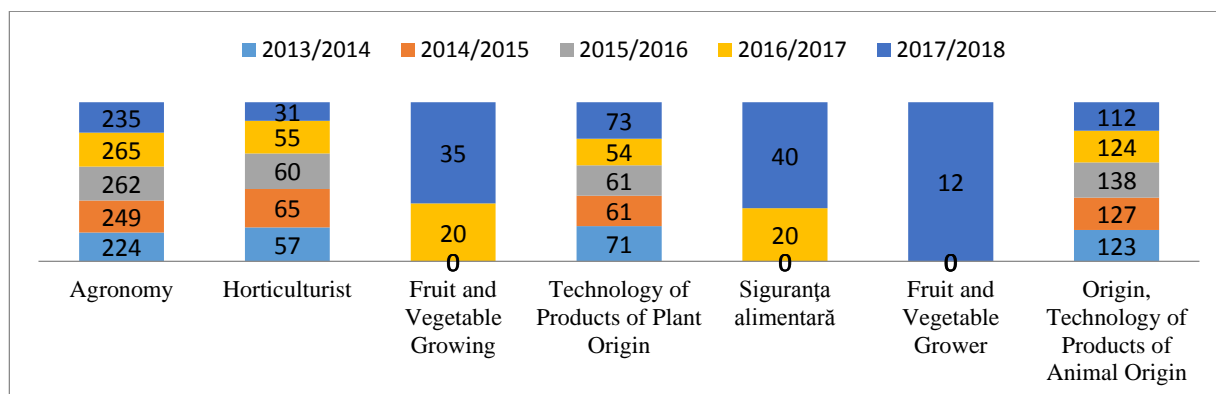
The slight increase in the number of students may also be the result of the broad reforms having taken place in the sector for aligning vocational training to the labour market demands. Starting with 2013, VETIs have enjoyed technical and financial support from EU as well as from other international donors, which has had positive impact on the strengthening of capacities of such institutions. In addition, by organizing numerous campaigns for promoting the VETI image, their prestige has increased.

### 2.1.1 Evolution of student contingent by agricultural specialties and trades

The evaluation of the student contingent was conducted according to the vocational training programmes in the reference areas: *Agronomy*, *Safety of Agri-Food Products*, *Fruit and Vegetable Growing*, *Technology of Products of Plant Origin*, *Technology of Products of Animal Origin*, *Fruit and Vegetable Grower*, *Viticulturist–Wine-Maker*, *Viticulturist–Wine-Maker–Fruit Grower*, *Apiculturist* and *Flower-Grower*.

The three colleges and Țaul CEx offer educational programmes on *Agronomy*, *Safety of Agri-Food Products*, *Fruit and Vegetable Growing*, *Technology of Products of Plant Origin*, *Technology of Products of Animal Origin* and the trade of *Fruit and Vegetable Grower* (Figure 22). Țaul CEx provides the biggest range of vocational training programmes, 6 specialties of the ones listed. Most students study the specialty *Agronomy*; their number varied between 224 and 265 during the academic years 2013/2014–2017/2018.

**Figure 22. Number of students by specialties in colleges and Țaul CEx (2013/2014–2017/2018)**



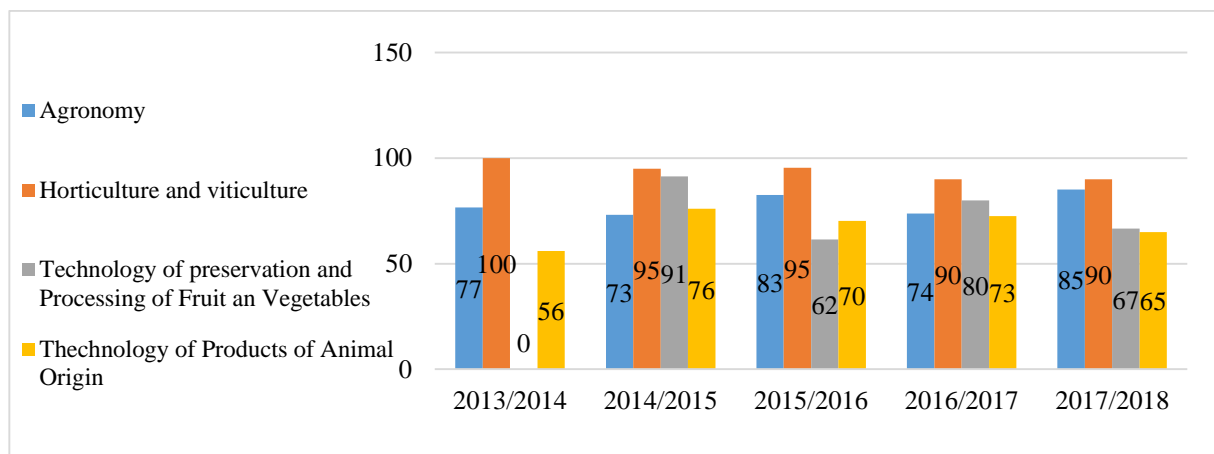
Source: Developed by authors based on the study data



### 2.1.2 VET Institution Graduation Rate

In the reference period, the graduation coefficient at the evaluated specialities in colleges and in Țaul CEX varied between 56% and 100%. The biggest contingent losses, of up to 44%, were registered for the specialty *Technology of Products of Animal Origin*, followed by the specialty *Technology of Preservation and Processing of Fruit and Vegetables*, with losses between 34% and 19%, and the highest graduation rate was at the specialities *Agronomy* (between 76,6% and 85.2%) and *Horticulture and viticulture* (90%-100%)

**Figure 23. Graduation rate by specialities in colleges (3) and in Țaul CEX in the period 2013/2014–2017/2018**



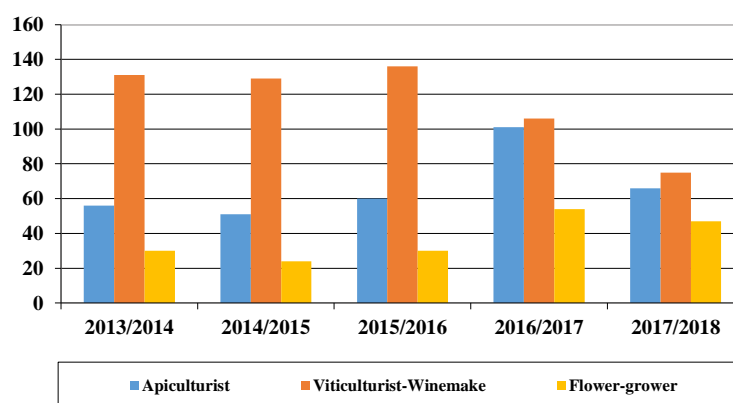
Source: Developed by authors based on the study data

The vocational schools provide three vocational training programmes at *Apiculturist*, *Viticulturist-Wine-Maker*, *Viticulturist-Wine-Maker-Fruit Grower* and *Flower-Grower*. The training programme in *Apiculturist* is provided at Nisporeni VS and Bubuieci VS. The number of graduates varied between 51 and 101, reaching the highest rate in the academic year 2016/2017 and the lowest rate in the school year 2014/2015 (Figure 23).

The vocational training programme in *Viticulturist-Wine-maker* is provided at Nisporeni VS and Leova VS. The total number of students in the school years 2013/2014–2017/2018 varied between 75 and 131, reaching the biggest rate in 2013/2014 and the minimal rate in 2017/2018.

Commencing the academic year 2016-2017, Nisporeni VS has been implementing a new training programme for the complex trade of *Viticulturist-Wine-maker-Fruit Grower*. During two years, 63 students were matriculated for this trade (Figure 24).

**Figure 24 Evolution of number of students by trades at Bubuieci VS, Leova VS and Nisporeni VS in the period 2013/2014–2017/2018**



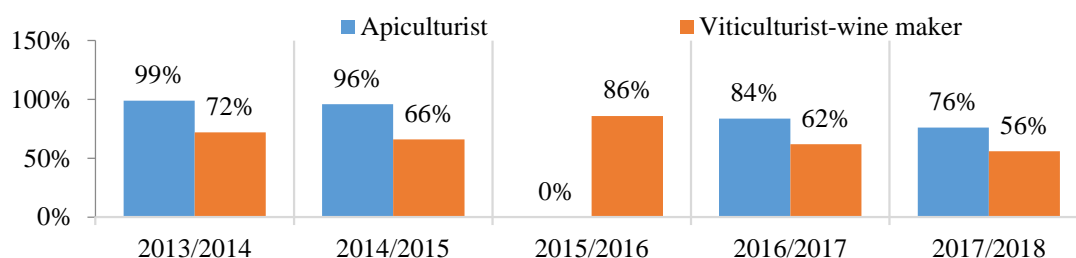
Source: Developed by authors based on the study data

The graduation rate for the agri-food trades varied between 56% and 99% in the



period 2013-2018. The biggest losses, of up to 44%, were registered for the trade of *Viticulturist-Wine-maker* in the school year 2017/2018. The highest rate of graduates was registered for the trade of *Apiculturist*, reaching maximal rates of 96% and 99% in the academic year 2013/2014 and 2014/2015, accordingly (Figure 25).

**Figure 25. Graduation rate by trades in vocational schools (Bubuieci, Leova, Nisporeni) in the period 2013/2014–2017/2018**

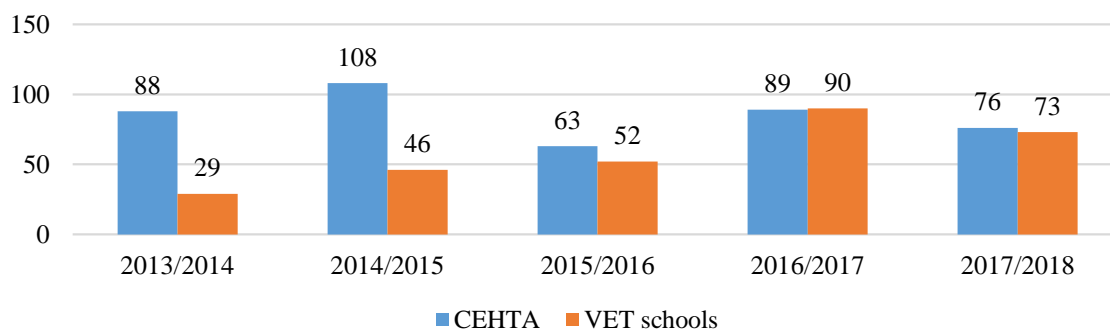


Source: Developed by authors based on the study data

### 2.1.3 Contingent losses

An indicator of VETI performance also serves the total number of contingent losses registered at the end of the school year.

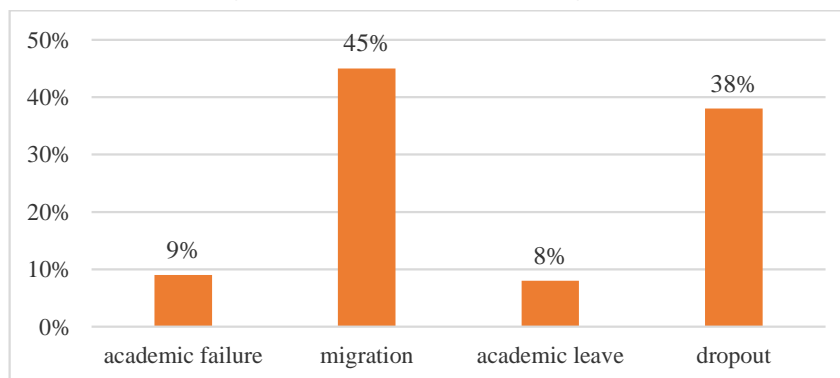
**Figure 26. Contingent losses in the period 2013/2014–2017/2018**



Source: Developed by authors based on the study data

The comparative analysis of contingent losses shows that they were much smaller in vocational schools than in colleges and CEx in 2013/2014. Later, during 2016/2017 and 2017/2018, the contingent losses in colleges and Țaul CEx decreased but essentially increased in vocational schools. According

**Figure 27. Reasons for contingent losses**



Source: Teacher survey

to the respondent perceptions, the losses were caused by a number of factors (Figure 27): *migration* (44.0%), *absenteeism leading to dropout* (38.2%), *academic failure* (9.0%) and *academic leave* (7.8%).

The representatives of VETI participating in the workshop said that the admission period became a real challenge for agri-food VETIs. According to the VETI managers, ‘despite the diversification of the education offer that had been enriched with new programmes, the number of youth opting for agricultural specialties/trades has been decreasing in the past five years’. The admission transforms into ‘student recruitment’ and ‘with each year, it becomes more and more difficult to convince students to choose a profession in agriculture’. The lack of new and divers tools to increase enrolments is also a challenge. According to the teachers the methods of promoting the image of the institution are obsolete as they ‘have been the same in the past 5 or even 10 years,’.

### **Conclusions:**

- The youth have low preference for agri-food trades and specialties.
- The actions used for the promotion of VETIs have been the same in the last 10 years and mainly being organized before the admission period.
- The national and/or international academic mobility of students is missing.
- Contingent losses for some trades/specialties are rather high (up to 44%), which imply financial losses, given that these institutions are funded from the state budget.

### **Recommendations:**

- Create a platform of communication among agricultural VETIs, the business sector and the education institutions in the entire country in view of strengthening the relations among these players. The purpose is to arise youth awareness on the importance of agriculture and of a sustainable management of natural resources, as well as to provide information on employment opportunities in the rural area.<sup>13</sup>
- Carry out a public information campaign on professional perspectives in agriculture aimed at the youth in middle and high schools and their parents; conduct visits to schools; organize interactive activities with profession-specific curiosities.
- Diversify, change and increase the number of VETI visibility actions, and carry them out throughout the year. Involve other players (LPA, professional associations, parents, students, VETI graduates, businesses etc.) in promotion campaigns.
- Publicize VET advantages (professional, financial etc.) and those of agricultural professions, especially in economically disfavoured regions; collect data about the success rates of VET graduates on the labour market and promote positive examples in order to attract as many students to VETIs as possible.
- Set up a National Advisory Council<sup>14</sup> for professional training and retraining in the agri-food area.
- Conduct a study of the growth of organic products, including soya, on the experimental land plots in VETIs.
- Develop mechanisms for the facilitation and organization of student academic mobility.

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<sup>13</sup> Italy’s experience may serve as a model.

[http://www.ruraland4.it/ruraland/index.php?option=com\\_content&view=article&id=2006&Itemid=901](http://www.ruraland4.it/ruraland/index.php?option=com_content&view=article&id=2006&Itemid=901)

<sup>14</sup> Romania’s experience may serve as a model: <https://lege5.ro/Gratuit/g42dqmzzgu/ordinul-nr-4456-2015-privind-aprobarea-cadrului-general-de-organizare-si-functionare-a-structurilor-parteneriale-consultative-pentru-invatamantul-profesional-si-tehnic>

## 2.2 Education offer and level of correlation with labour market requirements

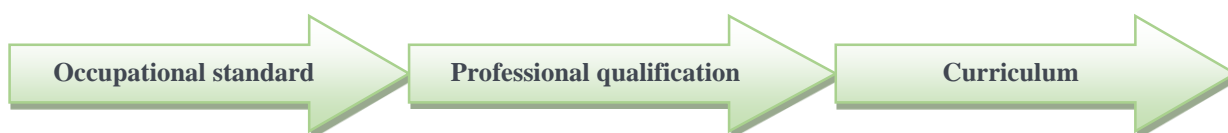
The vocational training of qualified workers, technologists, foremen, technicians etc. in VETIs is carried out according to the NQF, Nomenclature of Vocational Training Areas and Trades/Professions, Nomenclature of Vocational Training Areas, Specialties and Qualifications, approved by the Government, and levels 3, 4 and 5 of ISCED.<sup>15</sup>

The strategic grounds for the curriculum design is set out in the Reference Framework of the Curriculum for Vocational Education<sup>16</sup> that establishes the structure and the procedures for curriculum development and implementation and represents an education policy paper.

The practical guide for curriculum development<sup>17</sup> specifies that, in view of substantiating the curriculum design on the essence of professional qualification, *assuring a strong link between the labour market needs and its content* should be taken into account in curriculum development.

This link is expressed by the following scheme:

**Figure 28: The link between the labour market needs and its content**



The occupational standard defines what a person must be capable of doing at their workplace (tasks, duties, functions, working conditions etc.). The qualification standard indicates what a person must know to be competent in their job (types of competences, methods of evaluation). The curriculum defines what, how much and how a person must study to qualify for a profession/specialty (outcomes, teaching-learning-assessment methods and strategies, contents, teaching materials, working tools etc.).

Thus, the occupational standard and the professional qualification serve as basis for curriculum development for a specialty.

In the past three years, curricula have been developed for all agricultural specialties, which represents a significant achievement and a tremendous work. However, few of them have been developed based on qualification standards due to the fact that up to the moment only 8 qualification standards for level 4 ISCED are approved. Moreover, these qualifications were not developed based on OS but in their absence. Only six OS and three qualifications have been developed for level 3 ISCED (trades). The curricula are missing for a number of trades (e.g. *Viticulturist–Wine-Maker* and *Fruit Grower* etc.). Thus, the education and training process takes place only based on the Study Plan. Such a situation complicates things even more.

In this connection, it is rather cumbersome to correlate the curriculum content with the employer requirements. Hence, the compliance of the contents with the labour market needs is questioned, the discontent of businesses participating in the focus group on the contents taught in VETIs being justified –

<sup>15</sup> Code of Education, no.152 of 17 July 2014, title IV.

<sup>16</sup> Reference Framework of VETI Curriculum, approved by OME no.1128 of 26 Nov 2015.

<sup>17</sup> Practical guide for the development of curricula for post-secondary and non-tertiary post-secondary vocational education, approved by OME no.296 of 21 April 2016

‘the study programme differs from reality’, since ‘what is taught is not useful on the job, students learn a lot but not what is needed’ and ‘upon employment, the youth must again be taught, in practice’.

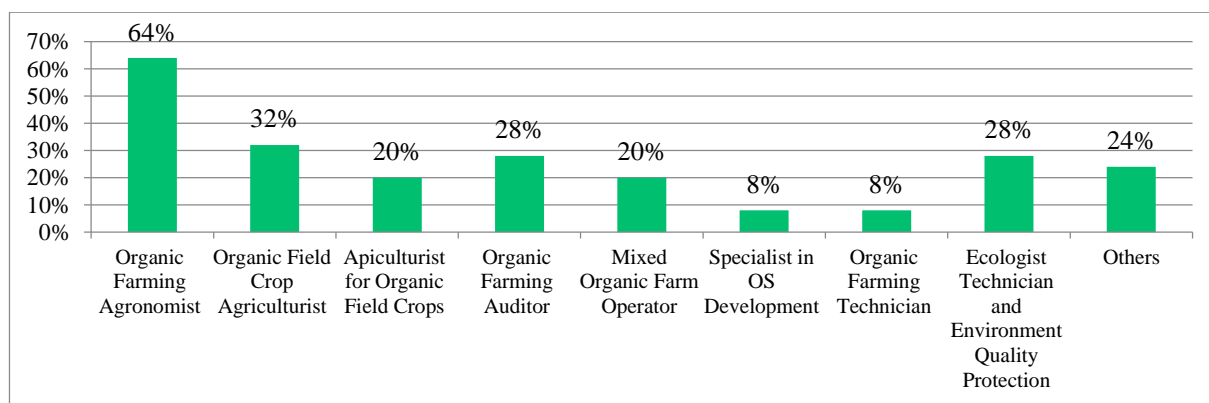
The participants in the survey (teachers) and those who participated in the interview specified that the involvement of businesses in curriculum development for the agri-food area was difficult since they were not motivated or aware of the need to engage in this process. Since the line curricula have been recently developed, specialized textbooks, methodological guides and teaching materials are missing. Specialized teachers use old textbooks or, if they are missing, contents from Romanian or Russian textbooks, or Internet-based sources in teaching. The teachers mentioned that in the absence of specialized textbooks, ‘the content taught differs much from one institution to another and from one teacher to another’, depending on the professional training and teaching materials available. As a result, the qualification examination becomes a challenge for the students of such institutions.

The labour market in the agri-food sector is in a permanent and increasingly emphasized dynamics as the signing of the EU – Moldova association agreement and the opening of new sales markets requires adapting products and services to the European standards. Thus, VET provision must satisfy to an increasing extent, a market in search of highly qualified specialists / workers, holders of new competences.

However, such changes on the labour market are hard to implement as long as curriculum contents are not always developed based on the qualifications that, in their turn, are not based on the OS. Additionally, there is a lack of valid mechanisms for anticipating the competences and skills required by the labour market, which presuppose the existence of analytical and prognostic tools to determine the development potential of the agri-food sector in the medium and long term as well as the evolution of the labour market, thus that the VET meets business needs.

The businesses participating in the survey identified a range of specialties and trades necessary to be included in the VET offer: *Organic Farming Agronomist* (64%), *Organic Field Crop Agriculturist* (32%), *Apiculturist for Organic Field Crops* (20%), *Organic Farming Auditor* (28%), *Mixed Organic Farm Operator* (20%), *Ecologist Technician and Environment Quality Protection* (28%), *Specialist in OS Development* (8%), *Organic Farming Technician* (8%), as well *Animal Nutritionist* and *Human Nutritionist*.

**Figure 29. New trades/specialties in organic farming needed on the labour market**



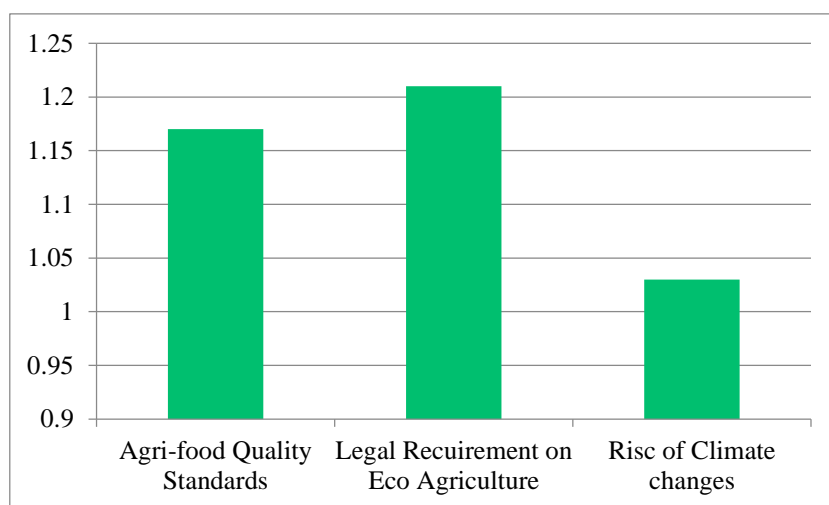
Source: Survey with businesses

Businesses also consider it necessary to include the study of the following contents: *Quality Standards for Organic Agri-Food Products*; *Legal Provisions on the Organic Agri-Food Production*; and *Climate Change Risks*.

Another challenge related to the compliance of the study programme content are the general subjects, as reported by VETI representatives, participants in the workshop. The content of

the teaching materials in all general subjects is not applicative for the trade/specialty studied when the programme's primary goal is to train the specialist/tradesman in the agri-food area. Teachers use high school textbooks in their teaching process. The teachers stated, "students come to the vocational school hoping to learn a trade" and "are dissatisfied that they must further learn math, chemistry, biology etc. as in high school." The students asserted the same: "I don't like history and I don't understand how it can be useful to me when I practice my job," "I thought I would get rid of math here (at the VET school) but it's not like that." To note that, so far, no actions have been taken to develop applicative curricula for general subjects that would have content specific to the trade/specialty.

**Figure 30. Contents necessary to be studied in VETIs, according to businesses**



Source: Survey with businesses

## Recommendations

- Develop textbooks, teaching materials for the line subjects, and methodological guides;
- Develop curricula for the trades *Viticulturist and Fruit Grower*;
- Revise the curricula for all the agri-food specialties, for initial and continuous professional training, especially for the following trades and specialties: *Safety of Agri-Food Products*, *Technology of Products of Plant Origin*, *Technology of Products of Animal Origin*, *Viticulturist–Wine-Maker*, *Agronomy*;
- Develop Occupational Standards for the professions of the agri-food branch:
  - *Viticulturist 811013*, qualification level – III ISCED;
  - *Wine-Maker 811013*, qualification level – III ISCED;
  - *Fruit Grower*, qualification level – III ISCED;
  - *Flower-Grower 812002*, qualification level – III ISCED;
  - *Agronomist*, medium qualification, specialty *Agronomy*, qualification level – IV ISCED;
  - *Agronomist*, medium qualification, specialty *Vegetable and Fruit Growing*, qualification level – IV ISCED;
  - *Agronomist*, medium qualification, specialty *Primary Viticulture and Wine-Making*, qualification level – IV ISCED.

- Develop qualifications for:
  - *Viticulturist–Wine-Maker* 811013, qualification level – III ISCED;
  - *Fruit Grower*, qualification level – III ISCED (is studied in VETIs, the curriculum exists, the qualification and OS are missing);
  - *Flower-grower* 812002, qualification level – III ISCED.
- Revise the qualifications:
  - *Agronomist* /medium qualification/ (specialty *Agronomy*);
  - *Agronomist* /medium qualification/ (specialty *Vegetable and Fruit Growing*);
  - *Agronomist* /medium qualification/ (specialty *Primary Viticulture and Wine-Making*);
  - *Forestry Technician*
  - *Public Catering Technician* (specialty *Public Catering Technology*);
  - *Technician Technologist* (specialty *Technology of Products of Plant Origin*);
  - *Technician Technologist* (specialty *Technology of Products of Animal Origin*);
  - *Technician Technologist* (specialty *Technology of Wine, Beer and Soft Drinks*) developed according to the old methodology,<sup>18</sup> NOT based on the standards;
- Introduce all qualifications in the National Qualifications Register.

### 2.3 Work Based Learning and cooperation with the business

The work-based learning (WBL) is part of the VET at all levels: secondary VET, post-secondary VET, and non-tertiary post-secondary VET both in the initial and continuous VET.

The WBL is essential in vocational education for developing students' professional competences specific to a qualification of level 3, 4 or 5 ISCED of the NQF, thus contributing directly to acquiring practical skills that are relevant for labour market needs. This was also confirmed by businesses who stressed, "Practical training enables students to get acquainted with the real work environment and with the specific requirements to them," "it develops useful work skills," because "theoretical knowledge students get at school is nearly useless if there is not practical training."

*On-the site learning - in school practical training*, that ordinarily provided in VET institution (workshop, lab, didactic farm, mini-factory, greenhouse etc.), *on- the- job training - internships in companies*, usually carried out in a business unit and dual education, mainly organized in companies, represent the main WBL models in our country. These are efficient mechanisms facilitating the transition from VETI to the workplace as they enable the youth to familiarize with the real labour world.

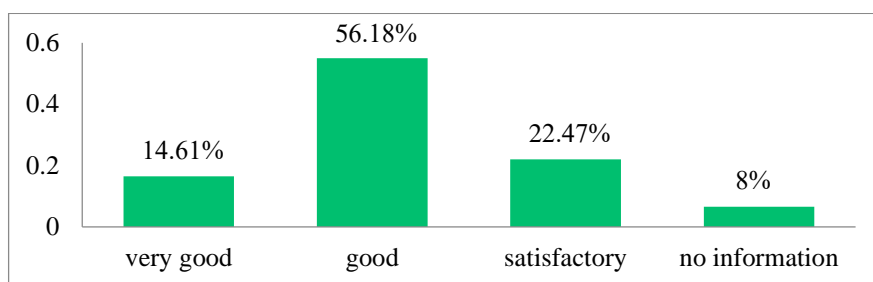
WBL, and namely, dual education but also internships are organized under the legal framework in force (Annex 1). The VETI is liable for the organization of practical training. Businesses provide internship places for students under the contract and/or agreement signed with the VETI. According to the data presented by the 7 VETIs, they have contracts and/or cooperation agreements established with 11-26 agri-food companies. The contracts are periodically updated and serve as practical basis for organizing the WBL. In general, more than half of the specialized teachers participating in the survey assess the observance of contract provisions by both parties as 'good'; 14.6% – 'very good'; 22.4% – 'satisfactory', and circa 8% said they were up-to-date with the state of affairs (Figure 31).

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<sup>18</sup> Methodology for developing professional qualifications in the secondary VET, approved by OME no. 990 of 17 Sept 2014.

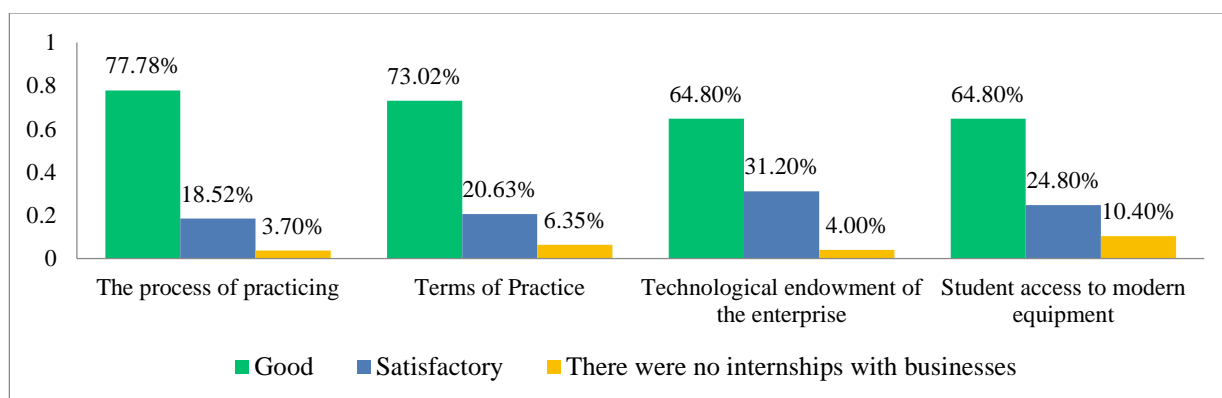
Students' opinion about this aspect somewhat corresponds to that of the teachers as they assess the quality of the practical training (process and conditions, company's technologic endowment, students' access to equipment) mainly as 'good' (70%) and 'satisfactory' (23.8%). Circa 6% of respondents said there were no internships with businesses.

**Figure 31. Level of observance of contract provisions on organizing internships**



*Source: Teacher survey*

**Figure 32. Students' opinion about internships with businesses**



*Source: Student survey*

Practical trainings including internship are mandatory elements of vocational training programmes. This explains the high percentage of students who carried out WBL in the period 2013/2014–2017/2018. According to the data generated by the VETIs, in the period 2013/2014–2017/2018, the number of students from secondary VETIs who carried out internships varied between 749 and 998, indicating a maximal share in 2016/2017. The number of students conducting production internships is directly proportional to the number of students attending secondary VETIs. The percentage of those who did not conduct internships in this period is insignificant (0.4%) decreasing to nearly zero in some years. In the same period, the number of students who conducted internships in agricultural trades varied between 99 and 172. The number is not impressive, accounting for 16.9% of the total number, as secondary VET provides many other vocational training programmes for different occupational domains.

Internships in post-secondary and non-tertiary post-secondary VET are also mandatory parts of the VET and aim at strengthening theoretical knowledge, training and developing practical skills and competences specific to professional qualification. Internships are conductive in accordance with the Syllabus<sup>19</sup> that indicates the types, duration and periods thereof.

<sup>19</sup> Vocational schools approve their syllab at MECR. Agricultural colleges and centres of excellence approve their syllabuses at MECR and MARDE.



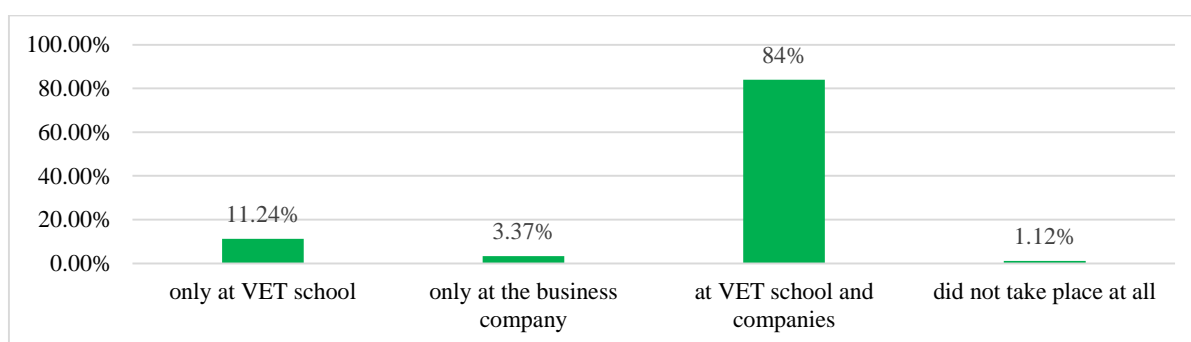
Frame curricula for post-secondary and non-tertiary post-secondary VET includes for the following types of practical trainings: internship for induction in the specialty, training internship, specialized internship, and internship anticipating graduation. The first two usually take place in VETIs and have an instructive character.

Specialised internships usually take place in business units and aim to develop the skills and competences necessary for performing the duties and work tasks in business companies according to the qualifications, and to deepen the theoretical knowledge through studying and learning the methodology of applying them in production.

Internships are the final stage of the VET process and ensure the training and development of specific competences in line with the professional qualification. In the 7 institutions a part of students conducts internship in the VETI as they cannot be provided a place with business companies. The administration of institutions affirm that the VET institutions have their own production sites, laboratories, workshops, greenhouses, didactic farms, mini-factories and special facilities for organizing the WBL .

Thus, over 84% of teachers reveal that students carry out internships both in the VETI and with companies; 11.24% say that internships take place only in the VETI, and 3.37% – only with the business company; and 1.12% said the internship did not take place at all. None of the survey participants indicated that the internship was conducted abroad (Figure 33).

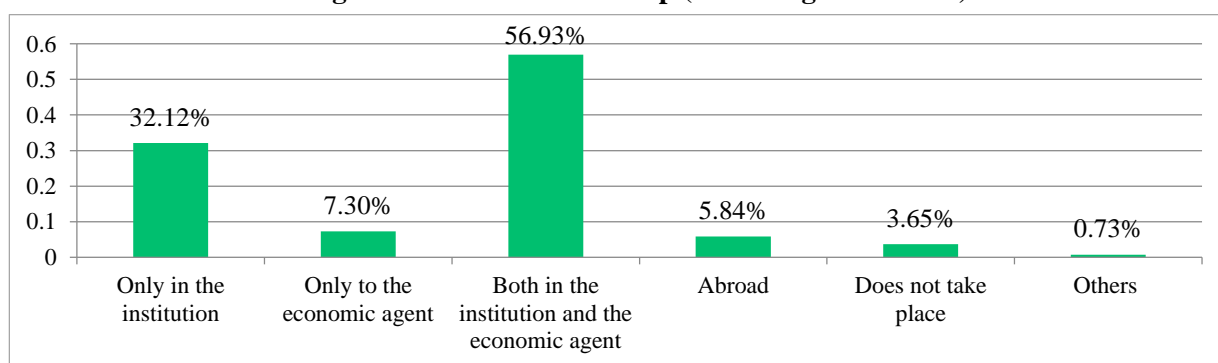
**Figure 33. Place of internship (according to teachers)**



*Source: Teacher survey*

Students indicated that they conducted their production internships both in the VETI and with companies (57%); circa 3% – only in the VETI, and little over 7% – only with the business, 3.65% said the internship did not take place at all, and 6% – that it took place abroad (Figure 34).

**Figure 34. Place of internship (according to students)**

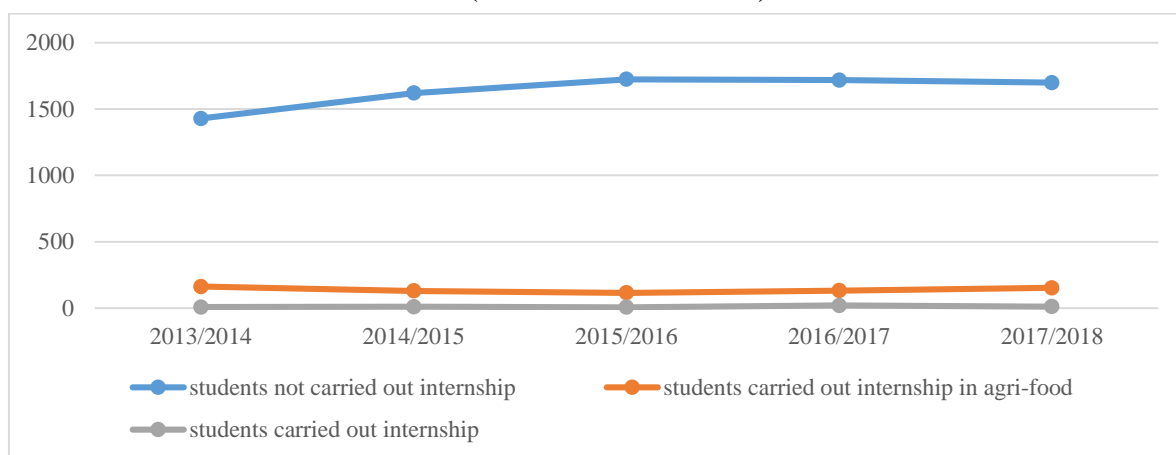


*Source: Student survey*



According to data generated by colleges and Țaul CEx (Figure 35), the number of students who carried out their internships in the period 2013/2014-2017/2018 varied between 1429 and 1725, showing a maximal rate in the school year 2015/2016. The number of students conducting internships is directly proportional to the number of those who study in VETIs. 0.6% of students did not carry out production internships. The number of students who carried out internships in agricultural specialties varied between 114 and 161. These VETIs also train specialists in other areas.

**Figure 35. Level of conduction of internships in colleges and in Țaul CEx (2013/2014 – 2017/2018)**



Source: Developed by authors based on study data

## 2.4. Dual education

Another model of WBL is dual education – an alternative form of VET that implies vocational training within a VETI and one or more business units in view of obtaining knowledge, skills, and competences for professional qualifications of level 3 ISCED, 4 ISCED and 5 ISCED, according to NQFRM.

Dual education is a new model of WBL, which has emerged recently, since 2014. In the agricultural field it is practiced since 2018. In Țaul CEx 12 students were matriculated at *Fruit and Vegetable Grower*, dual education in the academic year 2017/2018, .

In the absence of a big company, Țaul CEx had to conclude cooperation agreements with five small business units for providing dual education: *Fagrofarm* SRL of Ruseni, Edineț; IF *Cherdivara Dorin* of Hlinaia, Edineț; IF *Victoria Secrieru* of Plop, Dondușeni; and IF *Petru Furtună* of Frasin, Dondușeni. According to the managers of Țaul CEx, this complicates the organization and monitoring of the VET process as these business units are located in different communities.

Other challenges faced by the VETI in the process of dual education are caused by the lack of motivation among entrepreneurs to get involved in the development of curriculum papers. Apart from this, the curricula were developed in the absence of a framework plan for dual education, as it was approved only on 10 September 2018.

The absence of a foreman-trainer in production also complicates the vocational training in small companies. The assessment of apprentice competences at the end of each module in accordance with the regulation provision is also a problem. Small businesses are not willing to designate a foreman-trainer out of their limited staff, for training in the implementation of dual education.

A reality that reflects the statements made by the respondents is the low number of students (12) who underwent vocational training through dual education in the school year 2017/18. Despite the fact that the NBS informs that, the interest of youth in dual education is growing, the number of students being 2.5 times higher compared to the school year 2016/17, dual education in the agri-food area remains unattractive.

Even though, starting with 2014, MECR, MARDE, CCI, VETI, the GIZ project *Structural Reform in VET in the Republic of Moldova* have been making great efforts to promote this model of vocational education, dual education in the field of agriculture remains in little demand by the youth at level 3 ISCED and is missing at levels 4 and 5 ISCED. Managers, foremen-trainers, and specialised teachers say that businesses are not motivated and fully prepared to provide dual education.

However, even though dual education represents the best model of learning in real working conditions and it works well in Germany, Austria, Switzerland and Denmark, it may be considered an alternative but not a panacea or the only solution for enhancing VET in the agri-food area. This model depends on the economic stability, companies' willingness to assume a high level of responsibility in vocational education and training and on their technical capacity.

Thus, the development of dual education depends on the presence of big companies and is quite difficult to implement it in rural area, where they often are missing and where small companies and individual farms prevail.

## **2.5. Cooperation with entrepreneurs**

Despite the fact that the Code of Education stipulates in art.67 pt. (5) *that public authorities, public institutions and state companies are required to provide each year places for internships in proportion of at least 10% of their total staff*, both the teachers and the managers stressed that VETIs faced big difficulties in identifying and establishing long-term relations with the companies, especially with the big ones. Another problem remains the recruitment of students for vocational training through dual education because it is unattractive for the youth and less motivational for businesses.

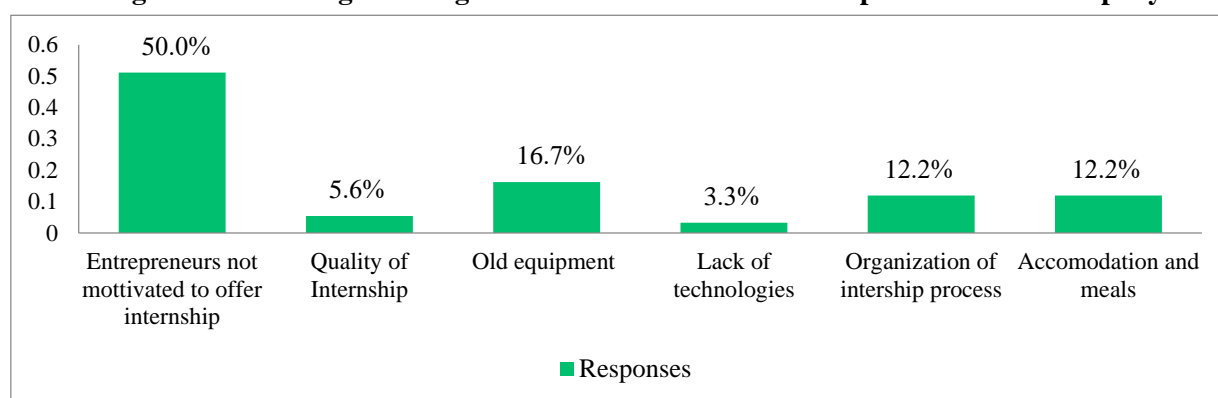
According to VETI representatives, few employers are open for signing partnership agreements with VETIs, to provide places for internships, to get actively involved in the VET process, to implement WBL programmes, to provide dual education, and to get involved in the process of developing OSs and other curricular documents, etc.

Hence, the discrepancy between the labour market demand and the educational offer further persists in the agri-food sector. Even though the representatives of businesses participating in the focus group meeting testified that "the partnership with VETIs is highly needed," because "it is a win-win situation for students, schools and businesses", few of them are motivated to get actively involved in VET. "The legislation must offer real financial advantages to motivate the cooperation with the school. Big companies are not interested in investing in students who, upon graduation, may decide to be employed elsewhere or may go abroad. Therefore, they want a compensation if they assume responsibilities and risks," while "small companies do not have capacities, staff, or time to get involved."

VETIs are responsible for planning, organizing and holding internships but in such conditions, this is not easy to accomplish and in some cases students themselves have to search for companies to provide them with internship places.

According to the survey results, 50% of specialized teachers consider the *lack of employer motivation* to accept students for internship as the main problem. The participants also mentioned other challenges (Figure 36): obsolete equipment in the companies (16.7%) or lack of technologies (3.3%), difficulties with student accommodation and meals (12.2%) during internship time, as well as difficulties with the implementation process (12.2%) due to the lack of production foreman-trainer who would be responsible for organizing and monitoring the internship. In addition, a foreman-trainer must possess both specialized and psycho-pedagogical competences.

**Figure 36. Challenges during the conduction of the internship in a business company**

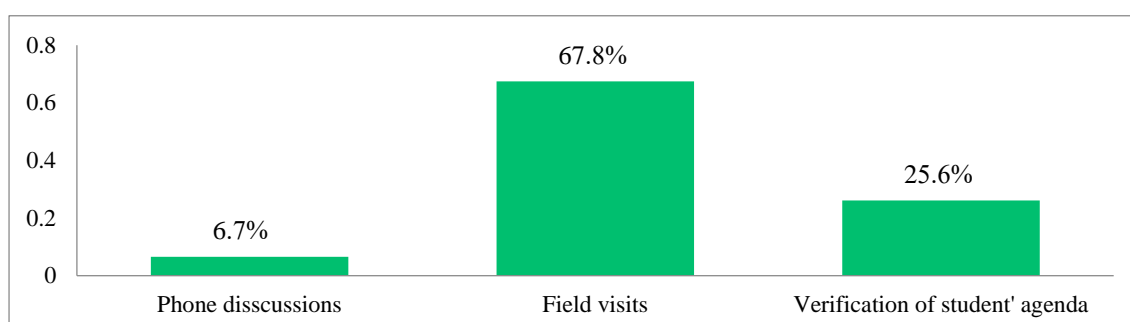


Source: Teacher survey

In the opinion of respondents from the private sector, the main challenges faced in the process of internship implementation are the lack of a functional and motivational legal framework for businesses, the insufficient endowment of companies for securing the entire educational process in accordance with the study plan, insufficient theoretical knowledge and “very little or not applicative” knowledge of students, “the youth are not responsible, not well organized and they are not used to work,” the incapacity to provide the students with meals/accommodation during the internships.

All these factors have negative influence on the quality of the professional training of students in a business company. The problem of having the process monitored by a foreman-trainer from the VETI also adds here. According to the regulation, during the internship, students must be monitored daily thereby, which does not happen, for financial reasons, VETI managers say. The teachers participating in the survey say that this is done by visits to the company (67.8%), telephone discussions (6.7%) and verification of student’s internship agenda (25.6%) (Figure 37).

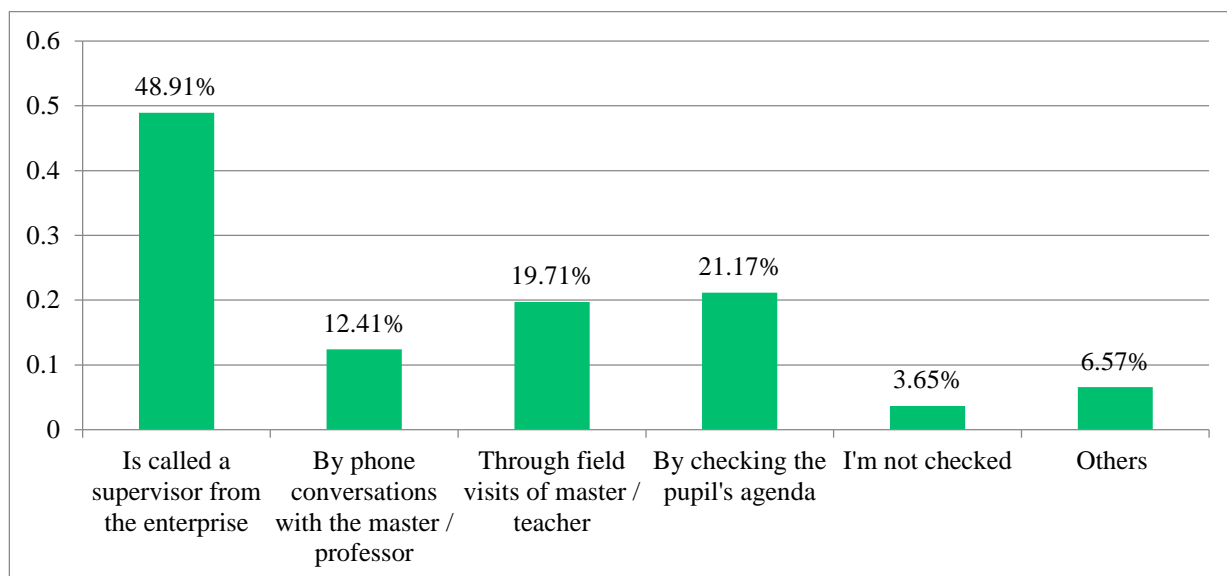
**Figure 37. Process of monitoring of conduction of internship in a business company**



Source: Teacher survey

According to the students, internship monitoring is ensured by the supervisor from the company (49%) and by the responsible staff from the VETI, through field trips (19%), verification of agenda (21%), telephone discussions (12%). Only 4% said they were not monitored during the internship at the business company (Figure 38).

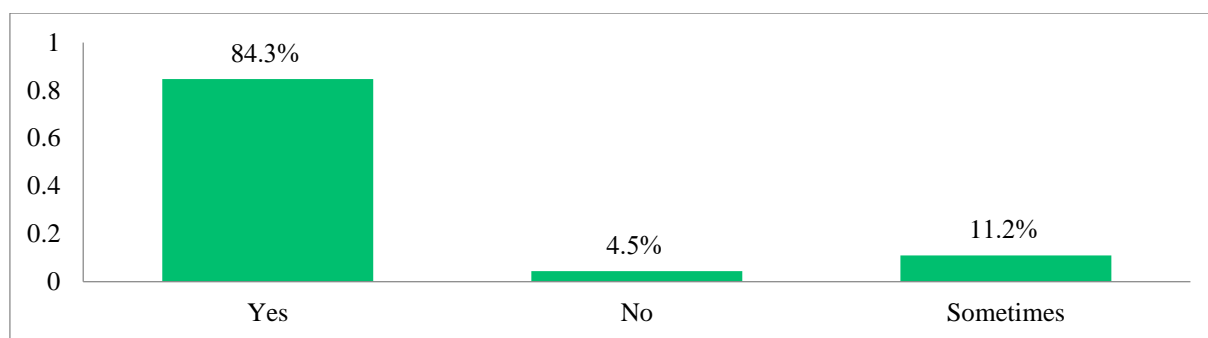
**Figure 38. Monitoring of students during the internship in the business company**



*Source: Student survey*

The vast majority of students (84.3%) said that the VETI conducted the monitoring of internships in business companies, 11.2% – only sometimes and 4.5% – was not practiced (Figure 39).

**Figure 39. Level of monitoring of the internship in the business company**



*Source: Teacher survey*

It is worth to mention that, the internship may be transferred to another period than the one provided in the Study Plan at the request of business units, depending on the specific of the WBL and with the approval of the MEQR. Nonetheless, such cases have not been detected, despite the fact that agricultural works take place throughout the year and some technological processes can only be practiced in a certain period, for instance, when students are on vacation. For the acquirement of practical skills, it is necessary to review the structure of the Study Plan in order to adapt the period and duration of the internship in accordance with the period of the specific agricultural works.

**Conclusions:**

- The period and duration of the internship is pre-established in the Framework Curriculum and in the Study Plan, therefore, some agricultural works cannot be practiced by students in the period when the internship takes place.
- The coordination of the WBL programme is insufficient since there is insufficient/poor cooperation between agri-food VETIs and the business.
- The cooperation with businesses is scarce and only partly exploited and capitalized. This cooperation is especially aimed to provide students with places for the internship. Nonetheless, few institutions currently manage to secure the necessary number of places. Most of the business units miss the mechanism for ensuring the quality of the vocational training of students. The employers are poorly motivated to organize WBL due to the high costs and increased responsibility.
- A considerable number of students conduct their internships at individual (peasants`) farms and small companies. In some VETIs, in 55% of cases WBL, including internship, are conducted at the VETI's production site and in 15-20% of cases students perform the internship on their parents' individual farms.
- Monitoring the implementation of syllabus provisions by businesses throughout the internship period is done superficially or it is missing at all.
- Monitoring the process internship is challenging as students are assigned to a number of businesses, located at a far distance from the VETI. Therefore, foremen-trainers encounter difficulties to pay visits, as there is no budget provided for transport costs.
- The lack of foremen-trainers in production in the company represents another challenge for WBL.
- Dual education is not widely spread in the agri-food area. It implies not only technical but also cultural aspects. Dual education requires investment and sharing of responsibilities for youth professional training between the economic unit and the VETI. This is more likely to happen in the economically developed regions of the country, or where there are foreign capital companies from countries where dual education is natural. This is difficult to achieve in the areas with lack of big business units, since the employer must provide the students with stipends, work and protection equipment, risk insurance, a supervisor/mentor with pedagogical training etc.
- There are no functional mechanisms in place for the recognition of skills acquired through non-formal and informal learning within the WBL. The development of such mechanisms has started,<sup>20</sup> and it is highly important that all interested stakeholders, veti, bussines community and civil society get actively involved in this process.
- None of the 7 institutions has partnership agreements concluded with similar institutions and line business units from abroad for exchange of experience, internships, staff training.
- The cooperation with the local public authorities is low.

**Recommendations:**

- Amend the regulatory documents (Frame Curricula, Study Plans) to facilitate the organization of the internship in accordance with the period and duration of seasonal agricultural works specific to the trade/specialty.

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<sup>20</sup> The regulation on the validation and certification of competences acquired in informal and non-formal conditions is currently in transparency in decision-making

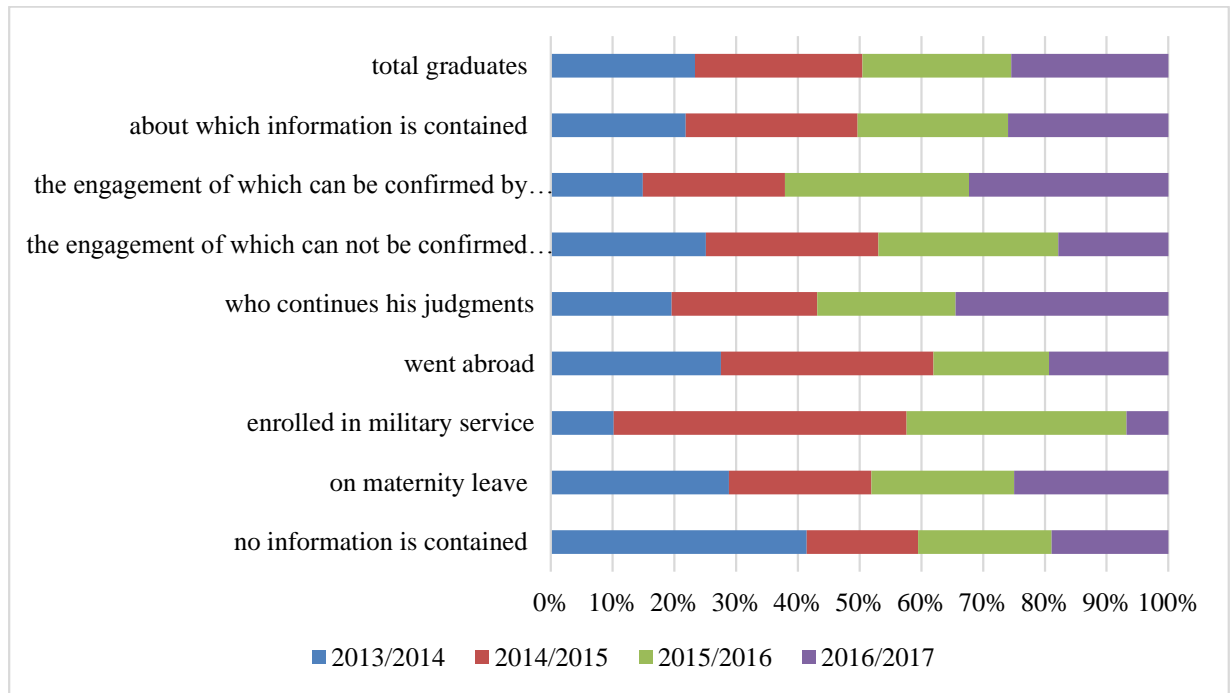
- Organize actions to raise the awareness of the business about the importance to get actively involved in the initial VET and CVET and establish partnerships with VETIs in view of planning and developing strategy, regulatory and curriculum papers.
- Strengthen the mechanism for WBL monitoring and quality assurance that would include:
  - training foremen-trainers in production that would be responsible for students' internship in the business unit;
  - developing a plan with specific tasks and indicators, based on the syllabus and curriculum contents to be achieved by students in the company and based on which the internship is to be conducted and evaluated;
  - allocating financial resources for the travel cost to the business unit in view of monitoring the internship conducted in the company.
- Develop a strategy for motivating agri-food businesses to get actively involved in the VET process. The involvement of all players (centres of excellence, Republican Centre for the Development of Vocational Education, Methodological Centre for Education under MARDE, CCI, MEI, MHLSP, LPA, Agriculture Sector Committee) in identifying functional mechanisms for motivating the business operator get involved in VET. Provide financial and non-financial incentives to the employers (VAT deductions on the equipment donated, deduction of profit tax for the costs involved in training activities etc.).
- Develop the capacities of Țaul CEx to exercise its function of liaison among the relevant players in view of strengthening the partnerships in the area and ensuring the compliance of the VET development offer with the labour market requirements.
- Set up a National Advisory Council for agri-food VET.
- Support VETIs with identifying potential strategic partners and facilitate their cooperation on behalf of MARDE, CCI, Regional Development Agencies, and regional Chambers of Commerce. Create a platform of communication among line VETIs, business sector, middle and high schools in the entire country. Organize public campaigns for disseminating success stories.
- Associate companies in the same area for implementing dual education.
- Involve line associations in advocating/promoting the needed changes in the training of qualified specialists/traders (e.g. review or development of VET programmes, modification of the Nomenclatures of trades/specialities, CORM etc.).
- Establish cooperation and partnership with VET institutions from abroad to exchange experience and to encourage academic mobility.
- Establish partnerships with foreign business units for student internships, for the training of foremen and/or specialised teachers in companies in view of taking over good practices.
- Establish sustainable partnerships with LPA in view of facilitating the process of negotiation with the business companies and with potential investors from the community where the VETI is located.

## 2.6 Socio-professional integration of VETI graduates

The main indicator of the quality of the VET is the rate of employment of the graduates. Analysing the information on professional and social insertion of VETI graduates, we note that the institutions do not have a functional Tracer Study mechanisms for following the graduates' professional path, thus the data presented by VETIs cannot be validated.

As a rule, the information about VRTI graduates is randomly collected by class teachers. This is an extra task to the class teacher and it is often unpaid. According to the data presented by colleges and Taul CEx, of the total number of graduates, the share of employment varies between 25% and 35%: it reached the share of 25.7% in the academic year 2013/2014; then it underwent a slight increase – of up to 27.3% in 2014/2015, continuing to grow and constituting 34.8% in 2015/2016, and then it plummeted to 26.4% in 2016/2017 (Figure 40).

**Figure 40. Socio-professional insertion of graduates of colleges and Taul CEx in 2014-2017**

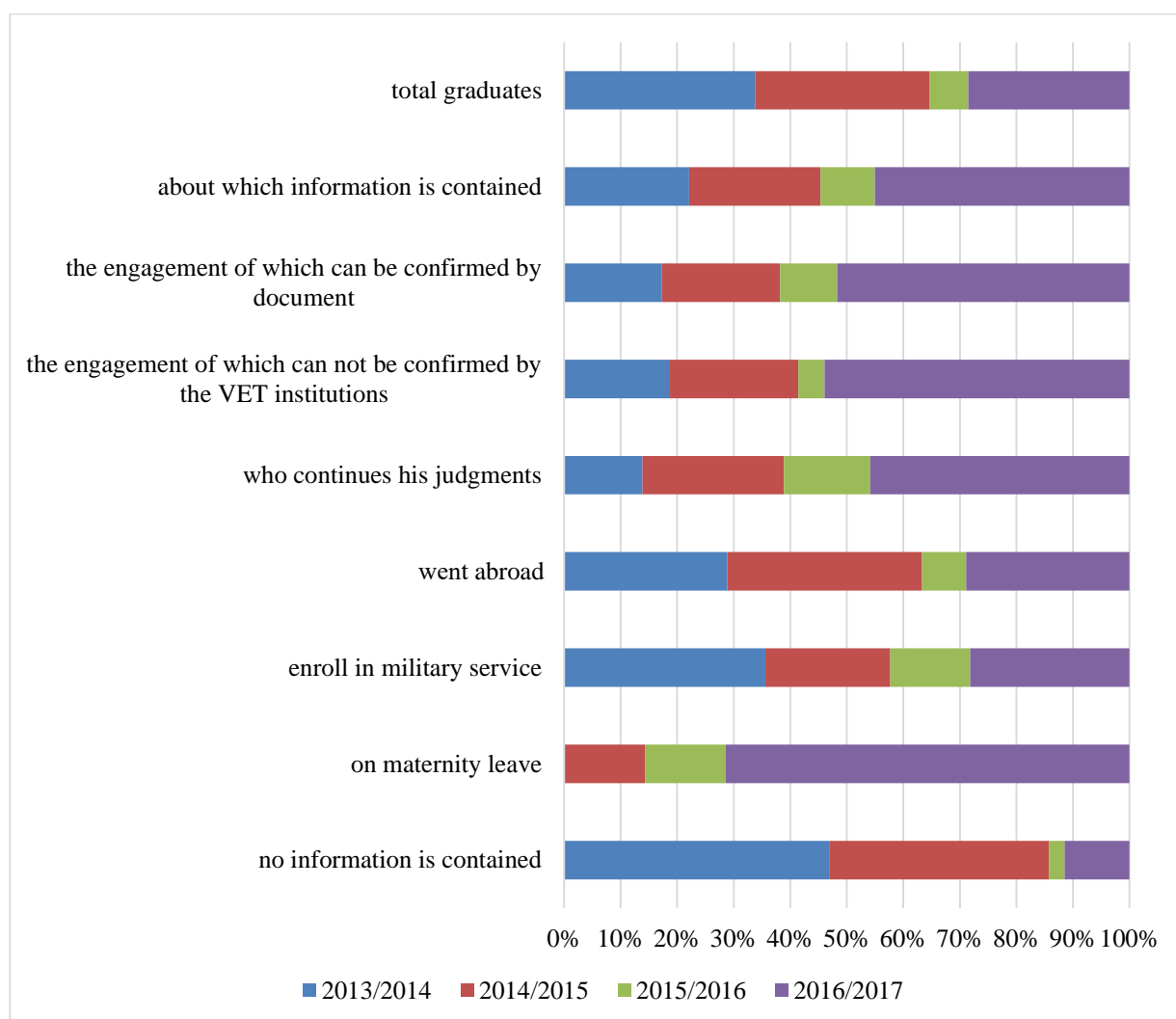


*Source: Prepared by authors based on the study data*

The employment rate of colleges and of Taul CEx graduates constitutes 28.5% on average, the share of those who continue their studies being of 34.5%. Concerning is the fact that the rate of those who go abroad is rather high, indicating slightly over 21%, a lower share is made up of those enrolled in the army (4%) and those on maternity leave (3.5%). The institutions do not have information about the social-professional insertion of 8% of graduates.

The picture of socio-professional insertion of graduates of the three vocational schools is different from that of the colleges and Taul CEx (Figure 41). In the period between 2013/2014–2016/2017, the rate of employment varied between 23% and 64%, continuously growing and reaching 30% in 2014/2015 and 47% in 2015/2016. The highest rate was reached in 2016/2017 and the lowest being in 2013/2014. According to the data presented by vocational schools, the share of employment in the reference period constitutes 41% on average; about 13% young graduates were enrolled in the armed forces, circa 7% migrated abroad, other 7% continued their studies and a small percentage (1.25%) were on maternity leave. The vocational schools do not hold any information about the professional or social insertion of one third of graduates.

**Figure 41. Social-professional insertion of graduates of Vocational schools, 2014-2017**



*Source: Prepared by authors based on the study data*

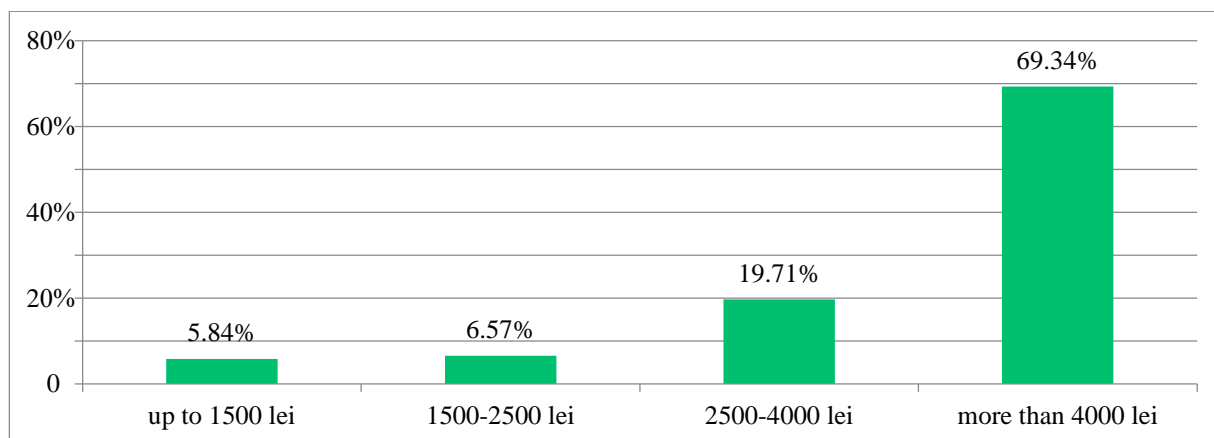
**The percentage of employment of graduates of the 7 VET institutions constitutes 35% on average.** The low share of employment is conditioned by the fact that many graduates of colleges/CEx choose to continue their studies (34,5%) and 13% of graduates of vocational schools are enrolled in the armed forces immediately upon graduation. The migration of the youth abroad also contributes to a decrease in the rate of employment in the country. Ten of those circa 12 students participants in the focus group specified that after graduation they planned to go abroad, some with the intention to “make some money and open own business” upon returning home.

VET managers explained that the problem of employment persists, being caused by a number of factors: “unattractive jobs in the agricultural area,” “migration of graduates seeking a better-paid job,” “employers prefer to employ workers for a short period only in the season,” “the big companies to employ specialists are missing, while opening one’s own business requires money,” “youth do not want to work with a salary lower than MDL 4000-5000, especially in villages” etc.

The results of student surveys show a share of 70% with salary expectations beyond MDL 4000; 20% – between MD 2500 and 4000 and only 10% would be ready to work for a salary lower than the minimum salary in Moldova.



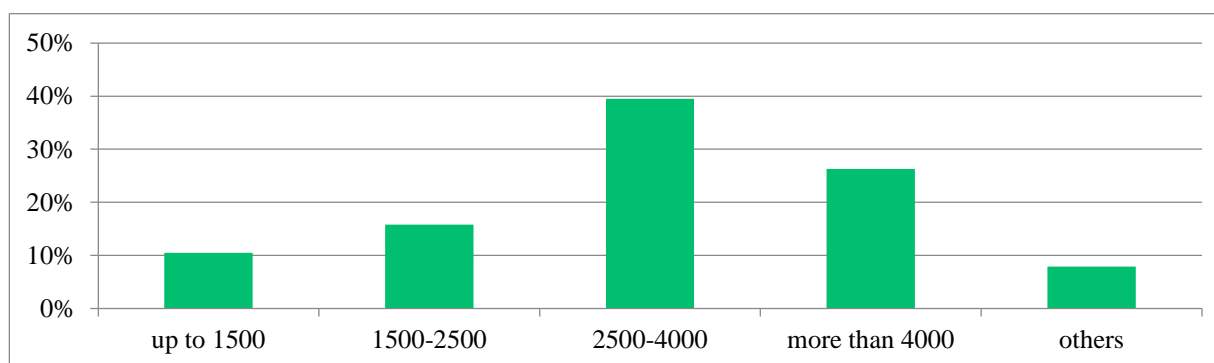
**Figure 42. Salary expectations of students upon employment**



*Source: Student survey*

The findings of the survey with the employers show a different reality. Approximately 26% indicated that they were willing to provide a salary of MDL 4000 to a young specialist; around 39% can provide a salary between MDL 2500 and MDL 4000; 25% – MDL 1500 – MDL 2500; and 10% are not willing to pay a salary higher than MDL 1500 MDL (Figure 43) To note, that according to NBS, the average monthly consumption costs of the population constituted MDL 2250.3 per person in 2017.

**Figure 43. Salary offered by the employer to a young specialist**



*Source: Survey with businesses*

The expectations of youth upon employment are higher compared with the employer's offers. Due to the precarious economic situation, there are not sufficient jobs and the salaries provided are very low.

Insufficient information of graduates about labour market opportunities and / or their willingness to find a job in the country with the alternative of migrating is another explanation for the low degree of employment after graduation.

According to ANOFM data, as at 11 June 2018, there were 224 jobs available for workers qualified in agriculture, forestry, aquaculture and fish farming: agronomist – 14, agricultural mechanic – 5, Fruit Grower – 5, viticulturist – 88, tractor driver – 90, mechanizer-docker – 10, digger – 10, milker – 9, shepherd – 3. ANOFM specifies, “the unattractive jobs and small salaries lead to their leaving them and to an intensification of the migration process.” Hence, the youth go to seek jobs abroad, be they even unqualified.

## Conclusions:

- VETIs do not have functional and sustainable mechanisms to conduct the Tracer Study of the graduates. As a rule, the information about the graduates is collected by class teachers and the work is often unpaid because the staff list does not include a position with such responsibilities. In the absence of a systemic approach the conduction of Graduate Tracer Study is a difficult task for the VETI.
- MECR developed and piloted the methodology on VET graduate Tracer Study, yet, the institutional capacity in its implementation is limited.
- The rate of employment of VETI graduates is low (34.75%), being largely influenced by the unattractive jobs in the field of agriculture, small salaries and the phenomenon of migration .

## Recommendations:

- Develop and implement systemic, functional mechanisms on Graduate Tracer Study.
- Create a strategy to cooperate and stay connected with VETI alumni
- Inform students/future graduates about the employment opportunities in the country, about starting one's own business in the agri-food area.

## 2.7 Continuous VET (CVET)

The results of the research revealed that most VETIs did not organize continuous training courses for adults, unemployed and/or other categories of unemployed people. Exceptions are Leova VS and Nisporeni VS. Thus, the research results show VETIs' low interest in providing short-term continuous training services.

Leova VS, in partnership with HEKS-EPER (Switzerland), has provided continuous training services for adults for the trade *Viticulturist*. Between 2015 and 2017, forty adults benefited from such courses with partial or full coverage of costs by HEKS-EPER.

In the school year 2017-2018, thirty-two farmers with individual farms cultivating vineyards were trained in the trade of *Viticulturist* at Nisporeni VS.

By providing continuous training courses for adults and/or short-term courses, VETIs could generate extra-budgetary resources and contribute to strengthening the partnership relations with the business, the community in which the VETI is located, and with LPA.

Even though the Framework Regulation of the Centre of Excellence<sup>21</sup> provides in its duties continuous professional training of specialized teachers and managing staff of VETI in the areas of specialization as well as certification of professional competences acquired in a formal, informal or non-formal environment, the institution does not provide such services yet, nor continuous training services for adults and/or short-term courses.

The survey results with the businesses show their interest in the continuous training of specialists from the companies that cooperate with VETIs (Table 3).

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<sup>21</sup> Framework Regulation on the Organization and Functioning of the Centre of Excellence approved by OME no. 1158 of 4 Dec 2015.

**Table 3. Employer training needs in organic farming**

| TRAINING NEEDS OF EMPLOYERS  | To large extend | To small extend | at all |
|--|-----------------|-----------------|--------|
| Law on Organic Farming (No 115/2005)   | 68%             | 22%             | 11%    |
| Law on the Protection of Plant Varieties (2008);   | 52%             | 30%             | 18%    |
| Seeds for Field Cultures "- technical regulation   | 59%             | 19%             | 22%    |
| Measures for the protection of the welfare - technical regulation                                    | 50%             | 11%             | 39%    |
| Regulation on seed and propagating material certificates used in the context of genetic modification | 45%             | 32%             | 23%    |
| On Organic Food Production and Labeling of Organic Products  | 78%             | 14%             | 8%     |

*Source: Survey with businesses*

### **Conclusions:**

- Most VETIs do not organize continuous training courses for adults, unemployed and/or other categories of unemployed people.
- So far, Țaul CEx has not provided continuous professional training courses for specialised teachers and managing staff of VETIs in its area of specialization.
- No services for the certification of professional competences acquired in a formal, informal and non-formal environment or continuous training courses for adults and/or short-term courses have been registered so far in Țaul CEx.

### **Recommendations:**

- Train, develop and strengthen VETI capacities in providing continuous training courses for adults and/or short-term courses.
- Train, develop and strengthen the capacities of Țaul CEx for providing continuous professional training courses to specialized teachers and managing staff of VETIs in the agri-food area and for certifying the professional competences acquired in a formal, informal or non-formal environment.

## **2.8 Technical Material Resources and Institutional Capacity**

The findings of the research indicate that the 7 VET institutions have sufficient estate and land which is partly used for carrying out the education process.

The education buildings are used to their maximum capacity. Practically all 7 institutions had a complete roof overhaul or replacement of the buildings, installed new windows and cosmetically renovated the spaces. The education building of the Grinăuți AI College does not have sanitation units.

All VETIs have dormitories: out of 23 only 10 dormitories host students, while other 13 are not functional (Table 5)

The technical condition of dormitories is relatively good in all 7 VETIs. Bubuieci VS carried out capital repairs in its both dorms. There were renovated the kitchens and sanitation units, new windows and doors were installed and there was performed a roof overhaul. Nisporeni VS has two dormitories. One of them was put into use in 2016. The first floor of the dormitory is used as a learning space (classrooms). Leova VS and Svetlîi TA College have two functional dormitories while Grinăuți AI College, Țaul CEx and Ungheni AI College have just one dormitory each.

The VET institutions were built and put into use in 1960s-70s and have never been subject to capital repairs since. Hence, the actual wear and tear of the buildings exceeds 50%.

A large number of buildings, especially of the colleges and Țaul CEx are decayed for lack of funds for their maintenance. Some of the buildings are conserved.

The institutional capacity of these VETIs (except for Bubuieci VS) considerably exceeds the current number of students and staff and therefore some of the buildings are conserved.

**Table 4. Infrastructure of colleges and Țaul CEx**

| VETI                       | Grinăuți<br>AI<br>College | Țaul<br>CEx | Ungheni<br>AI<br>College | Svetlîi<br>TA<br>College | Nisporeni<br>VS | Bubuieci<br>VS | Leova<br>VS |
|----------------------------|---------------------------|-------------|--------------------------|--------------------------|-----------------|----------------|-------------|
| Infrastructure             |                           |             |                          |                          |                 |                |             |
| Education buildings        | 2                         | 1           | 1                        | 1                        | 1               | 1              | 1           |
| Workshops                  | 1                         | -           | 3                        | 4                        | 2               | 2              | 9           |
| Training labs              | 14                        | 13          | 12                       | 13                       | 3               | 3              | 3           |
| Dorms/ Functional<br>dorms | 2/1                       | 3/1         | 3/1                      | 8/2                      | 2/1             | 2/2            | 3/2         |
| Canteen                    | 1                         | 1           | 1                        | 1                        | 1               |                | 1           |
| Gym                        | 1                         | 1           | 1                        | 1                        |                 |                | 1           |
| Library                    | 1                         | 1           | 1                        | 1                        | 1               | 1              | 1           |
| Festivities room           | 1                         | 1           | 1                        | 1                        | 1               | -              | 1           |
| Didactic farm (ha)         | 102                       | 405,5       | 49,62                    | 400                      | 100             | 0,035          | 21          |

*Source: Prepared by authors based on the study data.*

All institutions have labs for conducting practical training (Table 4). The total area of the farmland constitutes 1078,155 ha, of which 836,085 ha are in the management of colleges and Țaul CEx and 121,035 ha are in the management of vocational schools. The large area of land in the management of colleges and Țaul CEx can be explained through the specifics and profiles of such institutions. The laboratories for agri-food trades and specialities are partially equipped (for details, see the Box below).

**Box: Degree of endowment of the laboratories for trades and specialties in the agri-food**

| Specialty | Name of institution | Status of infrastructure  |
|-----------|---------------------|---|
| Agronomy  | AIC Svetlîi         | Partly equipped with modern equipment (agronomic laboratory for Chemical Analysis of Field Cultures). |
|           | AIC Ungheni         | Partially equipped the "Techno-chemical Control Laboratory". With the support of the CZDA within the  |

|   |   |  |
|---|---|--|
|   |   | project "Improvement of training programs in Viticulture and Winemaking in agricultural colleges in Moldova" at the college was created a demonstration lot with the planting of different varieties of technical vines.   |
|   | CEHTA Țaul  | Have a modern technical-material base at the Agronomy specialty, as well is equipped in 2013 with the equipment "Laboratory for the determination of the quality and quantity of gluten", later with the LED support, within the EdAgri project, the laboratory was expanded and supplemented with modern equipment and renamed "Multifunctional Laboratory".  |
| <i>Animal Products Technology</i>   | AIC Ungheni   | With the support of Budget Support Program, in the field of rural economic stimulation, in 2013 was endowed the "Chemico-bacterial Analysis Laboratory".   |
| <i>Vegetables and fruit growing</i>   | CEHTA Țaul  | With the support of the EdAgri project CEHTA Țaul has a modern, complete greenhouse and equipped with state-of-the-art technologies and facilities, a demonstration plot of multiannual plants with irrigation system and anti-hail system, demonstrative field open for irrigated leguminous crops.   |
| <i>Safety of agrifood products, Fruit and vegetable conservation technology</i> | CEHTA Țaul  | Currently, for the realization of the study program, is used the technical-material basis from other specialties.  |
| <i>Beekeeper</i>  | VET school from Nisporeni<br><br>VET school from Bubuieci | The technical-material basis at VET school from Bubuieci is in the process of modernization. With the support of the APM project, it will be equipped with a modern laboratory with state-of-the-art equipment and inventory. The institution also has a workshop with 20 families of bees and 20 horizontal hives.  |
| <i>Winegrower Winemaker</i>   | VET school from Nisporeni<br><br>VET school from Leova    | VET school from Nisporeni has a well-equipped material base, vineyard plantation (2 ha), car park and tractors for carrying out vineyard works in vineyards.<br><br>As well has a section for processing grapes and producing dry natural wines. The section is equipped with all the necessary for carrying out the didactic and technological training process. Grapes can be processed during the season, and up to 100 tons of wine can be stored here. VET school from Leova is provided with a laboratory of oenology, wine factory, experimental vine field with a surface of 4 ha. |

**Conclusions:**

- The actual wear and tear of the buildings exceeds 50%, as they were built and put into use in 1960s-70s.
- The infrastructure of the VET is not used to its maximum capacity (except for Bubuieci VS). Institutional capacity exceeds the current number of students and staff. Since VETIs are located in regions that are unattractive to the business a great part of the space remains unused because it cannot be rented out.
- Some buildings are irreversibly degraded. The unused buildings and space incurs maintenance costs.
- The technical-material basis in most institutions is obsolete, except for the institutions that have benefited from foreign technical assistance.
- The VET institutions that have partnerships with donors have made substantial changes in sense of modern equipment and renovations of infrastructure.
- Most institutions have a large amount of vehicles and equipment that needs to be offset. This equipment takes storage space and generates costs.
- The total area of the didactic farms in the management of the VETI constitutes circa 1078,155 ha (Table 16). A part of them is used for teaching purposes or is rented out while another part remains unused.
- The institutions have limited capacities of property management and efficient management of the technical-material basis, of space and land. The institutions have excess space and farmland in excess; however, their exploitation does not bring relevant extra-budgetary revenues.
- The VET institutions that cooperate with the donors have made substantial changes in terms of renewal of equipment and renovation of infrastructure.

**Recommendations:**

- Establish partnerships with technical assistance projects, businesses in the area and LPAs; attract foreign resources and generate income from extra-budgetary source in view of developing the VETI.
- Conduct technical expertise of IVET infrastructure to determine the investment needed to rehabilitate deteriorated spaces.
- Identify the need of space, buildings and didactic land for a quality VET process. Establishing the necessary equipment required to ensure the professional training of specialists and qualified workers in the agri-food sector.
- Strengthen the capacities of VETI managers to enhance administration of property and productive management of means.
- Develop a vision/strategy at the level of MARDE and MECR regarding the opportunities for renting out space and land and/or selling out the buildings and land that is not used or transferring some properties to the LPA. The money received from the rent and/or sales should be used for developing the VET institution, for buying modern equipment, for motivating the teachers etc.
- Enhance the process of settlement of the depreciated equipment.

- Have MARDE facilitate the cooperation between the internal/external donors and VETIs. Disseminate positive experiences of VETIs in attracting external resources, for motivating the initiation of new partnerships.

## CHAPTER 3. FUNDING OF VETI ACTIVITIES

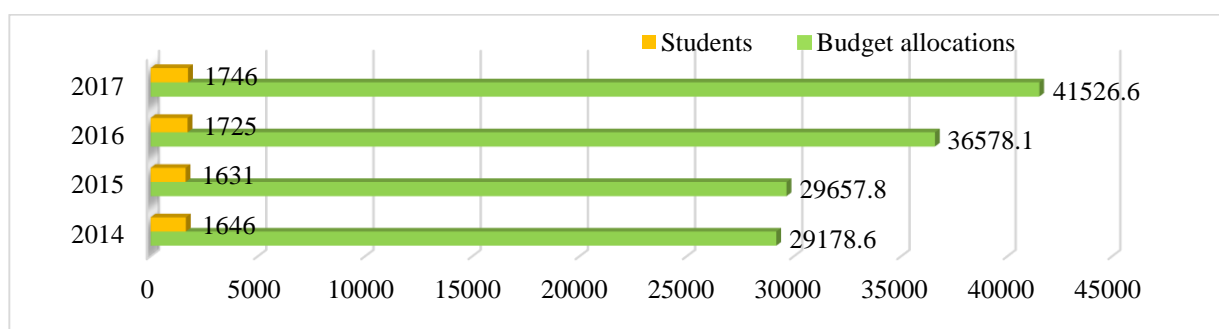
The functioning of the VETI system largely depends on the level of funding. The main source of funding in the public VET system are the budgetary means. The institutions are funded in compliance with the matriculation plan and the number of students in the previous years of studies.

### 3.1 Budget allocations

#### *Analysis of budget allocations to colleges and Țaul CEx*

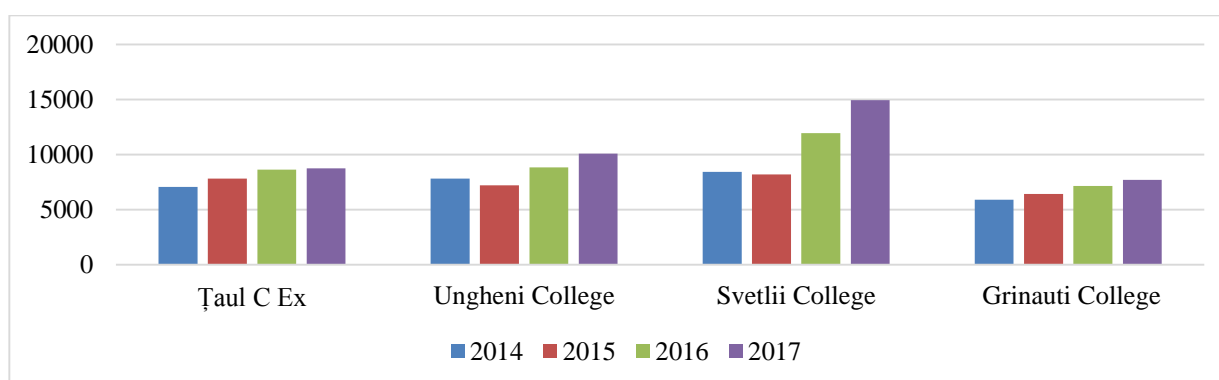
The evolution of allocations from the state budget has continuously increased in the past 5 years (Figure 44). For the four institutions they have gradually increased each year, from 29178.6 thousand MDL in 2014 to 41526.6 thousand MDL in 2017 (Table 6), which is an increase of approximately 42.32%. The budget allocations per student have also significantly increased, from 17.73 thousand MDL in 2014/2015 to 23.78 thousand MDL in 2016/2017 (Figure 44)

**Figure 44. Evolution of budget allocations (thousand MDL) and of the number of students in colleges and Țaul CEx, 2014-2017**



Source: Prepared by authors based on the study data

**Figure 45. Evolution of budget allocations (ths MDL) for colleges and Țaul CEx, 2014-2017**



Source: Prepared by authors based on the study data

The most substantial budget allocations in the past two years have been registered in Svetlii TA College (Figure 46), 3.5 mill MDL, for the procurement of agricultural machinery and equipment.



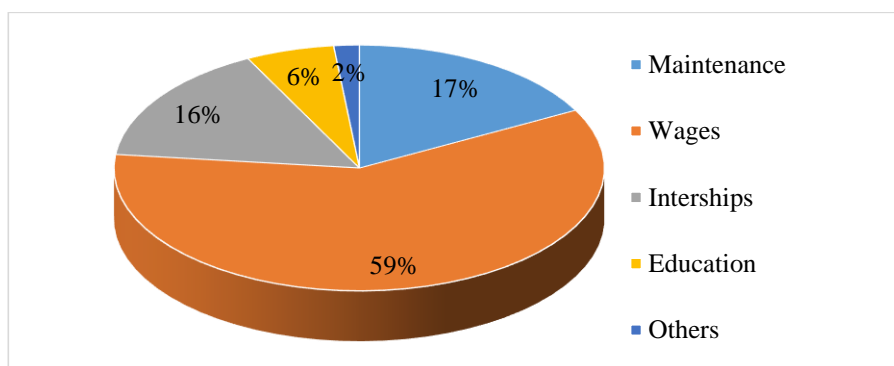
The budget allocations are meant as maintenance costs (maintenance, utilities, current repair), wages, stipends, meals, education process (procurement of equipment, teaching materials, consumables etc.) etc..

The largest share of the budget allocations is for wages, on average accounting for 59% of the total amount in the reference period (Figure 46).

The high share of budget allocations for wages was constant between 2014 and 2017 (Figure 48), due to the fact that in the past 5

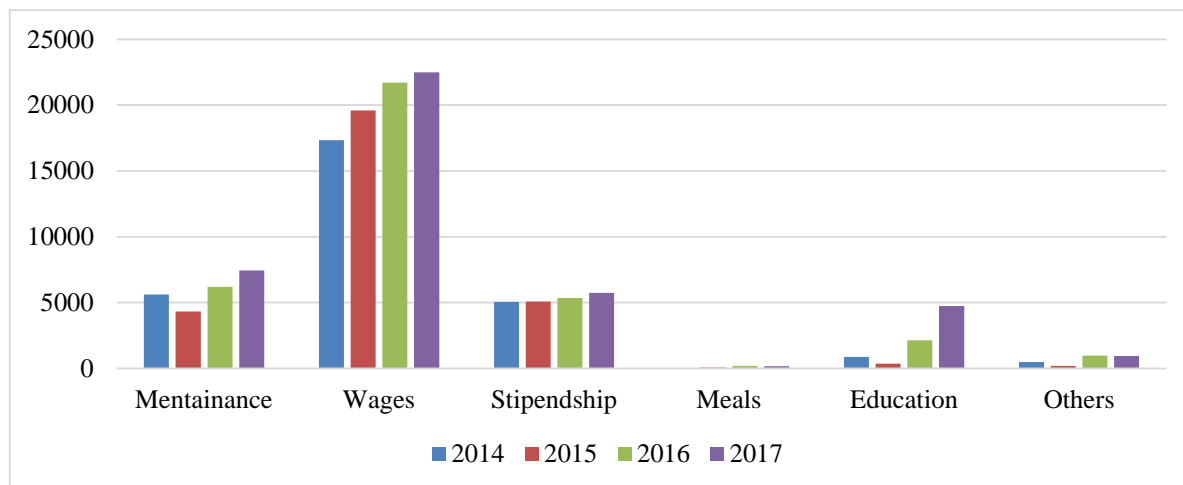
years the Moldovan Government has increased wages of teachers (the latest increase (by 11.3) was in September 2017) and of other categories of staff; the share of staff allocations increased by 22.92%. The quantum of stipends for VET students was increased and respectively the share of budget allocations for students, stipend increased by 11.96.

**Figure 46. Distribution of budget allocations (%), on average, between 2014 and 2017, in colleges and in Țaul CEx**



*Source: Prepared by authors based on the study data*

**Figure 47. Evolution of the structure of budget allocations between 2014 and 2017**



*Source: Prepared by authors based on the study data*

To note that, in the reference period, the maintenance costs for the space designed for the training process, administrative space, space used for other purposes but also the unused space, increased by 24.27% on average, with a slight decrease in 2015.

The biggest share of maintenance costs (58.1%) was registered at Grinăuți AI College followed by Svetlîi TA College (34.36%).

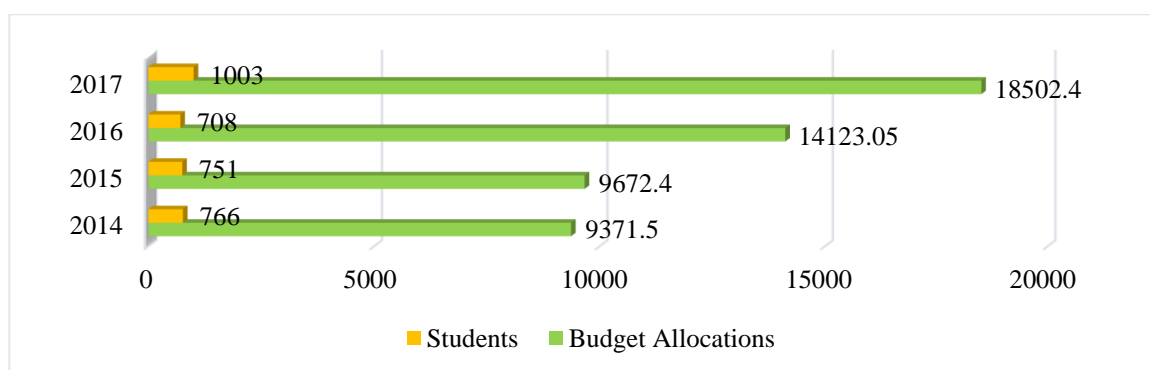
The largest share of increases in budget allocations was for education costs recording an increase of 81.3% in 2017 as compared to 2015.

### Analysis of budget allocations for vocational schools

State budget allocations for vocational schools, similarly to the ones for colleges and CEx, have continuously grown in the past 4 years. The budget allocations for Bubuieci VS and Nisporeni VS increased from 9371.5 thousand MDL (2014) to 14043.9 thousand MDL (2017), which represents a growth of 49.85%.

The budget allocations per student also went up significantly, from 12.23 thousand MDL in 2014-2015 to 14.00 thousand MDL in 2016-2017.

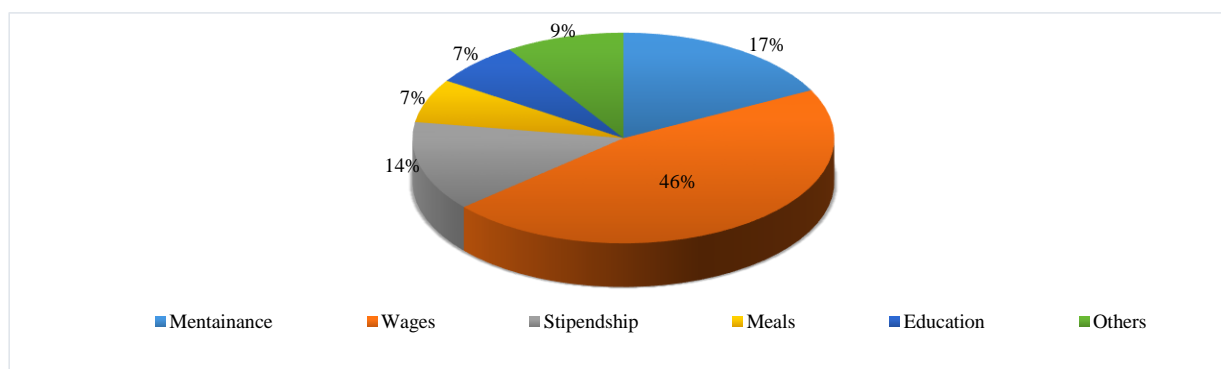
**Figure 48.. Evolution of budget allocations (thousand MDL) and of number of students in Nisporeni VS and Bubuieci VS, between 2014 and 2017**



*Source: Prepared by authors based on the study data*

The budget allocated for vocational schools is made up of maintenance costs (maintenance, utilities, current repair), wages, stipends, meals, education process (procurement of equipment, teaching materials, consumables etc.) etc. The biggest share of budget allocations is for wages, on average accounting for 46% of the total amount in the reference period (Figure 49).

**Figure 49. Distribution of budget allocations (%), on average, between 2014 and 2017, in VS**



*Source: Prepared by authors based on the study data*

The maintenance costs have increased by 22.9% on average: in Nisporeni VS – by 28.0% and in Bubuieci VS – by 31.7%.

Wages of teachers and of other staff categories gradually augmented between 2014 and 2017. Hence, the budget allocations for wages increased by circa 39%: in Nisporeni VS – by 31.3% and in Bubuieci VS – by 48.4%.

In the reference period, the amount of education stipends was increased. This contributed to an increase in the budget allocations for stipends. In 2014 the amount of such allocations constituted 1551.6 thousand MDL and in 2017 – 2299.63 thousand MDL, the percentage of growth representing about 32.5%.

Expenditure on the educational process (procurement of equipment, teaching materials, consumables etc.) increased by 53.5%. Nisporeni VS records an increase of 212.5 thousand MDL and Bubuieci VS – 245.2 thousand MDL. The largest expenditures were registered at Nisporeni VS for 460.2 thousand MDL in 2016 and expenses in the amount of 541.6 thousand MDL were registered in Bubuieci VS in 2017.

To summarize, we can state that the evolution of state budget allocations in the 7 VETIs had a positive trend, from 9371.5 thousand MDL allocated to the institutions in 2014, they accrued to 18502.4 thousand MDL in 2017. The ratio of budget allocations per student increased significantly, from 15000 MDL in 2014-2015 to 21830 thousand MDL in 2016-2017 due to the increase in the state budget allocations when the number of students has practically not evolved.

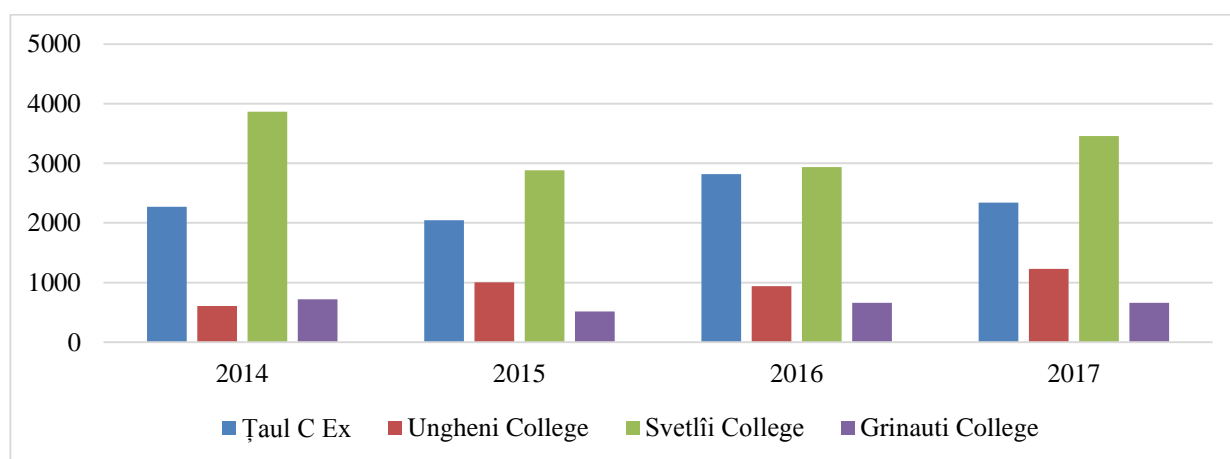
### 3.2 Extra-budgetary revenues

#### *Extra-budgetary revenues in colleges and Țaul CEx*

VETIs are eligible to generate extra-budgetary revenues. Two categories of extra-budgetary revenues have been identified: a) obtained from services (tuition fees, space rent, continuous training services, cooperation with businesses, accommodation etc.; b) obtained from production activities.

The extra-budgetary revenues obtained between 2014 and 2017 differ from one institution to another (Figure 50). The most substantial ones were registered at Svetlîi TA College (13142.5 thousand MDL), followed by Țaul CEx (9467.6 thousand MDL). Much lower are the extra-budgetary revenues at Ungheni AI College (3778 thousand MDL) and at Grinăuți AI College (2554.1 thousand MDL).

**Figure 50. Evolution of extra-budgetary revenues (thousand MDL) in colleges and in Țaul CEx, (2014-2017)**



*Source: Prepared by authors based on the study data*

The extra-budgetary revenues in colleges and in Țaul CEx are obtained from the sale of finished products (59.5%) and from provided services (40.5%). To note that, according to the data, *de facto*, the average finished production for 3 institutions is of approximately 75%, except for Ungheni AI College (12%), since the area of its farmland, compared to the other institutions, is much smaller. Another reason, according to

the institution's administration, is the fact that field crops have been affected by diseases in the past years, which has led to a decline in harvest.

Revenues from services differ a lot from one institution to another. For instance: the revenues from tuition fees in Ungheni AI College registers 728.6 thousand MDL on average, while in Svetlîi TA College this revenue is almost 2 times lower, constituting 359.6 thousand MDL. In Țaul CEx, such revenues account for little less than a half (111.9 thousand MDL) of those registered in Svetlîi TA College, while Grinăuți AI College does not have any revenues from tuition fees. This is because the first 2 institutions register a higher number of students admitted on a contract basis, in Țaul CEx, their number is smaller, while in Grinăuți AI College there are no students studying on a contract basis.

**Table 5. Average extra-budgetary revenues from colleges and Țaul CEx, in 2014-2017**

| Income generating sources                                       | Țaul CEx | Ungheni AI College | Svetlîi TA College | Grinăuți AI College |
|---|----------|--------------------|--------------------|---------------------|
| Annual average of extra-budgetary revenues, thousand MDL        | 2367     | 1253               | 3285               | 638                 |
| % provision of services (education, accommodation, meals, rent) | 26       | 87                 | 23                 | 25                  |
| % sale of final products  | 74       | 12                 | 77                 | 75                  |
| Others  | 0        | 1                  | 0                  | 0                   |

*Source: Prepared by authors based on the study data*

The extra-budgetary revenues are mainly distributed for maintenance costs (44%); education (30%); and wages (22%). Circa 11% are allocated for education; 3% - for meals; and 3% are other costs (Table 6).

**Table 6. Average of costs from extra-budgetary revenues in colleges and in Țaul CEx, 2014- 2017**

|                | Țaul CEx | Ungheni AI College | Svetlîi TA College | Grinăuți AI College | Average |
|----------------|----------|--------------------|--------------------|---------------------|---------|
| Annual average | 2737,5   | 506,4              | 1978,5             | 638,5               | 1462,2  |
| % maintenance  | 7%       | 79%                | 10%                | 81%                 | 44%     |
| % education    | 54%      | 4%                 | 48%                | 14%                 | 30%     |
| % wages        | 32%      | 17%                | 38%                | 4%                  | 22%     |
| % other costs  | 7%       | 0%                 | 1%                 | 1%                  | 3 %     |
| % meals        |          |                    | 3%                 |                     | 3%      |

*Source: Prepared by authors based on the study data*

#### *Extra-budgetary revenues in vocational schools*

The extra-budgetary revenues in VS, compared to the same revenues in colleges and CEx are much lower, since their land areas are much smaller. Between 2014 and 2017, Nisporeni VS collected extra-budgetary revenues amounting to 497.2 thousand MDL on average. This was from the sale of finished products (83.7%) and from services, accommodation rent (10.37%). Bubuieci VS collected 202.7 thousand

MDL on average from services (accommodation rent), Leova VS – 717.0 thousand MDL (2015-2017). The revenues in Leova VS come from services (accommodation, rent) (70%) and other (30%) (Table 7).

**Table 7. Average extra-budgetary revenues in VS between 2014 and 2017**

|  | Nisporeni VS | Bubuieci VS | Leova VS <sup>22</sup> |
|--|--------------|-------------|------------------------|
| Annual average of extra-budgetary revenues, thousand MDL | 497.2        | 202.7       | 717.0                  |
| % services (education, accommodation, meals, rent)       | 10.37%       | 98.8%       | 70%                    |
| % sale of finished products                              | 83.74%       | 0%          | 0%                     |
| % other  | 5.8%         | 1.12%       | 30%                    |

*Source: Prepared by authors based on the study data*

The extra-budgetary revenues collected by Nisporeni VS between 2014 and 2017 were mainly used for procurement of raw materials (54.8% on average), maintenance costs (16.9%), education process (14.1%) and wages – only 8.1%. Bubuieci VS has on average registered extra-budgetary revenues amounting to 202.7 thousand MDL.

The extra-budgetary revenues collected by Leova VS between 2015 and 2017 were used for maintenance costs (circa 59.2%), wages (3.5%), and other costs – 37.2% (Table 8).

**Table 8. Average costs from extra-budgetary revenues (%) in VS (2014-2017)**

|                                | Nisporeni VS | Leova VS <sup>23</sup> | Bubuieci VS |
|--------------------------------|--------------|------------------------|-------------|
| Annual average                 | 529.8        | 850.0                  | 0           |
| % maintenance                  | 16.9%        | 59.2%                  | 0 %         |
| % education process            | 14.1%        | 0%                     | 0 %         |
| % wages                        | 8.1%         | 3.5%                   | 0 %         |
| % other costs                  | 5.9%         | 37.2%                  | 0 %         |
| % procurement of raw materials | 54.8%        | 0%                     | 0%          |

*Source: Prepared by authors based on the study data*

Art.67 (6) of the Code of Education of the Republic of Moldova no.152 of 17 July 2014 provides for activities generating revenues from other sources. Thus, VETIs may carry out entrepreneurship activities in the conditions established by the Government, including in workshops of own production. According to the institutions' managers, this activity is currently hard to implement because the institutions are facing a range of obstacles, namely the provisions of some legislative acts and the regulatory framework establishing the revenues collected by the budgetary authorities / institutions.

A comparative analysis of the investments made in VETIs shows that they are largely covered from state budget allocations.

<sup>22</sup> Data are presented for the period from 2015 to 2017.

<sup>23</sup> Data are presented for the period from 2015 to 2017.

The share of investments of donors and of businesses in 2014-2018, compared to the budgeted ones, are rather small. VETIs have received donations<sup>24</sup> amounting to 8346.0 thousand MDL, which accounts for 20% of the total investments. The colleges and Țaul CEx have received 6205.8 thousand MDL, which represents only 6.9% of the total amount of investments. (Table 9).

**Table 9. Investments in VS, colleges and Țaul CEx, between 2014 and 2018, thousand MDL**

| Investments  | Țaul CEx       | Ungheni AI College | Svetlîi TA College | Grinăuți AI College | Nisporeni VS   | Leova VS      | Bubuieci VS   |
|--------------|----------------|--------------------|--------------------|---------------------|----------------|---------------|---------------|
| <b>Total</b> | <b>10796.5</b> | <b>220.0</b>       | <b>44129.7</b>     | <b>34767.0</b>      | <b>37951.9</b> | <b>1628.8</b> | <b>1459.2</b> |
| State budget | 4810.7         | 0                  | 44129.7            | 34767.0             | 26522.8        | 36.6          | 189.2         |
| Donors       | 5985.8         | 220.0              | 0                  | 0                   | 5553.8         | 1592.2        | 1200.0        |
| Business     | 0              | 0                  | 0                  | 0                   | 5875.0         | 0             | 0             |

*Source: Prepared by authors based on the study data*

The findings reveal that state budget allocations ensure full coverage of the expenses for labor remuneration and partly the maintenance expenses.

The annual average of extra-budgetary income in colleges and in Țaul CEx is practically triple to the annual revenue for vocational schools. At the same time, vocational schools do not show revenues from tuition fees, while the two colleges and Țaul CEx register 40%, on average, of the extra-budgetary revenues for four years. As to vocational schools, only Nisporeni VS collects revenues from the sale of finished products. The three colleges and Țaul CEx also generate revenues from the sale of finished products, owing a much bigger area of farmland than vocational schools. As a result, state budget investments on average account for 86.6% while the share of investments from donors account for circa 13.4%.

### 3.3 Conclusions and recommendations on VETI funding

- VETI funding does not occur based on performance, therefor it does not stimulate an efficient administration of resources.
- The funding does not take into account the actual needs of the institutions, it is done without a real analysis of the needs, which could ensure an appropriate sizing of the budget.
- The per-student funding is deficient in VET because it is insufficient and favours the lack of performance.
- Additional funding is secured from the revenues obtained from services (tuition fees, space rent, continuous training services, cooperation with businesses, accommodation rent etc.) and production activities. This also greatly depends on the VETI's capacity to develop projects, on the ministry's availability to co-fund projects, on the existing partnerships with the businesses, etc.
- The generation of revenues from the didactic farm's economic activity is difficult, a challenge being the reduced capacity of agri-food VETI staff to do it.
- Some VETIs have reduced capacities of accessing European funds and applying for technical assistance projects.

<sup>24</sup> Representatives of evaluated VETI use the term *donations for funding from external sources*

- In general, the VETI funding is adequately secured despite the budgetary constraints. Nonetheless, one notices the lack of educational priorities, high maintenance costs, and other low efficiency evidence that supports the statement that the management is poor and does not bear responsibility for the results.

**Recommendations:**

- Establish performance indicators for the allocation of means (output, outcome, efficiency) for activities funded from the VETI's budgetary means.
- Revise the manner of capitalization of the funds allocated for teacher wages.
- Provide assistance and organize trainings for VETI staff in accessing European funds.
- Organize training courses for strengthening the capacities of VETI managers and staff in view of capitalizing and generating income from economic activities, extra-budgetary sources.
- Organize training courses for VETI accounts and managers in view of implementing the amendments to the Government Decision no.1077/2016 on funding based on per student costs of public institutions of vocational education and training, in view of establishing a VETI self-management financial-economic regime.
- Grant tax benefits to the businesses involved in VET (VAT deduction on the equipment donated, deduction of profit tax for vocational education and training).

## CHAPTER 4. RECOMMENDATIONS

### 4.1 Recommendations for the project

#### ȚAUL CEX AND VET INSTITUTIONS

Strengthen the organizational capacity for promoting innovation of the agri-food sector and create a functional centre for continuous training services within Țaul CEx, including the concept, regulation, an activity plan and one for its strategic development for a competitive services portfolio.

- Identify the needs for continuous training in the agri-food area;
- Provide technical assistance with developing continuous training programmes for business operators and teachers from the agri-food system;
- Provide technical assistance to Țaul CEx in preparing the set of documents for the institution's accreditation and of programmes for providing continuous training services;
- Develop and strengthen teacher capacities for providing quality continuous training services;
- Provide support to Țaul CEx by supplying relevant equipment and technologies for implementing agri-food continuous training programmes;
- Set up an experimental land plot for cultivating soya (Țaul CEx, Grinăuți and Ungheni Agro-industrial Colleges, and Svetlîi TA College);
- Set up an experimental land plot for cultivating greenhouse organic tomatoes in Țaul CEx;
- Set up an experimental land plot for growing organic vineyard in Nisporeni VS and Leova VS;
- Provide support to the pilot VET institutions for endowing the technical material basis for the specialities *Safety of Agri-Food Products*, *Technology of Products of Plant Origin*, *Technology of Products of Animal Origin*, *Apiculturist*, *Flower-Grower*, *Viticulturist-Wine-Maker*, *Vegetable and Fruit Growing*, *Agronomy*;
- Set up an online library in all pilot institutions;
- Procure relevant software for providing initial and continuous training programmes in all pilot institutions;
- Provide assistance with facilitating the visibility process of initial and continuous training programmes in the agri-food area in all pilot institutions.

#### OCCUPATIONAL STANDARDS, PROFESSIONAL QUALIFICATIONS, CURRICULA

- Provide assistance with developing of OS for the following professions:
  - *Viticulturist-Wine-Maker*, qualification level 3 ISCED;
  - *Flower-Grower*, qualification level 3 ISCED;
  - *Agronomist*, medium qualification, specialty *Vegetable and Fruit Growing*, qualification level 4 ISCED;
  - *Agronomist*, medium qualification, specialty *Viticulture and Oenology*, qualification level 4 ISCED;
  - *Quality Assurance Technician*, medium qualification, specialty *Safety of Food Products*, medium qualification 4 ISCED;
  - *Food Industry Technician*, medium qualification, specialty *Technology of Products of Plant Origin*, medium qualification 4 ISCED;



- *Food Industry Technician*, medium qualification, specialty *Technology of Products of Animal Origin*, medium qualification 4 ISCED.
- **Develop qualification standards for**
  - *Fruit and Vegetable Grower* 811005, qualification level 3 ISCED;
  - *Viticulturist–Wine-Maker* 811013, qualification level 3 ISCED;
  - *Fruit Grower*, qualification level 3 ISCED;
  - *Flower-Grower* 812002, qualification level 3 ISCED.
- **Revise the qualification standards :**
  - *Agronomist*, medium qualification, specialty *Vegetable and Fruit Growing*, qualification level –IV ISCED;
  - *Agronomist*, medium qualification, specialty *Viticulture and Oenology*, qualification level – IV ISCED;
  - *Quality Assurance Technician*, medium qualification, specialty *Safety of Food Products*, medium qualification – IV ISCED;
  - *Food Industry Technician*, medium qualification, specialty *Technology of Products of Plant Origin*, medium qualification – IV ISCED;
  - *Food Industry Technician*, medium qualification, specialty *Technology of Products of Animal Origin*, medium qualification – IV ISCED;
- Develop curricula for the trades of *Viticulturist–Wine-Maker and Fruit Grower*;
- Revise the curricula for all agri-food specialties (*Safety of Agri-Food Products, Technology of Products of Plant Origin, Technology of Products of Animal Origin, Apiculturist, Flower-Grower, Viticulturist–Wine-Maker, Vegetable and Fruit Growing, Agronomy*);
- Develop textbooks, teaching materials for the line subjects and methodological guides;
- Develop curricula and textbooks for general subjects with applicative content for the profession studied;
- Provide assistance with identifying the medium and long-term demands of the labour market for VET (priority subsectors/trades/specialities) in view of developing the annual matriculation plan;
- Provide assistance with updating CORM and/or the nomenclature of professions based on the findings of the labour market needs.

## **INITIAL AND CONTINUOUS PROFESSIONAL TRAINING PROGRAMMES**

- Organize actions to raise the awareness of the business about the importance of getting actively involved in the initial and continuous vocational training of students as well as about the need to establish partnerships with VETIs in view of planning and developing strategy, regulatory and curriculum papers;
- Organising trainings for foremen-trainers in production that would be responsible for students' internship/WBL in the business unit;
- Revise the initial VET programmes (*Safety of Agri-Food Products, Technology of Products of Plant Origin, Technology of Products of Animal Origin, Apiculturist, Flower-Grower, Viticulturist–Wine-Maker, Vegetable and Fruit Growing, Agronomy*) in the context of organic farming;

- Develop adult continuous training programmes, specific to the individual areas of the pilot institutions;
- Develop and strengthen VETI capacities (through thematic seminars, study visits, workshops, company-based trainings) for providing continuous training services for adults and/or short-term trainings.

### **TRAINING OF MANAGING AND TEACHING STAFF**

- Implement continuous training programmes focused on teaching aspects, quality standards, systems of certification in organic farming for teachers and managing staff of Taul CEx and of project pilot institutions (e.g. strategic planning, participatory management, modern human resource management tools, educational marketing etc.);
- Provide course materials and teaching materials, technology transfers, improve the competence and skills of using modern technologies in the agri-food area;
- Organize study visits to line companies in the country and abroad for representatives of VETIs (managers, teachers, students) and of the agri-food sector (farmers, company directors and staff etc.) for exchanging experience in quality standards for organic farming;
- Develop the capacities of Taul CEx to exercise its function of liaison among the relevant players in view of strengthening the partnerships in the area and ensuring the compliance of the vocational development offer with the labour market requirements;
- Organize continuous training courses for specialized teachers in view of building their competences of:
  - using IT technologies in the teaching process;
  - innovative models and technologies in the area of the specialized subject;
  - organic farming;
  - evaluation of security of food obtained from transgenic plants;
  - practices of cultivation of organic farming and confrontation with climate changes;
  - cultivation of genetically unmodified crops;
  - regulation of the use of plants, food, genetically modified organisms;
  - climate changes and their impact on agriculture.
- Provide assistance and organize trainings of trainers for training the staff of VETs in accessing European funds and/or writing projects;
- Organize training courses for strengthening the capacities of VETI managers and staff for capitalizing and generating revenues from economic activities and extra-budgetary sources.

### **CAREER DEVELOPMENT IN ORGANIC FARMING**

- Organize career guidance trainings for students from the pilot institutions;
- Facilitate the internships/WBL of students of pilot institutions in agricultural companies, support them through mentoring programmes;
- Develop and hold a training programme for planning a business focused on quality standards in the ecologic area meant for students of pilot institutions and young farmers promoting innovative business ideas;
- Support the implementation of the best business ideas identified as a result of the competition “Best Business Plan,” annually organized by MARDE;

- Provide support with the participation in national and international exhibitions and in ecologically certified agri-food fairs;
- Support the pilot institutions for participation in national and international exhibitions in the relevant area;
- Create a platform of communication among agri-food VETIs, the business sector and education institutions from the entire country in view of strengthening the relations among these players, enhance the level of awareness of youth about the importance of agriculture, sustainable management of natural resources and learn about employment opportunities in the rural area;
- Organize a public information campaign about professional perspectives in agriculture aimed at middle and high school students and their parents;
- Effective media promotion of the (professional, financial etc.) advantages of VETIs and agricultural professions, especially in economically disfavoured regions.

## **4.2 Recommendations for other type of beneficiaries**

### Recommendations for public authorities

- Develop the VETI matriculation plan based on the analysis of the medium- and long-term labour force demand (MHLSP, MECR, MEI, MARDE, Ministry of Finance);
- Develop a mechanism for introducing financial and non-financial incentives for companies involved in VET (Ministry of Finance);
- Develop mechanisms for motivating the teachers to remain in the VET system and prevent their migration (Ministry of Finance, MECR, MARDE, MHLSP);
- Organize training courses for VETI accountants and managers in the implementation of the Government Decision no.1077/2016 on Per-Student Cost Funding of Public Vocational Education and Training Institutions, in view of establishing a self-management financial-economic regime for VETIs (MARDE, MECR, Ministry of Finance);
- Review the CORM, the nomenclature of trades (professions) for training the secondary vocational education staff and the nomenclature of specialities for training secondary specialized education staff (MARDE, MECR, MHLSP);
- Facilitate the academic mobility of students and staff to foreign VETIs for the transfer of good practices (MECR, MARDE);
- Organize a campaign for promoting VETI image and agri-food trades/specialities; engage a number of players in sector promotion (MECR, MARDE with the involvement of CCI, CEx, partner agricultural companies, line professional associations etc.).

### Recommendations for the Ministry of Agriculture, Regional Development and Environment

- Develop a national strategy for the promotion of agri-food VET;
- Set up a National Advisory Council for training and professional development in the agri-food area;
- Set up a platform of communication among agri-food education institutions, the economic sector, high and middle schools in the entire country;
- In the context of increased migration, organize a public information campaign on the professional perspectives and funding opportunities in the agri-food area;

- Initiate, organize and coordinate the process of development of specialized textbooks, practical guides and specialized teaching materials (with the involvement of donors);
- Facilitate the establishment of partnerships with VETIs and domestic and foreign line companies for exchanging good practices in the area, including in organic farming and soya growing.

#### Recommendations for the Ministry of Education, Culture and Research

- Initiate and facilitate the process of development of qualification standards for:
  - *Fruit and Vegetable Grower*, qualification level 3 ISCED;
  - *Viticulturist–Wine-Maker*, qualification level 3 ISCED;
  - *Fruit Grower*, qualification level 3 ISCED;
  - *Flower-Grower*, qualification level 3 ISCED;
  - *Agronomist*, medium qualification, specialty *Viticulture and Oenology*, qualification level 4 ISCED;
  - *Quality Assurance Technician*, medium qualification, specialty *Safety of Food Products*, medium qualification 4 ISCED;
  - *Food Industry Technician*, medium qualification, specialty *Technology of Products of Plant Origin*, medium qualification 4 ISCED;
  - *Food Industry Technician*, medium qualification, specialty *Technology of Products of Animal Origin*, medium qualification 4 ISCED.
- Set up functional mechanisms for the recognition, validation and certification of the competences obtained in informal and non-formal conditions.

#### Recommendations for agri-food Vocational Education and Training Institutions

- Organize new and varied actions for promoting institution's image and sector trades/specialities throughout the year;
- Create an intranet in VETIs and capitalize the portal [www.colegiiaagricole.md](http://www.colegiiaagricole.md);
- Revise the curriculum contents with the involvement of businesses and develop specialty textbooks, practical guides and specialized teaching materials;
- Develop an efficient, participatory and transparent management;
- Develop and implement systemic, functional mechanisms on Graduate Tracer Study with the support of MARDE, MECC;
- Develop and implement a strategy to cooperate and stay connected with VETI alumni
- Inform students/future graduates about the employment opportunities in the country, about starting one's own business in the agri-food area.
- Set up an outside school within VET where all those interested could learn a profession or improve their knowledge in farming (e.g. growing seedlings, land cultivation, growing organic products etc.);
- Strengthen institutional capacities for capitalizing and generating revenues from business activities and extra-budgetary sources;
- Set up a teacher stimulation fund in the VETI in view of preventing their migration and attracting young specialists in VET;
- Organize teacher trainings in ICT competence building;

- Establish partnerships with:
  - business, higher education institutions, field sectorial committee; field professional associations, CCI etc. in view of quality assurance and relevance of VET services;
  - NGOs implementing technical assistance projects and other agri-food organizations in view of facilitating the access to trainings of specialized teachers;
  - VETIs and foreign line companies for facilitating academic mobility, providing students with internships, trainings for teachers as well as for the dissemination of good agri-food practices, especially cultivation of organic products and soya growth.

#### Recommendations for the Centre of Excellence (CEHTA)

- Provide continuous professional training services to specialized teachers and managing staff in agri-food vocational schools and colleges;
- Provide continuous professional training programmes for business representatives;
- Jointly with VETIs, provide VET services to the unemployed and retraining of workers and specialists;
- Secure adequate conditions for conducting internships/ WBL for students, including students from other agri-food vocational schools and colleges;
- Strengthening the human resources capacities for curricular and methodological coverage of the agro-food system;
- Jointly with VETIs, identify and apply agri-food technological and scientific innovations in professional education and training.

#### Recommendations for the Sector Committee for Vocational Training in Agriculture and Food Industry

Developing occupational standards for professions from the agree-food branch:

- *Viticulturist–Wine-Maker*, qualification level 3 ISCED;
- *Flower-Grower*, qualification level 3 ISCED;
- *Agronomist*, medium qualification, specialty *Vegetable and Fruit Growing*, qualification level 4 ISCED;
- *Agronomist*, medium qualification, specialty *Viticulture and Oenology*, qualification level 4 ISCED;
- *Quality Assurance Technician*, medium qualification, specialty *Safety of Food Products*, medium qualification 4 ISCED;
- *Food Industry Technician*, medium qualification, specialty *Technology of Products of Plant Origin*, medium qualification 4 ISCED;
- *Food Industry Technician*, medium qualification, specialty *Technology of Products of Animal Origin*, medium qualification 4 ISCED.

#### Recommendations for agri-food companies

- Cooperate efficiently with VETIs and actively engage in VET process by organizing internships/WBL for the students; provide training/retraining courses for specialized teachers

within companies; actively engage in the development of OS, qualification standards and curriculum products; organize exhibitions and contests for students (e.g. “Best Professional”) etc.;

- Secure student access to company machinery and equipment for using it in educational purposes and/or endow labs, workshops and classrooms with modern equipment similar to the ones used in companies;
- Associate companies from the same area for the implementation of dual education;
- Actively involve line associations in promoting the modifications necessary to the sector for the training of qualified specialists/tradesperson ( review of the VET programme, CORM etc.) and periodically make proposals for developing the VET matriculation plan.

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## 6. ANNEXES

### Annex I. General Aspects of the VET System

The agricultural VETI system includes the total number of education institutions that provide vocational education and training programs for qualified workers, foremen, technicians and other categories of specialists in accordance with the National Qualifications Framework of the Republic of Moldova 1 (NQF), the Nomenclature of Vocational Training Areas and of Trades/Professions 2, the Nomenclature of Vocational Training Areas, Specialties and Qualifications for the Post-Secondary and Non-Tertiary Post-Secondary Vocational Education 3, approved by the Government, as well as with levels 3, 4 and 5 of the International Standard Classification of Education (ISCED).

According to the Education Code, VETI are set up, reorganized and liquidated by the Government at the initiative of the founder. The general organization of VETI is regulated by the Education Code of RM no. 152 of 17 July 2014 and the Framework Regulation approved by the MECC.

Vocational education and training in the agri-food area is provided on the basis of the VET curriculum standards and curriculum. Admission is based on secondary or high school education. The duration and structure of the year of study in institutions is governed by the Education Framework Plan approved by the MECC. The training process is carried out in accordance with the national reference standards and the accreditation standards elaborated by ANACEC and approved by the Government.

The funding for these institutions is from the state budget, but may also be the fees paid by the interested individuals and legal entities, as well as other legally constituted sources.

Initial and continuing secondary technical training for skilled agri-food workers includes programs ranging from 1 to 3 years of study, and non-tertiary post-secondary and post-secondary technical training programs provide training for foremen, technicians, technologists in accordance with Levels 4 and 5 ISCED. Post-secondary technical vocational training programs last for 4 years, based on gymnasium studies; 3 years - low-frequency studies based on high school certificate and general secondary education; 2-3 years - at the specialties related to the initial job, based on the qualification certificate and 2 years - on the basis of the certificate of high school education and general secondary education.

Secondary vocational schools are subordinated to the MECC, while agri-food colleges and centers of excellence have dual subordination, to the Ministry of Agriculture, Regional Development and Environment of the Republic of Moldova (MARDERM) and to MECC. Such institutions operate based on their internal rules, developed in accordance with the framework regulation approved by MECC.

Vocational education and training in the agri-food area is provided in 20 public VETIs (12 vocational schools 5, 6 colleges and 2 centres of excellence). At present, such institutions provide secondary vocational training programs (level 3 ISCED) and post-secondary vocational training programs (level 4 ISCED). According to the Code of Education, VETIs, especially centres of excellence, may provide non-tertiary postsecondary vocational training programs (level 5 ISCED). Dual education – in education institutions and in business units – may also take place in agri-food VETIs. Table 1 shows the vocational schools and specialties/trades that may be studied in such institutions.



12 VET schools ( VS from Nisporeni , VS from Bubuieci, VS from Leova, VS from Orhei, VS from Cimișlia, VS from Ștefan-Vodă, VS from Ceadâr-Lunga, VS from Ciumai, VS from Sîngerei, VS from Râșcani, VS from Glodeni, VS from Cuhureștii de Sus) preparing trained and skilled workers in the field of agri-food, in about 8 trades: Tractor, Tractor-Engineer in agricultural production, Forestry, Beekeepers, Wine-Grower and Winemaker, as well as related trades - Winegrower-Winegrower, Fruit grower and Tractor-farmer.

According to the results of the admission in VET schools in this field, in the last 5 years, from the offer of 22 specialties, the most required are: Agricultural Mechanics, Veterinary Medicine, Electrification of Agriculture, Marketing, Merceology, Accounting and less requested remain: Agronomy, Vegetable and fruit growing, Technology of Products of plant origin (source: **MADRE**, Annual Conference of teachers in agricultural colleges 2017).

Of the total of 20 VET schools, 10 (50%) are trained in rural areas and 10 (50%) in the urban area, which are trained by specialists and craftsmen in the field - Centers of Excellence, Colleges and Vocational schools with an agro-food profile. Centers of excellence and agricultural colleges are fairly evenly distributed, 4 being located in rural areas and 4 in urban areas; 4 VET schools - in the rural area and twice as many - in the urban environment.

The training of qualified workers, technicians, foremen, technicians and other categories of specialists in this field, as well as the functioning of these institutions is carried out in accordance with the following legislative and normative framework:

#### **Documents of the European Union:**

- Council conclusions on the role of education and training in the implementation of the Europe 2020 strategy;
- Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training (ET 2020);
- EU Strategy for the Danube Region;
- The Copenhagen Declaration of 30 November 2002 and the Copenhagen Council Conclusions of 19 December 2002 on the promotion of European cooperation in Vocational / Technical Education;
- The Bruges Communication of 7 December 2010 on European cooperation in Vocational / Technical Education.

#### **National Strategic Planning Documents:**

- Moldova - 2020 National Development Strategy;
- Memorandum on Economic and Financial Policies between RM and FMI;
- The National Development Strategy "Moldova 2020", Law no. 166 of 11. 07. 2012.
- "Education - 2020" Strategy;
- "VET 2013-2020" strategy.

**Regulatory Framework for Workplace Education (LLM):**

- GD no. 70 of January 22, 2018 for the approval of the Regulation on the organization of technical training programs through dual education;
- The Regulation on Production Practices in Secondary, approved by EOM no. 233 of March 25, 2016;
- Regulation on the organization and conduct of post-secondary TVET postgraduate practice and non-tertiary post-secondary TVET, approved by OME no. 1086 of 29.12.2016;
- The framework regulation for the organization and functioning of the secondary vocational technical education institution, approved by OME no. 840 of 21 August 2015; Framework Regulation on the organization and functioning of secondary technical education institutions, OME no. 840 of 21.08.2015, Regulation for organizing post-secondary and post-secondary non-tertiary TVET studies based on the Transfer Credit Transfer System, approved by OME no. 234 of 25.03.2016, the Framework Regulation for the Organization and Functioning of the Center for Excellence, approved by EOM no. 1158 of 04.12.2015;
- The Framework Plan, approved by Order of the Minister of Education no. 1205 of 16.12.2015;
- Framework plan for dual technical education, approved by Order of the Minister of Education and Culture no. 1331 of 10.09.2018;
- The Framework Plan for Secondary Technical Vocational Education with a duration of one year, approved by Order no. 596 of 29.06.2015;
- The Framework Plan for Secondary Technical Vocational Education with a duration of two years, approved by Order of the Minister of Education no. 531 of 02.06.2015;
- The framework plan for related professions in secondary technical education, approved by the minister's order.

## Annex II. Tables and Figures

**Table 10. Educational Offer the agri-food sector, specialties / crafts studied, 2017-2018**

| Specialty/ craft                                | VET institution |                |                 |                |                      |                 |                    |               |                           |                        |                            |
|---|-----------------|----------------|-----------------|----------------|----------------------|-----------------|--------------------|---------------|---------------------------|------------------------|----------------------------|
|   | CEHTA<br>Țaul   | AIC<br>Ungheni | AIC<br>Grinăuți | ATC<br>Svetlîi | College<br>Brătușeni | Cex<br>Chișinău | College<br>Rîșcani | ATC<br>Soroca | VET<br>school<br>Bubuieci | VET<br>school<br>Leova | VET<br>school<br>Nisporeni |
| Food products safety                            | x               |                |                 |                |                      |                 |                    |               |                           |                        |                            |
| Technology products of plant origin             | x               |                |                 |                |                      | x               |                    |               |                           |                        |                            |
| Agronomy  | x               | x              |                 | x              |                      |                 |                    |               |                           |                        |                            |
| Vegetable and fruit growing                     | x               |                |                 |                |                      |                 |                    |               |                           |                        |                            |
| Cultivator of vegetables and fruits             | x               |                |                 |                |                      |                 |                    |               |                           |                        |                            |
| Merchandising                                   |                 | x              |                 |                | x                    |                 | x                  |               |                           |                        |                            |
| Cosmetic and medicinal products technology      |                 |                |                 |                |                      |                 | x                  |               |                           |                        |                            |
| Baking technology                               |                 |                |                 |                |                      |                 | x                  |               |                           |                        |                            |
| Machines and devices in the food industry       |                 |                |                 |                |                      | x               | x                  |               |                           |                        |                            |
| Agricultural mechanics                          |                 | x              | x               | x              |                      |                 |                    | x             |                           |                        |                            |
| Technology of public food products              |                 |                | x               |                |                      |                 |                    |               |                           |                        |                            |
| Technology of animal products                   |                 |                | x               |                |                      |                 |                    |               |                           |                        |                            |
| Electrification of agriculture                  |                 |                |                 | x              |                      |                 |                    | x             |                           |                        |                            |
| Technical operation of car transport            |                 |                |                 | x              |                      |                 |                    | x             |                           |                        |                            |
| Electromechanics                                |                 |                |                 |                |                      |                 |                    | x             |                           |                        |                            |
| Business and administration of affairs          |                 |                |                 |                | x                    |                 |                    |               |                           |                        |                            |
| Veterinary medicine                             |                 |                |                 |                | x                    |                 |                    |               |                           |                        |                            |
| Tourism   |                 |                |                 |                |                      | x               |                    |               |                           |                        |                            |
| Technology of products obtained by fermentation |                 |                |                 |                |                      | x               |                    |               |                           |                        |                            |
| Viticulture and oenology                        |                 |                |                 |                |                      | x               |                    |               |                           |                        |                            |
| Tractor driver                                  |                 |                |                 |                |                      |                 |                    |               |                           |                        |                            |
| Beekeeper                                       |                 |                |                 |                |                      |                 |                    |               | x                         |                        | x                          |
| Winegrower-winemaker                            |                 |                |                 |                |                      |                 |                    |               |                           | x                      | x                          |
| Winegrower-winemaker,                           |                 |                |                 |                |                      |                 |                    |               |                           | x                      | x                          |
| Flowers grower                                  |                 |                |                 |                |                      |                 |                    |               | x                         |                        |                            |

Source: Elaborated by authors based on MARDERM and MECR data

**Table 11. VET Institutions and Participants data**

| Or. Nr.   | Name of VET institutions  | Category of VET institutions | Study language | Geographic location | Nr. of participants | Category of participants | Geographic location | Environment | Gender |    |
|---|---------------------------|------------------------------|----------------|---------------------|---------------------|--------------------------|---------------------|-------------|--------|----|
|   |                           |                              |                |                     |                     |                          |                     |             | F      | M  |
| 1   | AIC from Grinăuți         | Low                          | romanian       | North               | 17                  | Specialised teachers     | North               | rural       | 11     | 6  |
|   |                           |                              |                |                     | 4                   | Senior staff             |                     |             | 3      | 1  |
|   |                           |                              |                |                     | 26                  | Students                 |                     |             | 12     | 14 |
| 2   | AIC from Ungheni          | Medium                       | romanian       | Center              | 15/ 10              | Specialised teachers     | Center              | urban       | 5      | 5  |
|   |                           |                              |                |                     | 3                   | Senior staff             |                     |             | 1      | 2  |
|   |                           |                              |                |                     | 20                  | Students                 |                     |             | 11     | 9  |
| 3   | CEHTA from Țaul           | Well                         | romanian       | North               | 18/ 16              | Specialised teachers     | North               | rural       | 9      | 7  |
|   |                           |                              |                |                     | 4                   | Senior staff             |                     |             | 3      | 1  |
|   |                           |                              |                |                     | 29                  | Students                 |                     |             | 13     | 16 |
| 4   | ATC from Svetlii          | Well                         | russian        | South               | 16/ 11              | Specialised teachers     | South               | rural       | 5      | 6  |
|   |                           |                              |                |                     | 4                   | Senior staff             |                     |             | -      | 4  |
|   |                           |                              |                |                     | 30                  | Students                 |                     |             | 14     | 16 |
| 5   | VET school from Bubuieci  | Well                         | romanian       | Chișinău            | 15                  | Specialised teachers     | Chișinău            | rural       | 10     | 5  |
|   |                           |                              |                |                     | 3                   | Senior staff             |                     |             | 3      |    |
|   |                           |                              |                |                     | 14                  | Students                 |                     |             |        | 14 |
| 6   | VET school Leova          | Medium                       | romanian       | Center              | 21                  | Specialised teachers     | Center              | urban       | 13     | 9  |
|   |                           |                              |                |                     | 3                   | Senior staff             |                     |             | 2      | 1  |
|   |                           |                              |                |                     | 9                   | Students                 |                     |             | -      | 9  |
| 7   | VET school from Nisporeni | Medium                       | romanian       | Center              | 12                  | Specialised teachers     | Center              | urban       | 7      | 5  |
|   |                           |                              |                |                     | 3                   | Senior staff             |                     |             | 1      | 2  |
|   |                           |                              |                |                     | 15                  | Students                 |                     |             | -      | 15 |
| Source: Elaborated by authors based on study data |                           |                              |                |                     |                     |                          |                     |             |        |    |

| Ord. nr. | Specialty                           | Level of education | Curriculum                        | Professional qualification                                    | Qualification is found as occupation / function in CORM | Qualification in RNC | Occupational standard for specialty qualification   | Framework plan                                     | Educational plan  | Didactic materials | Share P / Total hours |
|----------|-------------------------------------|--------------------|-----------------------------------|---|---|----------------------|---|--|---|--------------------|-----------------------|
| 1.       | Vegetable and Fruit Growing         | IV                 | MECC Order nr. 529 of 05.12.2017  | OME nr. 1230 of 14.12. 2015 includes the occupational profile | 314202 Agronomist (average qualification)               | -                    | -   | Framework Plan, Order no. 1205 of 16.12.2015       | Approved by the MARDERM, MECC, Order 917 of 31.10.2016.     | Doesn't exist      | 60,16%                |
| 2.       | Agronomy                            | IV                 | MECC Order nr. 529 of 05.12.2017  | OME nr. 1230 14.12. 2015 includes the occupational profile    | 314202 Agronomist (average qualification)               | -                    | -   | Framework Plan, Order nr. 1205 of 16.12.2015       | Approved by the MARDERM, MECC, Order nr. 753 of 15.08.2016. | Doesn't exist      | 64,21 %               |
| 3.       | Viticulture and Oenology            | IV                 | MECC Order nr. 529 of 05.12.2017  | OME nr. 1230 14.12. 2015 includes the occupational profile -  | 314202 Agronomist (average qualification)               | -                    | -   | Framework Plan, Order nr. 1205 of 16.12.2015       | Approved by the MARDERM, MECC, Order nr.639 of 05.07.2016   | Doesn't exist      | 50,82%                |
| 4.       | Cultivator of vegetables and fruits | III                | MECC Order nr. 1485 of 05.10.2018 | -   | 811005 Cultivator of vegetables and fruits              | -                    | Order nr. 27 of 16.02.2016 of the MARDERM , Published: 04.03.2016 in the OM nr. 49-54, art. no. 360 | Framework dual Plan, Order nr. 1331 din 10.09.2018 | Approved the Order of the MECC nr. 528 of 05.12.2017        | Doesn't exist      | 69,71%                |

| Ord. nr. | Specialty                            | Level of education                   | Curriculum                                    | Professional qualification | Qualification is found as occupation / function in CORM                    | Qualification in RNC | Occupational standard for specialty qualification                              | Framework plan                              | Educational plan  | Didactic materials | Share P / Total hours |
|----------|--------------------------------------|--------------------------------------|---|----------------------------|--|----------------------|--|---|---|--------------------|-----------------------|
| 5.       | Viticulturist                        | III                                  | -   | OME nr. 1230 of 14.12.2015 | 811013 Viticulturist   | -                    | Order nr.18 of 01.02.2013, of the MHLSP, Order nr.64 of 11.02.2013 of the MECR | Plan Framework OME nr. 531 of 02.06.2015    | OME nr. 923 of 22.09.2015                                 | Doesn't exist      | 47,68 %               |
| 6        | Viticulturist -winemaker             | III                                  | Approved by MECC Order no. 1485 of 05.10.2018 | *                          |  | -                    |  |   |   | Doesn't exist      | 70%                   |
| 7.       | Winegrower - winemaker –fruit grower | III                                  | -   | *                          | 611203 Fruit grower<br>611204 Winegrower<br>611205 Winemaker<br>Winegrower | -                    | Order of MHLSP nr.18 of 01.02.2013 of the ME no.64 of 11.02.2013.              | Plan Framework by OME nr. 437 of 29.05.2017 | <b>Winegrower - approved by OME no. 923 of 22.09.2015</b> | Doesn't exist      | 47,,68 %              |
| 8.       | Fruit grower                         | III                                  | -   | -                          | 611203 Fruit grower  | -                    | Nu este  | Framework plan OME nr. 531 of 02.06.2015    | -   | Doesn't exist      | 47,68%                |
| 9.       | Flower grower                        | Secondary VET - Level III ISCED 2011 | Approved by MECC Order no. 586 of 18.12.2017  | -                          | <b>812002 Flower grower</b>  | -                    | Nu este  | Framework plan, OME nr. 531 of 02.06.2015   | OME nr. 98 of 12.09.2017                                  | Doesn't exist      | 47.68 %               |

**Table 12: Evolution of budget allocations for colleagues and CEx Țaul, during the period 2014-2017**

| Year  | 2014           |              | 2015           |              | 2016           |              | 2017           |              |
|---|----------------|--------------|----------------|--------------|----------------|--------------|----------------|--------------|
|   | Budget         | Extra budget | Budget         | Extra budget | Budget         | Extra budget | Budget         | Extra budget |
| CEHTA from Țaul   | 7055,2         |              | 7819,6         |              | 8635,8         |              | 8765,4         |              |
| Ungheni College   | 7811,1         |              | 7202,8         |              | 8841,3         |              | 10092,2        |              |
| Svetlii College   | 8423,4         |              | 8194,6         |              | 11961,3        |              | 14960,2        |              |
| Grinăuți College  | 5888,9         |              | 6440,8         |              | 7139,7         |              | 7708,8         |              |
| <b>Total</b>  | <b>29178,6</b> |              | <b>29657,8</b> |              | <b>36578,1</b> |              | <b>41526,6</b> |              |
| <i>Source: Elaborated by authors based on study results</i> |                |              |                |              |                |              |                |              |

**Table 13: Evolution of the structure of extra budgetary income 2014-2017, %**

|   |              | Total income   |            | Revenue from study fees |              | Rent of premises / land |             | Accommodation services |              | Food services |             | Training continues |              | Realization of Finished Goods |              | Others       |              |
|---|--------------|----------------|------------|-------------------------|--------------|-------------------------|-------------|------------------------|--------------|---------------|-------------|--------------------|--------------|-------------------------------|--------------|--------------|--------------|
|   |              | thsd lei       | %          | thsd lei                | %            | thsd lei                | %           | thsd lei               | %            | thsd lei      | %           | thsd lei           | %            | thsd lei                      | %            | thsd lei     | %            |
| <b>Total VET institutions</b>             | 2014         | 8393.6         | 100        | 783                     | 9.32         | 243.9                   | 2.9         | 1432.1                 | 17.06        | 66.5          | 0.79        | 0                  | 0            | 5345.8                        | 63.68        | 7.1          | 0.08         |
|   | 2015         | 7404           | 100        | 884.3                   | 11.94        | 271.6                   | 3.66        | 1406                   | 18.98        | 75.6          | 1.02        | 0                  | 0            | 4756.7                        | 64.24        | 9.8          | 0.13         |
|   | 2016         | 8929.9         | 100        | 1027.5                  | 11.5         | 255.3                   | 2.85        | 1752                   | 19.61        | 70.2          | 0.78        | 8                  | 0.08         | 5358.5                        | 60           | 39.1         | 0.43         |
|   | 2017         | 9816.4         | 100        | 1188                    | 12.1         | 552.5                   | 5.62        | 1776.8                 | 18.1         | 96.4          | 0.98        | 124                | 1.26         | 5269.7                        | 53.68        | 516.8        | 5.26         |
|   | <b>total</b> | <b>34543.9</b> | <b>100</b> | <b>3882.8</b>           | <b>11.24</b> | <b>1323.3</b>           | <b>3.83</b> | <b>6366.9</b>          | <b>18.43</b> | <b>308.7</b>  | <b>0.89</b> | <b>132</b>         | <b>0.38</b>  | <b>20730.7</b>                | <b>60.01</b> | <b>572.8</b> | <b>1.65</b>  |
| <b>3 colleagues &amp; CEHTA from Țaul</b> | 2014         | 7866.7         | 100        | 783                     | 9.95         | 243.9                   | 3.1         | 1234.5                 | 15.69        | 66.5          | 0.84        | 0                  | 0            | 5016.5                        | 63.76        | 7.1          | 0.09         |
|   | 2015         | 6634.5         | 100        | 884.3                   | 13.32        | 271.6                   | 4.09        | 1221.8                 | 18.41        | 75.6          | 1.13        | 0                  | 0            | 4171.4                        | 62.87        | 9.8          | 0.14         |
|   | 2016         | 7769.8         | 100        | 1027.5                  | 13.22        | 255.3                   | 3.28        | 1448.5                 | 18.64        | 70.2          | 0.9         | 8                  | 0.1          | 4953.2                        | 63.74        | 7.1          | 0.09         |
|   | 2017         | 7905.5         | 100        | 1188                    | 15.02        | 247.7                   | 3.13        | 1444.5                 | 18.27        | 96.4          | 1.12        | 0                  | 0            | 4923.8                        | 62.28        | 5.1          | 0.06         |
|   | <b>total</b> | <b>30176.5</b> | <b>100</b> | <b>3882.8</b>           | <b>12.86</b> | <b>770.8</b>            | <b>2.55</b> | <b>5349.3</b>          | <b>17.72</b> | <b>308.7</b>  | <b>1.02</b> | <b>8</b>           | <b>0.026</b> | <b>19064.9</b>                | <b>63.17</b> | <b>29.1</b>  | <b>0.09</b>  |
| <b>3 VET schools</b>                      | 2014         | 526.9          | 100        | 0                       | 0            | 0                       | 0           | 197.6                  | 37.5         | 0             | 0           | 0                  | 0            | 329.3                         | 62.49        | 0            | 0            |
|   | 2015         | 769.5          | 100        | 0                       | 0            | 0                       | 0           | 184.2                  | 23.93        | 0             | 0           | 0                  | 0            | 585.3                         | 76.06        | 0            | 0            |
|   | 2016         | 1160.1         | 100        | 0                       | 0            | 0                       | 0           | 303.5                  | 26.16        | 0             | 0           | 0                  | 0            | 405.3                         | 34.93        | 32           | 3.01         |
|   | 2017         | 1910.9         | 100        | 0                       | 0            | 304.8                   | 15.95       | 332.3                  | 17.38        | 0             | 0           | 124                | 6.48         | 345.9                         | 18.1         | 511.7        | 26.77        |
|   | <b>total</b> | <b>4367.4</b>  | <b>100</b> | <b>0</b>                | <b>0</b>     | <b>304.8</b>            | <b>6.07</b> | <b>1017.6</b>          | <b>23.29</b> | <b>0</b>      | <b>0</b>    | <b>124</b>         | <b>2.83</b>  | <b>1665.8</b>                 | <b>38.14</b> | <b>543.7</b> | <b>12.44</b> |

**Table 14: Distribution of budget allocations in colleges, VET schools and CEHTA from Țaul, thsd lei, (2014-2017)**

| VET institutions                          | Period       | Maintenance costs | Remuneration    | Scholarships   | Food insurance | Educational process | Others         | Total          |
|---|--------------|-------------------|-----------------|----------------|----------------|---------------------|----------------|----------------|
| <b>Total 7 VET institutions</b>           | 2014         | 7278.9            | 21378           | 6610.4         | 707.8          | 1283.9              | 1291.1         | 38550.1        |
|   | 2015         | 5943.6            | 24161.2         | 6813.6         | 719.7          | 871.2               | 820.9          | 39330.2        |
|   | 2016         | 8679.8            | 27798.3         | 7201.8         | 1028.2         | 3607.5              | 2385.55        | 50701.15       |
|   | 2017         | 9897.3            | 32707.6         | 8046.13        | 1371           | 6003.9              | 2003.07        | 60029          |
|   | <b>Total</b> | <b>31799.6</b>    | <b>106045.1</b> | <b>28671.9</b> | <b>3826.7</b>  | <b>11766.5</b>      | <b>6500.62</b> | <b>188610</b>  |
| <b>3 Colleagues &amp; CEHTA from Țaul</b> | 2014         | 5626.2            | 17339.9         | 5058.8         | 29.8           | 886.2               | 237.7          | 29178.6        |
|   | 2015         | 4326.9            | 19604           | 5071.1         | 76.6           | 378.3               | 200.9          | 29657.8        |
|   | 2016         | 6211.9            | 21715           | 5347.5         | 190.1          | 2136.6              | 977            | 36578.1        |
|   | 2017         | 7429.4            | 22497.7         | 5746.5         | 163.8          | 4740.6              | 948.6          | 41526.6        |
|   | <b>Total</b> | <b>24163.1</b>    | <b>83589</b>    | <b>22074.5</b> | <b>551</b>     | <b>8187.1</b>       | <b>2366.5</b>  | <b>140931</b>  |
| <b>3 VET schools</b>                      | 2014         | 1652.7            | 4038.1          | 1551.6         | 678            | 397.7               | 1053.4         | 9371.5         |
|   | 2015         | 1616.7            | 4557.2          | 1742.5         | 643.1          | 492.9               | 620            | 9672.4         |
|   | 2016         | 2467.9            | 6083.3          | 1854.3         | 838.1          | 1470.9              | 1408.55        | 14123.05       |
|   | 2017         | 2467.9            | 10209.9         | 2299.63        | 1207.2         | 1263.3              | 1054.47        | 18502.4        |
|   | <b>Total</b> | <b>9431.5</b>     | <b>24888.5</b>  | <b>7448.03</b> | <b>3624.8</b>  | <b>3624.8</b>       | <b>4911.12</b> | <b>53928.8</b> |

*Source: Elaborated by authors based on study results*





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