

# **“Public support to higher education in prioritized areas of economy: International practice research and demand estimates”**

## **EXECUTIVE SUMMARY**

Presented by EV Consulting CJSC to CEP Project  
Implementation Unit of the RA Ministry of Education and  
Science

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## 1. Introduction

In order to address the issues in the system of higher education (HE) financing, the RA Government, with its decision #30 dated June 30, 2011 approved the Higher Education Financing (HEF) Strategy. According to the strategy, certain reforms of the HE financial management system are envisaged to be carried out, which entails a transformation of the state-higher education institution relationship system. In addition, the current system of financial aid to students is to be improved through creating and introducing a straightforward mechanism for allocation of state funds. Under the strategy, one of the specific mechanisms of assistance to students is the professional scholarship program. The main goal of the latter is to secure adequate supply of higher education institution graduates matching the potential demand in the priority sectors of the economy. In the mentioned context, EV Consulting has conducted a study ordered by the CEP Project Implementation Unit of the RA Ministry of Education and Science, with the following objectives:

- Identification of priority sectors of the RA economy, based on sectoral priorities stated by the government in its legal documents,
- Estimation of potential demand for graduates of HE institutions in the priority sectors of the economy,
- Study of the international practice of state support in the area of higher education.

The overall aim of the current Report is to assist in the decision-making for designing a special state program for HEF, directed towards meeting future demand for high-quality specialists in the priority sectors of the RA economy.

## 2. State support to higher education in the priority sectors of the economy- global practice

The global practice suggests that most of the countries continue to employ traditional mechanisms of state support of HE that are primarily based on the trends of the past. The need for improvement in overall quality of HE is often predominant here. The precedents, where assistance to the priority sectors of the economy (PSE) is set as a priority for state financing of HE, are still relatively few.

On the other hand, there is a growing trend to link the HE state support with the fundamental priority directions stated in the country's overall economic strategy. The latter particularly applies to a group of newly developing countries in East Asia and Latin America regions. In this context, there is also a trend to match key HE orientation, outcomes and state support with labor market demand in different sectors of the economy (particularly, in the Eastern European countries). Some of the global trends of the state support to HE in PSE are presented next:

- The agenda for state support to HE in PSE is mainly initiated by the state (mostly, in Asian countries). In some countries (particularly, in Eastern Europe) the said agenda for state support is devised jointly with the private sector.
- The global practice suggests that state support to HE in PSE is more stressed and differentiated at graduate and postgraduate levels compared to undergraduate. At the latter level, the increase in level of access to HE is often prioritized. The latter practice of resolving traditional problems through state support to HE is especially relevant in a number of newly developing countries.
- In the countries with differentiated state support to HE in PSE, the latter does not fully substitute traditional mechanisms of state support to HE (common across the sectors).

The international practice shows that state support to HE in primary sectors of the economy is applied mainly in 3 formats listed next:

- Direct financing of students – scholarships and student vouchers<sup>1</sup>
- Direct financing of HE institutions – formula-based differentiated financing<sup>2</sup>
- Direct financing of students and HE institutions (combination of the previous 2 formats)

Some of the features shared by the presented mechanisms are outlined next:

- The share of differentiated state support to HE PSE in the entire state support to HE is insignificant.

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<sup>1</sup> In case of application of the student voucher scheme, the student is provided with his/her HE tuition fee and decides himself/herself which HE institution to apply to.

<sup>2</sup> Financing of the sectors driven by labor need in the economy, country's economic strategy and based on a set of other factors such as the number of students, relative significance of the sector, the importance of the sectoral programs, etc. Formula-based differentiated financing is often applied to targeted funding of the PSE. In this way, the HE institutions can improve their physical infrastructure and the quality of educational content, grant scholarships to students, etc.

- Direct state support to students is a less commonly adopted practice as compared with direct financing of HE institutions.
- Public-private partnership is largely non-existent.

The international practice demonstrates that a straightforward application of clear-cut mechanisms of state support to HE in PSE, generally, is not the case. The selection of mechanisms is mainly country-specific and depends on a number of general and sectoral factors.

Depending on the combination of the mentioned factors, the experience of each country with introduction, application and effectiveness of the mechanisms of state support to HE in the PES is different.

### 3. Demand estimates for labor in the priority sectors of the RA economy

#### 3.1. Approach

The definition of economic sectors prioritized by the RA government and their subsequent selection for the current Report has been based on the study of state policies and program documents. The Report has encompassed conceptual frameworks and programs approved by the RA government over the last ten years that dealt with priority of a sector or it being a primary one in the economy, as well as development goals and strategies. The following sectors were selected:

- Agriculture
- Tourism
- Information and telecommunication technologies
- Manufacturing sectors
  - Exact engineering
  - Pharmaceuticals and biotechnologies
  - Wine- and brandy-making
  - Textile manufacturing
  - Production of food and non-alcoholic beverages
  - Jewellery, diamond and watchmaking sectors

Sectoral demand for labor with HE forecasting approaches vary between knowledge-intensive and relatively low-knowledge-need sectors. This is due to a relatively large share of labor demand with HE in the knowledge-intensive sectors. The development scenarios for forecasting purposes are also different for the sectors. Overall, the new demand for labor with HE in the examined sectors is estimated primarily based on the expected revenue and productivity of the sector (with the exception of the IT services sector where also labor supply forecasts were done).

The forecasting of new demand for labor with HE consists of 2 parts:

1. New demand for labor with HE due to changes in revenue and productivity,
2. Replacement of labor with HE due to factors such as retirement, moving to work to a different sector, emigration or death.

The proportion of production (sector-specialty) labor and not-sector-specific/administrative labor in the total labor with HE of the sectors was also forecasted.

It is assumed that deviations from the estimated developments can be +/- 10%.

## **3.2. Analysis by sectors**

### **Information and telecommunication technologies**

#### ***Software support and IT consulting subsector***

As opposed to the other priority sectors examined in the scope of this Report, in order to estimate the demand for HE labor in IT services sector, labor supply forecasts have also been done. This is due to the fact that sector revenue and future growth are entirely determined by the availability of human resources.

It is assumed that as the Armenian IT industry develops and moves to a higher-value sector, productivity will improve.

2 development scenarios were considered for the sector:

- Maximum growth scenario with a restricting factor (it assumes unlimited demand for the Armenian IT sector services, therefore the availability of qualified labor is regarded as the only restricting factor for the sector growth),
- Moderate growth scenario (assuming sector growth, consistent with IT sector development global trends).

Given the characteristics of the Armenian educational system and the absence of high-quality secondary vocational education in the IT sphere, it has been assumed that in the forecasted period (2012-2022) the share of graduates with HE will remain constant - 95%.

It is expected that the current structure of labor with HE in the sector will slightly change. Particularly, the share of administrative staff will rise from 22% to 25% in 2018-2019 and will remain constant from then on.

#### ***Internet services provision sector***

Country benchmarking indicates that the internet services market in Armenia is quite far from saturation and has a significant potential for expansion. In the forecasting model, the broadband internet subscription in Armenia per 100 residents is assumed to increase from 12.3 in 2011 to 50 in 2022 thus equaling the Estonian figure for 2010. In case of such dynamics, the number of broadband internet subscribers in Armenia will rise to approximately 780,000. The share of administrative staff in labor with HE is currently 26% which is expected to hold in the coming years.

#### ***IT and internet services***

Overall, according to forecasts, IT and internet services sector will annually generate demand for around 1,000-2,000 new specialists with HE in the forecasted period up to 2022. The majority of this demand - around 70%, will be engaged in sector specialties.

Company surveys have found that companies' knowledge and qualification need from students mainly refers to basic education, i.e. physics and maths. As assessed by industry representatives, in the nearest future, it is expected that there will be demand for specialists particularly in gaming and cellular IT technologies.

According to the findings of the same surveys, administrative staff needs to be replenished with management and marketing professionals. At the moment, the demand for project management specialists is particularly high.

### **Exact engineering**

Labor demand forecasting is based on relevant projections made under Armenia's Export-led industrial strategy.

Estimations of further development dynamics are made based on two main scenarios - moderate and aggressive growth. The differentiating factor between them is the expected revenue growth, productivity levels and labor force levels. Under both scenarios, it is assumed that the normal growth rate of the sector will be accompanied by growth driven by infrastructure improvements and investments.

The developments stimulating the sector growth include opening of multi-national company (MNC) branches, attraction of MNC orders, venture projects and investment projects funded by the state financial institutions. In the forecasting model, the productivity level and growth potential are directly determined by the sector development scenario. The assumption is that the presence of MNCs will highly stimulate competition and will increase productivity.

Based on company surveys, the share of not-sector-specific administrative and production (sector specialties) HE staff in the sector, currently, is estimated to be 70% and 30%, within the total staff of the aforementioned two labor groups, respectively. Overall, currently, the engagement of professionals in the sector with HE is estimated to be around 45%. The share of production (sector specialties) staff with HE is assumed to increase up to 40%, conditioned by the developments in the sector. The 70% share of administrative staff with HE is expected to stay constant in the forecast period.

### **Pharmaceutical sector**

Forecasting of new demand for labor with HE in the sector was performed based on the projected revenue and developments in productivity under 2 main development scenarios.

#### *Normal growth*

The sector will continue to develop in line with current trends conditioned by the growing share of local products in the domestic market and increase in exports to the existing and new markets.

#### *Aggressive growth*

The expansion of sales in the domestic market and the increase in the exports will be accompanied by outsourced orders from MNCs to be done in Armenia. This will largely increase the volume of exports from Armenia. Under the aggressive growth scenario, the forecasts concerning exports of MNC orders

are based on the targets under the strategy of Pharmaceutical and biotechnologies sector of RA for 2012-2020.

Depending on the scenario, the productivity of the pharmaceutical industry in Armenia is expected to be different: MNC attraction will enable a faster accumulation of knowledge and competencies in the sector and will result in a more rapid growth in productivity.

Currently, the production (sector specialties) labor in the sector accounts for nearly 65% of the total labor which is assumed to remain in the same proportion in the projected period. At the moment, labor with HE makes up almost half of the total labor. The assumption is that this trend will also continue for 2012-2022.

In the 2012-2022 forecast period, new demand for the production (sector specialties) labor will primarily consist of 3 specialties: chemist-analyst, pharmaceutical chemist and pharmacist. The remaining 1/3 of the new demand for labor with HE is anticipated to be non-sector-specialties/administrative labor - economists, marketing specialists and other economic and managerial specialties.

## **Tourism**

Forecasts of new demand of labor with HE in the sector were made assuming two development scenarios:

- *Aggressive growth scenario* - active state support to the tourism industry, implementation of a comprehensive strategy and an action plan as part of the conceptual framework of the tourism development of RA.
- *Minimum growth scenario* - tourism industry growth trends will be in tune with international trends.

The development of Armenia's tourism sector is expected to be within the range between the forecasts of aggressive and minimum growth scenarios. In that range, the expected performance of the sector hinges on the outcomes of the strategic initiatives directed towards the development of the sector, particularly, active state support policy within the tourism development conceptual framework.

Currently, nearly half of the staff with HE employed in the hotels and tour/travel agencies in Armenia are estimated to possess specialized HE in tourism. Tourism specialties mainly include hospitality management, tour management, sports tourism management and international tourism management. Nearly 20% of the sector workforce with HE are specializing in public catering management, and around 30% have specialized education in the area of general management: accounting, financial, human resources management, etc. This structure of this specialty division is expected to hold in the forecast period.

## **Sectors with low demand for labor with HE**

A group of priority sectors of the RA economy covered in the scope of this Report is characterized by a comparatively small share of demanded labor with HE within the total labor in the sector. Those sectors are listed next:

- Production of food and non-alcoholic beverages<sup>1</sup>
- Wine- and brandy-making
- Textile manufacturing<sup>2</sup>
- Jewellery, diamond and watchmaking sectors
- Agriculture

Those traditional sectors are relatively less knowledge-intensive, and generally, require knowledge and skills not linked to HE. Due to this fact, special approaches were used in order to forecast the demand for labor with HE in the aforementioned sectors for 2012-2022<sup>3</sup>. The latter approach is somewhat different from the corresponding forecasting in the sectors with relatively high demand for labor with HE. The forecasting approach for production of food and non-alcoholic beverages, wine- and brandy-making, textile manufacturing, jewellery, diamond and watchmaking sectors is presented next (forecasting approach for agricultural sector is presented separately in the agriculture sector subsection).

#### *Approach*

- The selection of the examined 4 sectors was primarily based on the Export-led industrial strategy of RA, approved in 2011. This envisages designing and implementing sectoral strategies with the objective of exports promotion, with clearly defined activities and timeline<sup>4</sup> for each of the mentioned sectors.
- Total labor forecasting for each sector was carried out based on projected revenue and productivity in the sector. The latter two have been based on sector characteristics and main influence factors, past performance, current situation and relevant country benchmarking. Forecasts also cover the relevant sectoral targets of the Export-led industrial strategy of RA (developed in 2011-2012) discussed above which have been adjusted according to latest updates.
- It is projected that the planned actions under the sector strategies will serve as pillars for the projected growth in the examined sectors. In addition, sector analyses also have pointed out other key factors, stimulating or restricting the sector growth.
- Deviations in the revenue, productivity and labor forecasts of the sectors can amount to +/- 10%.

### **Textile manufacturing**

The aggregate revenue of the sector in the forecast period is projected to grow annually by 15% on average.

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<sup>1</sup> Processing and canning of fruits and vegetables, production of natural spring and other bottled water.

<sup>2</sup> Production of textile goods, clothes manufacturing, leather and leather products manufacturing.

<sup>3</sup> Tourism is also considered to be a relatively less knowledge-intensive sector, however due to comparatively high demand for labor it has been examined separately in the scope of this Report.

<sup>4</sup> Sectoral strategies are currently in the development stage and are anticipated to be approved by sectoral boards in the second half of 2012.

The average annual productivity growth per employee expressed in purchasing power parity (PPP), is forecasted at 6%.

Currently, production (sector specialties) labor makes up around 70% of the total labor in the sector which is assumed to remain in the same proportion in the forecast period. Currently, labor with HE accounts for around 20% and 60% of the production (sector specialties) and administrative (non-sector-specialties) labor, respectively. It is expected that in 2012-2022 this trend will continue.

It is expected that around 70% of the new demand for labor with HE will be the production (sector-specialties) labor. This labor is made up of two main specialties - fashion designer and engineer of textile goods technologies. The remaining 30% of the new demand for labor with HE is projected to consist of administrative (non-sector-specialties) labor - economists, marketing specialists and other managerial specialties.

### **Jewellery, diamond and watchmaking industries**

It is estimated that the aggregate revenue of the sector in Armenia will grow annually by 15% on average in the projected period. The average annual growth in productivity per employee (expressed in PPP) is forecasted at 4%.

Currently, the production (sector specialties) labor in the sector makes up around 2/3 of the total labor. This proportion is expected to remain the same in the forecasting period.

At the moment, the labor with HE accounts for around 20% and 60% of the production (sector specialties) and non-sector-specialties/administrative labor, respectively. This trend is expected to continue for 2012-2022 as well.

The production (sector specialties) labor is mainly made up of 2 specialties - fashion designer and gems specialist. Not-sector-specialties/administrative labor is expected to consist of quality controllers, economists, marketing specialists and other not-sector-specific and managerial specialties.

### **Canning sector, production of natural juices and bottled water**

It is estimated that the aggregate revenue of the sector in Armenia will grow annually by 10% on average in the projected period.

The average annual growth in productivity per employee (expressed in PPP) is forecasted at about 5% and 4%, for 2012-2015 and 2016-2022, respectively.

Currently, the production (sector-specialties) labor in the sector makes up around 2/3 of the total labor that is expected to remain the same in the forecasting period.

At present, labor with HE makes up around 10% and 25% of production (sector-specialties) and not-sector-specific/administrative labor, respectively. This trend is projected to also continue for 2012-2022.

The production (sector-specialties) labor with HE is primarily made up of 2 specialties - engineers (equipment operation specialists) and food technologists. Not-sector-specific/administrative labor with

HE is projected to consist of economists, marketing specialists and other not-sector-specific and managerial specialties.

### **Wine- and brandy-making**

The actions planned under the strategies of brandy- and wine-making sectors are projected to result in a 8% and 12% average annual growth of the sectors in 2012-2016 and 2016-2022, respectively.

The forecasting model assumes that along with refurbishment of wine-making companies, the productivity level will rise annually in the range of 5%.

Currently, the production (sector specialties) labor of the sector makes up about 80% of the total labor. Taking into account the considerable growth in the exports projected under the Export-led industrial strategy of RA, the need for not-sector-specific/administrative staff in the sector is expected to slightly increase. This refers particularly to general managers, export managers and marketing specialists. Thus, the current 20% share of not-sector-specific/administrative staff is expected to rise to 25% by 2022.

Presently, the labor with HE makes up 20% and 60% of the production (sector specialties) labor and not-sector-specific/administrative labor, respectively. It is assumed, that in 2012-2022 this trend will also continue. Parallel to the sector development and expansion into new markets, the demand for highly qualified managers and specialists in the administrative staff will increase. The most demanded production specialties in the sector are anticipated to be winemakers, engineering technologists, microbiologists, chemists and mechanics.

### **Agriculture**

As per the RA Rural and agricultural sustainable development strategy 2010-2020, the further growth of the sector is expected to be largely moderate. An above average growth rate in the agriculture is anticipated only in hog farming, poultry farming and sheep farming.

The demand for labor will be dependent mainly on 2 actors in the labor market - the state and the private sector. The 2 directions for labor forecasting are the demand for specialists coming from the communities (community agricultural specialists will provide services to the small-scale farming entities in the community) and from large commercial organizations. Demand for specialists with HE will be predominantly formed by the state. This will be conditioned by the development of infrastructure for professional support to agriculture at the community level.

There are forecasted to be 5 primary professions: agronomist, plant protection specialist, veterinarian, cattle-breeder and agribusiness specialist.

#### **Main assumptions**

##### *Demand from community*

The assumption is that demand for community specialists will come from the state or the community. This implies that real demand for specialists will exist only in case the state puts an order and implements a relevant program. In case of an order placed by the state, the sector is expected to have

850 specialists in each of the specialties like agronomy, animal health and agribusiness and around 450 specialists in the specialties of animal farming and plant protection.

*Demand from commercial entities*

The total demand for veterinarians and cattle-breeders from the private sector is estimated at 50-200 and 30-40, respectively. In fish farming the demand for fish breeder-technologists is estimated at about 50-70. Currently, in horticulture sector only a small number of wine-making companies employ an in-house specialist. Such demand is insignificant and does not exceed 1-2% of the estimated demand for community specialists.

Overall, the demand for specialists with higher education in the agriculture is generated by the state. Accordingly, the demand for specialists will be directly determined by a corresponding order placed by the state.

New demand for labor with HE in the priority sectors of the RA economy for the forecast period is summarized next<sup>1</sup>:

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<sup>1</sup> Herein, projected demand for new labor with HE does not include the demand from the agricultural sector. The latter will be directly determined by a corresponding order placed by the state.

<b>Demand for new labor with HE, production (sector specialties), number of people</b>	<b>2012-2016, cumulative</b>		<b>2017-2022, cumulative</b>	
<b>Sector</b>	<b>Moderate</b>	<b>Maximum</b>	<b>Moderate</b>	<b>Maximum</b>
IT and internet services provision	2,500	4,700	3,500	7,900
Exact engineering	600	800	1,300	1,900
Pharmaceutics	260	325	675	1,000
Tourism	100	280	240	380
Production of food and non-alcoholic beverages	70	85	125	150
Wine- and brandy-making	100	120	280	340
Textile manufacturing	440	530	800	1,000
Jewellery, diamond and watchmaking	130	160	280	330
<b>Total</b>	<b>4,200</b>	<b>7,000</b>	<b>7,200</b>	<b>13,000</b>

<b>Demand for new labor with HE, not-sector-specific/administrative, number of people</b>	<b>2012-2016, cumulative</b>		<b>2017-2022, cumulative</b>	
<b>Sector</b>	<b>Moderate</b>	<b>Maximum</b>	<b>Moderate</b>	<b>Maximum</b>
IT and internet services provision	800	1,300	1,300	2,500
Exact engineering	600	1,000	1,300	1,900
Pharmaceutics	140	180	370	550
Tourism	168	435	335	650
Production of food and non-alcoholic beverages	85	100	145	180
Wine- and brandy-making	145	175	340	420
Textile manufacturing	560	670	1,100	1,300
Jewellery, diamond and watchmaking	200	240	410	500
<b>Total</b>	<b>2,700</b>	<b>4,100</b>	<b>5,300</b>	<b>8,000</b>

<b>New demand for labor with HE, number of people</b>	<b>2012-2016, cumulative</b>	<b>2017-2022, cumulative</b>
<b>Total</b>	<b>6,900-11,100</b>	<b>12,500-21,000</b>
Sector specialties	4,200-7,000	7,200-13,000
Other specialties	2,700-4,100	5,300-8,000

**Note.** In the forecasting of the new demand for labor with HE, for some sectors specific development scenarios are applied. For the rest of the sectors +/- 10% deviation from the projected developments is possible.

## **4. Challenges of supply and demand of labor with HE**

### *Decline in the number of graduates with HE*

Up to 2024 a continuous decline in the number of graduates of HE institutions is projected. This is conditioned by the reduction in the number of births in the 1990s and early 2000s.

### *Gaps in primary and secondary vocational education system*

Currently, practically all the sectors in Armenia experience the mentioned gap in the primary and secondary vocational education system. This needs filling in order to optimize the provision of labor for the sectors and effectively address sectoral needs.

### *Professional knowledge and skills of the graduates*

Almost all the sectors require reform of HE system components, such as the HE content quality and infrastructure, as well as the cooperation between the sector companies and HE institutions. The need to boost the motivation of HE students to study and enter the field of employment is also an issue.

### **Estimation and forecasting of demand for labor with HE**

#### *Complexity of forecasting the demand for specialists with HE*

The private sector companies in Armenia predominantly have short-term planning horizons with only few long-term investment projects. Companies lack a clear understanding of demand for specialists in the long run.

#### *Need for comprehensive statistical information*

At present, a comprehensive review of the labor market is imperative. There is a need of labor statistics of the sector (at the beginning, at least double digit level; later - 4 digit level) based on age and gender, educational level and specialties. This will allow a more in-depth analysis of the labor movements and existing gaps.

#### *Not-sector-specific specialties and managerial specialties of HE*

In some sectors, not-sector-specific/administrative labor (particularly, economists and marketing specialists) will have an instrumental role in the overall sector performance. In particular, for sectors with a large share (potential) of exports (textile manufacturing, jewellery and diamond sectors) effective product promotion is a critical factor.

## 5. Possible directions for state support mechanisms to higher education in priority sectors

### 5.1. Possible formats of state support in Armenia

Financing format	Mechanisms	Description
Direct student financing	Professional scholarship	<ul style="list-style-type: none"> <li>• Merit/need-based</li> <li>• For specialty study in Armenia or abroad</li> <li>• Conditional/unconditional– in some cases the granting of the scholarship can be contingent on certain conditions</li> <li>• Can cover the full/partial tuition fee amount</li> </ul>
Direct financing of HE institutions	Formula-based differentiated financing of HE sectors	<ul style="list-style-type: none"> <li>• The sector financing will be driven by the need for demanded labor in the economy, Armenia’s economic strategy, and will be based on a whole group of factors, such as the number of students, the comparative significance of the sector, the importance of sectoral programs, etc.</li> <li>• Financing will target the physical infrastructure and improvement in educational content quality, extension of R&amp;D work in the HE institutions, as well as will enable them to provide professional scholarships and financial aid to students.</li> </ul>
Direct financing of students and HE institutions	<ul style="list-style-type: none"> <li>• Combination of mechanisms under the previous 2 formats</li> <li>• HE sector co-funding by public and private sectors</li> </ul>	<ul style="list-style-type: none"> <li>• Combination of professional scholarships and equation-based differentiated financing</li> <li>• Co-financing through public-private partnership in a certain proportion</li> </ul>

### 5.2. Mechanism selection criteria

Criteria	Description
Extent of available targeted resources for state support	<ul style="list-style-type: none"> <li>• Depending on the extent of available targeted resources, possible mechanisms of state support can exhibit different efficiency in Armenia.</li> </ul>
HE primary target in the sector	<ul style="list-style-type: none"> <li>• Increase in student engagement level in HE in PSE</li> <li>• Improvement in quality of education</li> </ul>
Sectoral HE characteristics	<ul style="list-style-type: none"> <li>• Weight of R&amp;D and physical infrastructure in the sector and their needs.</li> <li>• Opportunities for synergy and cooperation between HE institutions of the sector and mutual complementing of existing strategic projects of HE institutions.</li> </ul>
Opportunities for private sector involvement	<ul style="list-style-type: none"> <li>• Given the appropriate mechanism, opportunities for maximum involvement of the private sector.</li> </ul>

### 5.3. Specifics of application

#### Extent of available targeted resources for state support

- Under direct student financing, there is a likely to be smaller need for financial resources.

#### HE primary target in the sector

- Direct student financing directly contributes to ensuring an adequate number of students in the target sectors, while in case of direct financing of HE institutions the primary objective is the improvement in quality of education.

#### HE characteristics of the sector

- Flexibility to adapt to changes in the market: a more efficient option is the generic state support at undergraduate level and more specialized one at graduate level.
- HE direct financing mechanism is more efficient when applied to specialties in natural and exact sciences.

#### Opportunities for private sector involvement

- Application of public-private cofinancing mechanisms at graduate level.

Taking into account the quality of education, as well as the need to ensure an adequate number of students in the priority sectors in Armenia, the application of a **combined model** of financing mechanisms for students and HE institutions is viewed as relatively effective.

### 5.4. Decision-making process

#### Continuous synchronization of the state economic development strategy and HE financing

This implies an active involvement of HE policy-makers and HE policy-implementers in design and implementation processes of sectoral development strategies. Currently, the priority sectors of the economy already have public-private partnership platforms - strategic sectoral boards in place which enable the involvement of all stakeholders.

#### Informed decision-making

There is a need for regular comprehensive analytical review of labor markets in the priority sectors, based on sectoral specifics and utilizing an extensive toolset (surveys of employers, employees, HE institutions of the sector, public and private sector stakeholders; official statistics, round table discussions among the stakeholders of the sector). In the future, an option for Armenia can also be the comprehensive application of labor market analytical review tools for the entire labor market in the economy. The findings can be used to determine priority sectors.

#### Development of efficient mechanisms for private sector involvement

The principal objective of the financial support to HE in the primary sectors of the economy is to satisfy the need for adequate labor, driven by the companies in the sector. In this respect, one of the

fundamental principles should be the maximum involvement of the private sector at all stages of the process, starting from the development of mechanisms and determination of priorities to their implementation.

In order to attract investments from the private sector, economic incentives for the companies also need to be set up, specifically, linking the investment outcome with the interests of the company.

**Continued state support of the priority sectors**

The share of differentiated state support to HE in PSE industries, within the entire support to HE needs to gradually extend.