

# Integrated Biodiversity Management, South Caucasus

## GREEN JOB MARKET ASSESSMENT



EV Consulting CJSC

Report

## Acknowledgments

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This Report has been produced with the contribution of the Alumni and Career Center of Yerevan State University (YSU) of Armenia, as well as with participation of the Faculty of Biology of YSU.

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## Executive summary

The current research focuses on the sector of **biology** and the so called “**green job**” market. Our research had the overall aim to help the Faculty of Biology of Yerevan State University (YSU) to improve the curriculum and create a better communication with the “green job” market. The assessment can also contribute to the formulation of national policies that aim to support the creation of green jobs.

The linkage of job market and the education system is of high importance for any of the sectors of the economy. Put in other words, it is the journey from education to employment, which in case of being effectively built – helps to improve the overall economic performance of the country.

In case the journey is not effective and significant gaps exist between the education system and the employment providers, then the consequence is a paradox:

**High levels of youth unemployment from one side and a shortage of people with critical job skills, from the other side.**

The green job policy should have the overarching goal of creating and fostering as many as possible green jobs in the economy. The policy initiatives towards that can be rooted in the following key areas: environmental policy, energy policy, green government initiatives and overall labor policy in the country.

The lack of distinct policies in the sector calls for action for immediate development and execution of such initiatives, with the aim of developing the green sector of the economy.

EV Consulting interviewed 55 companies-employers, directly or indirectly working in the field of “green” activities in Armenia. This were companies and organizations from different fields (e.g. biodiversity, environmental and ecological studies, food processing, mining, etc.).

### **Required qualifications for the “green” specialists in Armenia**

The four most popular answers to the question asking about the required qualifications that “green” specialists should have, were: (i) education, (ii) work experience, (iii) motivation and (iv) soft skills. Too many of the young people surveyed thought that what they learn in the university only partially corresponds or does not correspond at all – to the real-life requirements of employers in Armenia. Almost 80% of employers say that it is extremely difficult or difficult, but yet possible, to hire skilled specialists in the field while 84% of surveyed alumni finds it difficult or extremely difficult to get a job after graduating from YSU.

### **Recruitment channels**

The survey results conducted among students and alumni indicate that graduates mainly seek job announcements through social networks (only 7% of answers selected by employers mentioned social networks as primary method of recruitment). This can indicate some mismatch among the job seeking and recruitment processes, as methods of reflecting demand and supply are different.

The majority of the respondents indicated that they recruit “green” field specialists from either Yerevan State University or from Armenian State Agrarian University (these two universities together accounted more than 50% of all the answers).

The companies which have had experience of work with foreign specialists from “green” field in the vast majority of cases indicate that there are differences (foreign specialists have advantages) between foreign and local specialists. In the majority of the answers this are differences in a set of skills (mainly soft skills), which are considered important qualifications for the employers.

### **Internship and volunteering programs conducted in the “green” job sector of Armenia**

The frequency of conducting internships in the “green” companies in Armenia indicate that there is lack of the culture and coordination in the job market and among the participants for development and implementation of well-structured and targeted internship programs, beneficial for both the employers and potential employees.

Half of the interviewed companies do not have agreements with educational institutions regarding conducting internship programs. This is another factor indicating weak cooperation of the two sectors and poor participation of one another in the conducted activities (thus students rarely participate in the work activities of the job market participants, while the companies almost never engage in the educational activities, like assisting in curricula preparation, public speaking, conducting lectures, etc.).

Dispersion of the answers on question regarding interest in conducting medium-to-long term internships indicates some unwillingness of the “green” companies to conduct internships. This can be a result of previously conducted non-effective and time-consuming programs, where students were barely engaged in the working process and had poor motivation (many respondents mentioned situations when the students did not show any interest in participating in the obligatory internships).

The vast majority of the respondents are ready to conduct volunteering programs. The main interests are in organizing tree-planting and waste management and recycling activities.

Our research demonstrated there is a fundamental mismatch between the expectations and requirements of the employers and the skills developed by the education sector in biology segment of Armenia (not very different from other sectors in the country).

We draw a set of recommendations based on our findings in order to facilitate the discussion and serve as a platform for further actions.

1. Initiate strong collaboration links between education and employers
2. Collect high quality database
3. Improving the curricula into a more hands on robust practical knowledge set and facilitating entrepreneurial activities

4. The role of the government and sector policy can be broader – in order to facilitate the development of overall “green” segment

As a whole, today’s education-to-employment system in Armenia lacks synergy and interconnection, required to deliver the desired results of well-functioning economy and sustainable society. “Green” sector is not an exception. Established poor connections between the job market and educational system cannot provide stable and effective outcomes and outer impulses are required for gaining growth momentum. Educational institutions, job market participants, the Government, or the 3 sectors together can catalyze development of the cooperation, by providing new programs and initiatives and establishing new policies.

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## List of Abbreviations

ANAU	Armenian National Agrarian University
ASPU	Armenian State Pedagogical University
CSR	Corporate Social Responsibility
CV	Curriculum Vitae
Haybusak	Yerevan Haybusak University
GIS	Geographic Information Systems
RA	Republic of Armenia
YSU	Yerevan State University



## 1. Introduction

The linkage of job market and the education system is of high importance for any of the sectors of the economy. Put in other words, it is the journey from education to employment, which in case of being effectively built – helps to improve the overall economic performance of the country.

In case the journey is not effective and significant gaps exist between the education system and the employment providers, then the consequence is a paradox:

**High levels of youth unemployment from one side and a shortage of people with critical job skills, from the other side.**

This seems to be the case for Armenia.

The current research focuses on the sector of *biology* or the so called “*green job*” market. Our research had the overall aim to help the Faculty of Biology of Yerevan State University (YSU) to improve the curriculum and create a better communication with the “green job” market. The assessment can also contribute to the formulation of national policies that aim to support the creation of green jobs.

For this purpose, we have designed and implemented a survey of the current employers of the sector, aiming to assess the following main points:

- how many and what kind of green jobs exist in different “green” sectors in the country,
- the main qualifications and skills required by different sectors of the “green job” market,
- internship opportunities present in the “green job” market,
- potential within each sector for new employment opportunities, etc.

Based on the results of the current study and the previously conducted **Baseline study and needs assessment on curricula change at YSU**<sup>1</sup> major spots of concern were identified in the relations between job market and newly graduated specialists.

For deeper exploration of the existing gaps and opportunities linking potential employees with the market, Career Center of YSU conducted its independent survey among biology faculty graduates and alumni, the results and analysis of which are incorporated in the current Report.

The link between the higher education and employment is rather complicated and it is natural that gaps exist in between. Clearly, employers need to work with education providers so that students learn the skills they need to succeed at work, and the policy makers also have a crucial role to play.

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<sup>1</sup> Anush Shahverdyan, “Baseline Study and Needs Assessment on Curricula Change at Yerevan State University”, Yerevan, Armenia, 2017

This report aims to be the start in beginning to fill in the knowledge gap and to provide a platform for discussion and further development.

## 1.1 Survey methodology

### Main objective and general notes

In order to assess the driving forces behind the “green” job market in Armenia, EV Consulting has conducted a survey, followed by number of interviews and sharing of insights with the sector representatives.

Apart from the survey implementation, EV Consulting has also conducted field research through arranging several meetings with independent experts from the “green” field in Armenia and telephone calls with recent graduates of biology faculty of YSU (we have interviewed both alumni who have found a job in their vocational fields as well as people who graduated in the last years but still did not manage to find a job relating to their specialization).

### Sample size and distribution

For the purpose of the study, the definition of UNEP can be used. “It defines “green” jobs as “work in agricultural, manufacturing, research and development (R&D), administrative, and service activities that contribute substantially to preserving or restoring environmental quality. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high-efficiency strategies; de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution” (FAO 2017).

### Our study mainly focuses on the sector of biodiversity.

The green job market as broadly defined in the above formulation is a wide category, that can include specialists from different sectors. For the purpose of the current study, we categorize the green job market in two levels (see image 1):

1. Direct sector of green jobs (includes but is not limited to environment, nature protection, management of biodiversity and ecosystem services, renewable energy, etc.)
2. Indirect sectors (the other sectors of the economy, that as a consequence of their negative environmental impact, require green job positions in order to eliminate the impact). The list of organizations and sectors that require environmental monitoring and protection efforts is defined by the **Law on Environmental Impact Expert Assessment**.

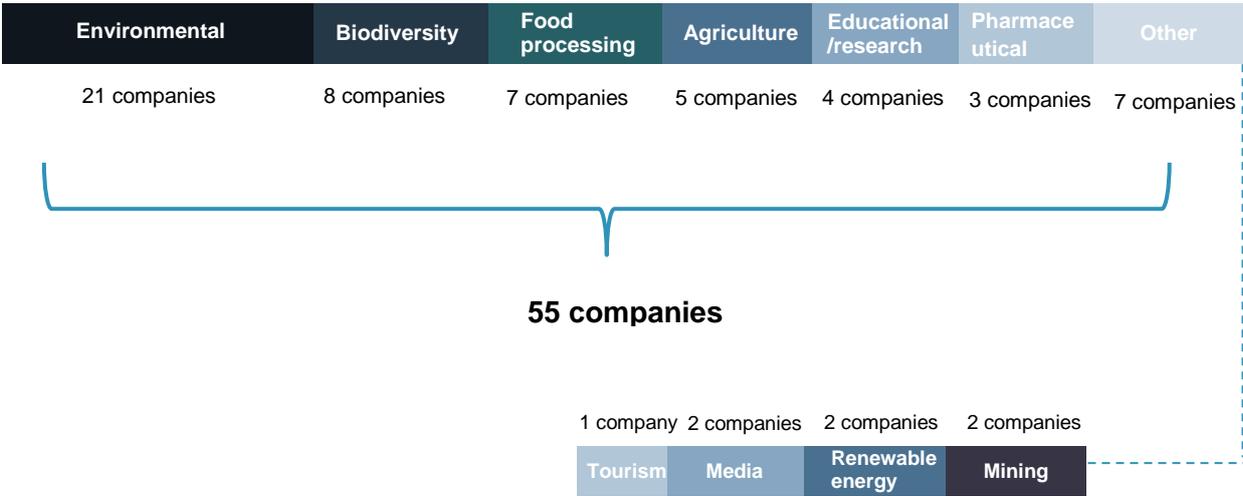
These two blocks of the green job market require specialists of various fields and are of wider nature than the current study aims to accomplish (**mainly, the assessment of YSU Biology department performance and perspectives**).

Our study will aim to assess the section of the wide “green job” market that will have a direct link to the YSU department of biology. As a result, the study will also identify the gap in the

current education system in Armenia, that is necessary to fill in, in order to purport the development of the wide “green job” market in Armenia. I.e. the study will identify the necessary specialists for the subsectors of the “green job” (e.g. in renewable energy) that current educational system of Armenia fails to prepare.

EV Consulting interviewed 55 companies-employers, directly or indirectly working in the field of “green” activities in Armenia (please see the full list of companies in [Appendix 1](#)). This were companies and organizations from different fields (e.g. biodiversity, environmental and ecological studies, food processing, mining, etc.). The 7 broad groups of sectors are represented below:

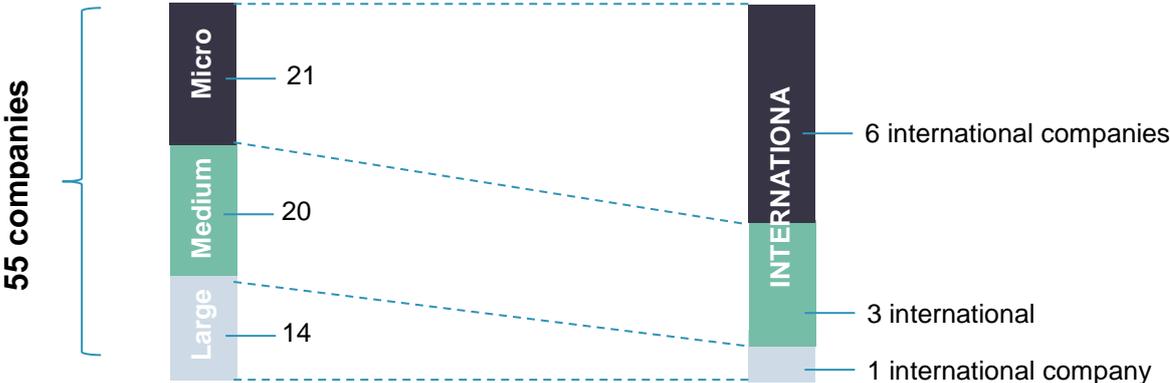
**Figure 1: Distribution of surveyed companies by broad sectors of their operations**



EV Consulting has conducted surveys with 10 international (branches and representatives of foreign, international companies in Armenia) and 45 local companies. The companies can be distributed into 3 main categories based on their size:

- Micro (up to 15 employees)
- Medium size (16-100 employees)
- Large (more than 100 employees)

**Figure 2: Distribution of surveyed companies by their size and type**



The majority of the international companies in the sample are of micro size (with up to 15 employees) and represent sectors like environmental and biodiversity protection and agriculture, actively engaged in funding and implementation of related field projects in Armenia.

The large companies mainly represent food processing sector (4 companies), mining (2 companies), renewable energy (2 companies) and educational/research institutions (2 companies).

### **Questionnaire design**

The questionnaire designed for the “green” sector companies comprised 4 main sections about the major aspects of company operations, recruitment process, required qualifications, etc. Those sections are:

- General information about the company/organization
- Recruitment process
- Required qualifications
- Internships and volunteering work

The questionnaire included 16 questions, mainly focusing on the following:

- The number of available labor resources in the companies,
- required skills and capabilities for the “green” field specialists,
- means of recruitment,
- identification of interest in conducting internships and volunteering programs, etc.

Please see the full questionnaire in [Appendix 2](#).

The questionnaire included both multiple choice and open-ended questions, as well as the mix of those two. We intentionally added spaces for open-ended answers in the multiple-choice questions under field “other answers”, in order to get thorough insights and understanding of the issues.

For more comprehensive analysis of the demand and supply relationship existing in the “green” market, we decided to conduct an additional survey directed to the supply side assessment. Survey conducted by Career Center of YSU included 8 questions regarding number of alumni applied for job and identification of the proportion of the respondents which eventually entered the job, main skills and qualifications that employers are interested in, assessment of the students’ knowledge relevance to the specific job requirements, etc. (please see the full questionnaire in [Appendix 3](#)). The final sample of the respondents included 65 current students as well as alumni, majoring different fields and areas of biology faculty.

## **Implementation**

Two different questionnaires (surveys) were developed for main target groups: companies representing “green” sector in Armenia and students and alumni majoring biology. Those surveys were conducted by the following methods:

- face to face (or via phone),
- online questionnaires

The major portion of the targeted companies was interviewed by face to face means (41 companies), which contributed to better understanding of “green” environment among the market participants.

We conducted interviews mainly with HR managers and line managers of the specific operational departments (e.g. laboratory or production managers, etc.) of the companies. In case of micro companies, where HR department was commonly missing, the interviews were conducted with relevant employees engaged in the HR functions of the company.

Data collection for the survey took place from 5 March 2018 to 19 March 2018. Depending on the situation of the respondent, the time taken to interview and complete the questionnaire ranged between 10 to 60 minutes.

## Findings from surveys

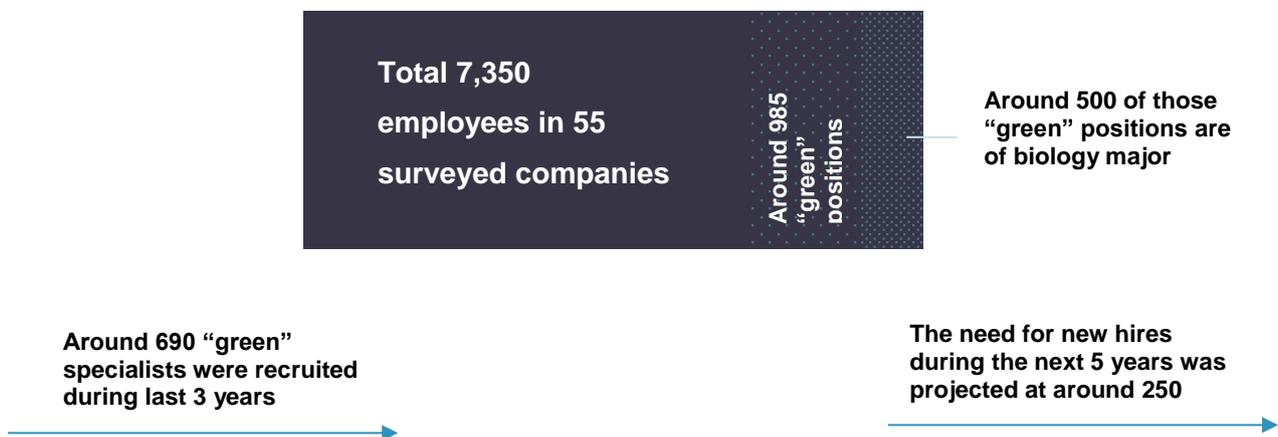
While many graduates cannot find a desired job, many employers have difficulties in finding the right people to recruit. We questioned both to understand the underlying reason.

### Quantifying the demand for skilled specialists

Across the surveyed 55 companies nearly all of them had plans to recruit more specialists in the near future.

The total number of “green” positions in the selected companies was about 1,000, comprising around 13.5% of total job positions in the surveyed companies. The majority of the “green” positions were occupied by biology field specialists.

Figure 3: “Green job” market capacity in Armenia



Throughout the last 3 years the surveyed companies recruited around 690 specialists representing “green” field, whereas in the upcoming 5 years they projected 250 “green” specialists to be required. Important to note, that some of the companies had hard time to project the future needs, which is however, a consequence of the immature of budgeting/planning corporate practice in Armenia, rather than a sign of low need in specialists. In their answers respondents frequently mentioned need in specialists such as:

- ecologists (37 specialists required),
- general “green” specialists (32 specialists required),
- food security and technology specialists (24 specialists required),
- biologists (19 specialists required), etc.

Less frequently respondents indicated possible need in professionals such as geographic information systems (GIS) and forestry specialists, biochemists and chemists, agronomists, etc. Others were able to provide general number of “green” field specialists required for the future projects, but could not specialize which specific professionals would be required for this or that project.

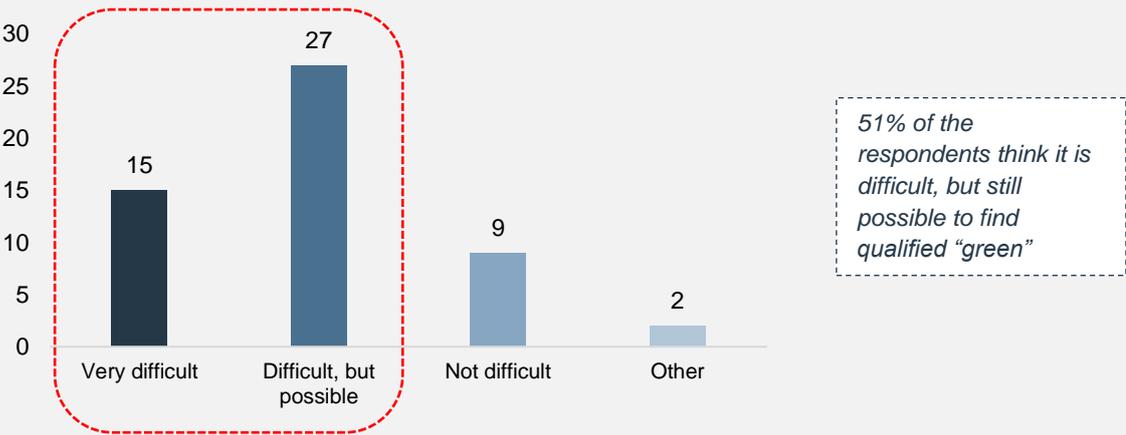
Thus, only the sampled companies require around 50 specialists per annum in order to grow organically. Without going into the deep statistical analysis (since the aim of the Report was not providing quantification of skill gap but rather more quality view), it is clear that the economy-wide demand for “green” specialists will not be lower than the around 100 graduates “produced” by the biology faculty of YSU.

**Almost 80% of employers say that it is extremely difficult or difficult, but yet possible, to hire skilled specialists in the field.**

We asked the question about being able to find the *right* candidates, with required qualifications and skills, since finding an average or below the requirements specialist does not represent a major problem.

It is notable, that the local companies find it relatively more easy to recruit qualified new hires, which can be a result of less strict entry requirements compared to international companies.

Figure 4: Difficulty of finding qualified “green” field specialists in Armenia



Sample size: 53  
Source: EV Consulting “green” job market survey, 2018

**At the same time, 84% of surveyed alumni finds it difficult or extremely difficult to get a job after graduating from YSU.**

**And only half of the respondents (53%) were able to find a job directly linked to their profession.**

**Almost 75% of employers say that lack of skills is the main reason for difficulties in hiring for entry level green jobs.**

The majority of employers have stated that lack of *practical* skills is the issue, i.e. students would come in with practically no understanding of what to do in the workplace and at their

actual jobs. This outcome was more or less expected, since the need for practical, hands-on approach to teaching has been in the center of attention for a while now.

However, the fact that 16% of the respondents mentioned that *lack of theoretical knowledge* is the main impediment in getting new recruits – is disturbing.

Figure 5: Difficulties arising during the hire of “green” specialists



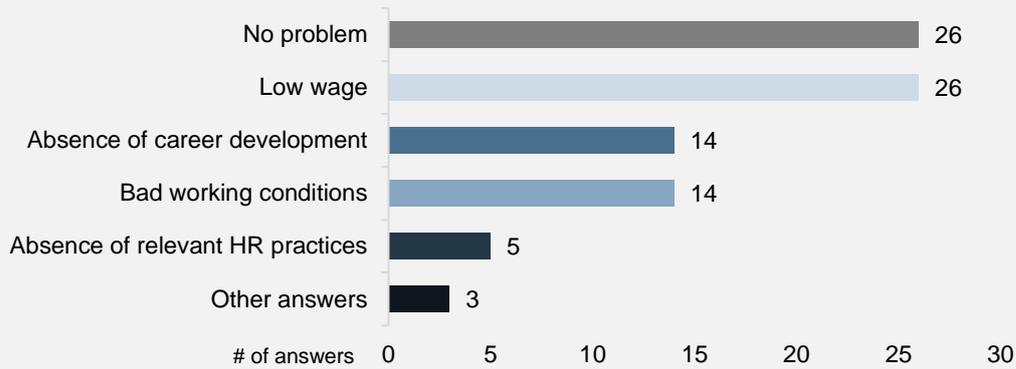
Multiple choice mode, several answers were allowed  
Source: EV Consulting “green” job market survey, 2018

Major part of the surveyed employers has mentioned the knowledge of English as an utmost important requirement for new entries. And the lack of it has been one of the major difficulties for hiring new skilled employees. Naturally, the surveyed international companies paid greater attention to the English knowledge.

Low motivation levels among recruitment candidates is yet another popular reason mentioned by the employers as a difficulty in hiring. In order to understand the student perspective on this we asked a question regarding the main problems they face or they think they will face during their employment.

**The problem of low wages is an inherent problem for Armenia as a whole and not only “green” sector. During the interviews with the students and graduates they indicated that salaries are of medium-to-high level in the private companies, while public sector pays way lower.**

**Figure 6: The main problems arising during the work in “green” field**



Multiple choice mode, several answers were allowed

Source: Career Center of YSU “green” job market survey, 2018

The student perspective on the requirements for getting a job (both the survey among them and the interviews) have confirmed that their view is identical to the view of employers, i.e. practical experience is the first requirement that the employers impose.

#### SURVEY CONDUCTED AMONG THE YSU STUDENTS AND ALUMNI

**Figure 7: Required qualifications of employers when recruiting “green” field specialists**



Multiple choice mode, several answers were allowed

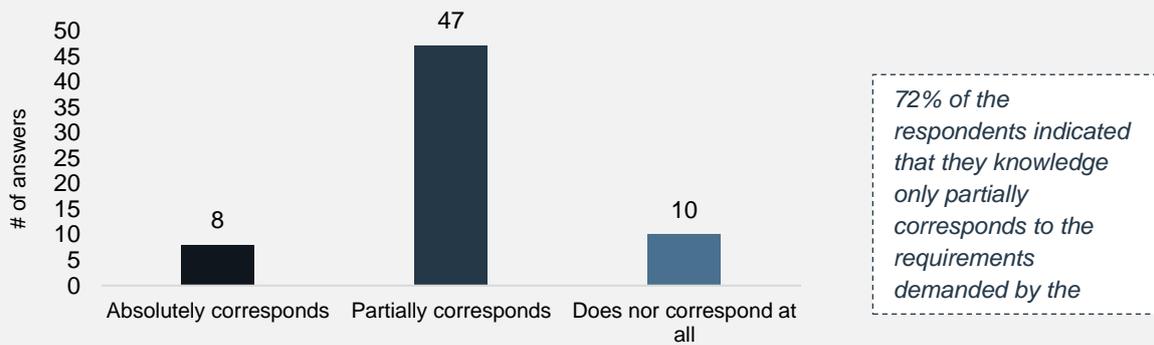
Source: Career Center of YSU “green” job market survey, 2018

Other popular answers included scientific and research skills and educational background. Under “other” section respondents mainly indicated “knowledge of English language”, once again stressing importance of this qualification in a current “green job” market in Armenia.

**Too many of the young people surveyed thought that what they learn in the university only partially corresponds or does not correspond at all – to the real life requirements of employers.**

The fact that the majority of the students and alumni answered that their gained knowledge just partially corresponds to the requirements of the job market once again proves existing mismatch between gained knowledge during the bachelor and master years with the current requirements of skills and competences in the “green job” market in Armenia.

**Figure 8: Students’ knowledge correspondence to the employers’ requirements**



Sample size: 65

Source: Career Center of YSU “green” job market survey, 2018

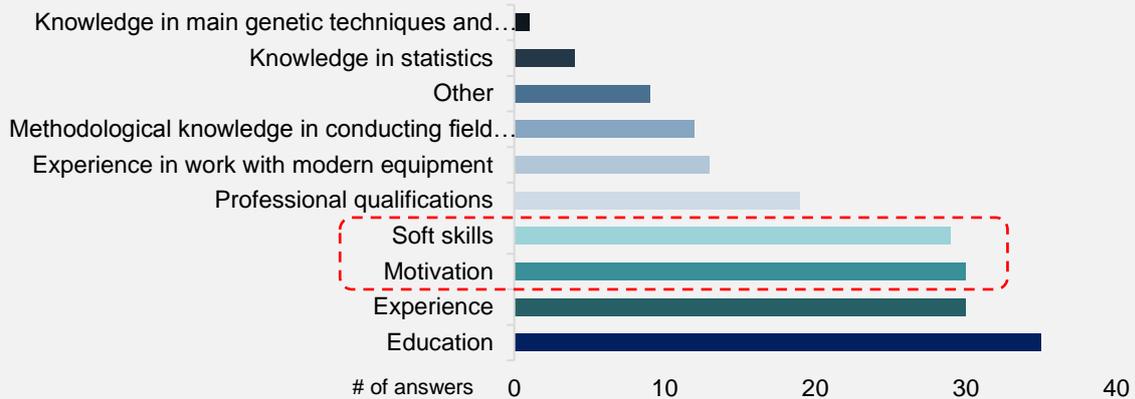
**The four most popular answers to the question asking about the required qualifications that “green” specialists should have, were: (i) education, (ii) work experience, (iii) motivation and (iv) soft skills.**

Apart the traditional requirements, such as experience and education, the respondents frequently selected availability of soft skills and motivation as important qualifications required for “green” field specialists (even though, this is a highly technical field with bulk of vocational knowledge and experience in conducting experiments and analysis required).

Soft skills<sup>2</sup> are a combination of people skills, social skills, communication skills, character traits, attitudes, career attributes, social intelligence and emotional intelligence quotients among others that enable people to navigate their environment, work well with others, perform well, and achieve their goals with complementing hard skills.

<sup>2</sup> Workforce connections: Key soft skills that foster youth workforce success, Child Trends, June 2015

**Figure 9: Required qualifications in the selection process of “green” specialists**



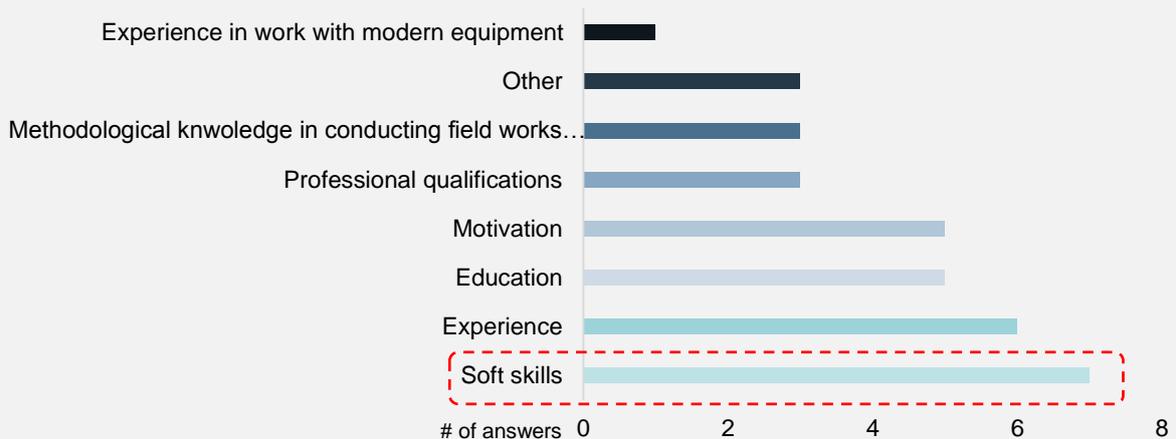
Multiple choice mode, several answers were allowed

Source: EV Consulting “green” job market survey, 2018

This tendency especially magnifies when observing responses given by the international companies. Thus 7 out of 10 international companies surveyed selected “soft skills” as one of the major qualification for the “green” specialists. It is a common practice among international companies to present reports in forms of Power Point presentations, interact with foreign colleagues and partners, actively use international practices in local communities, etc. where existence of soft skills and knowledge of English are becoming more crucial.

Overall the respondents (among all the companies) also frequently asked to add “knowledge of English” as a required qualification (not mentioned in the offered list of answers).

**Figure 10: Distribution of required qualifications among the international companies**



Multiple choice mode, several answers were

Source: EV Consulting “green” job market survey, 2018

Education and soft skills are 2 variables which force the categories of groups of responses to vary the most. Thus, when considering education as a major qualification required for the “green” specialist in Armenia, the responses suggest that large companies value it much more than the micro ones. While considering soft skills, the obvious incline can be seen in the responses of international companies, towards valuing this factor more than the others.

**Table 1: Distribution of required qualifications among the companies, based on size and type**

<i>Qualification/Company</i>	<i>Internationa l</i>	<i>Local</i>	<i>Micro</i>	<i>Medium</i>	<i>Large</i>
<i>Education</i>	15%	19%	13%	20%	27%
<i>Experience</i>	18%	16%	14%	16%	20%
<i>Professional qualifications</i>	9%	11%	10%	11%	11%
<i>Motivation</i>	15%	17%	19%	14%	16%
<i>Soft skills</i>	21%	15%	18%	14%	16%
<i>Knowledge in statistics</i>	0%	3%	3%	4%	0%
<i>Experience in work with modern equipment</i>	3%	8%	8%	9%	4%
<i>Knowledge in main genetics techniques and methods</i>	0%	1%	1%	0%	0%
<i>Methodological knowledge in conducting field works and research</i>	9%	6%	6%	7%	7%
<i>Other</i>	9%	3%	6%	4%	0%

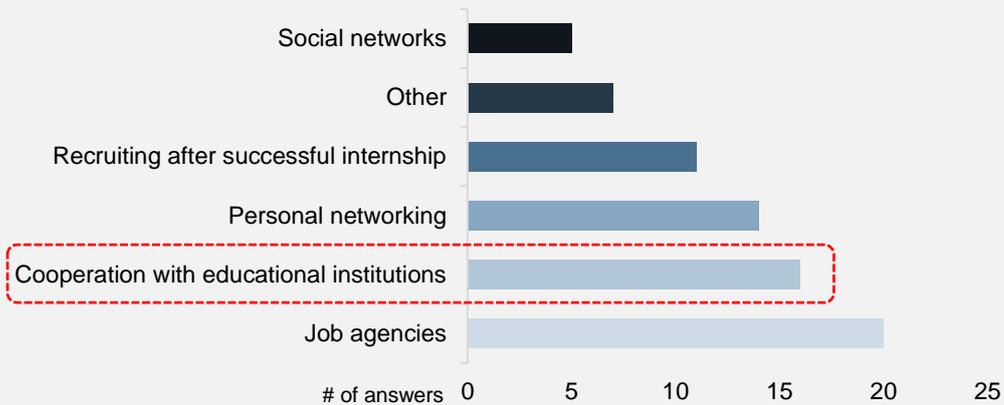
### **Recruitment channels**

Our obvious next question referred to the preferred channels of recruitment. And as expected, the employers mainly use traditional channels, such as job agencies. It gives some hope that some of the respondents do seek connection to the education providers and see this as a source of better recruitment.

The “green” companies in Armenia prefer job agencies, cooperation with specific educational institutions and personal networking. Job agencies as a traditional channel of recruitment persist their leading positions. Popularity of the answer “cooperation with educational institutions” indicates some activity among educational and job sectors and creates solid background for future work to be done.

**The survey results conducted among students and alumni indicate that graduates mainly seek job announcements through social networks (only 7% of answers selected by employers mentioned social networks as primary method of recruitment). This can indicate some mismatch among the job seeking and recruitment processes, as methods of reflecting demand and supply are different.**

**Figure 11: Methods of recruitment of “green” specialists in Armenia**



Multiple choice mode, several answers were allowed  
 Source: EV Consulting “green” job market survey, 2018

The survey shows that there are certain pockets of excellence in cooperation model with YSU, i.e. some of the companies surveyed do initiate links and connect to the educational center with the overall aim of getting skilled hires.

The majority of the respondents indicated that they recruit “green” field specialists from either Yerevan State University or from Armenian State Agrarian University (these two universities together accounted more than 50% of all the answers).

YSU remains the most frequently referred University providing “green” specialists to the market. This is also a result of the fact that “green” field specialists in Armenia mainly major biology faculty and no other key institution or faculty exists which can provide the supply of those specialists.

**Figure 12: Main universities from where the employers recruit “green” job specialists**



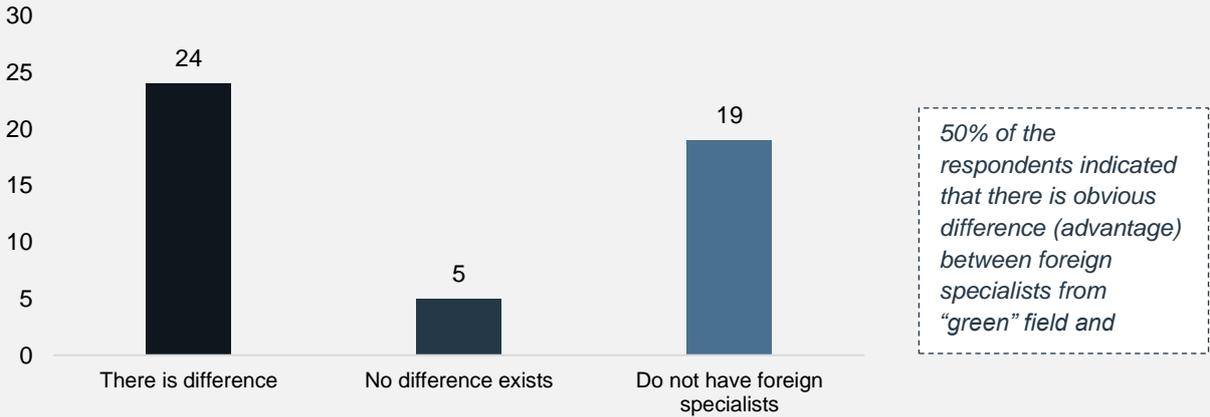
Multiple choice mode, several answers were allowed  
 Source: EV Consulting “green” job market survey, 2018

Other popular answers included foreign universities (outside Armenia), American University of Armenia and Russian-Armenian University. Under section “other possible answers” respondents mainly indicated options such as “there is no difference among the universities” and “National Science Academy of Armenia”.

Almost half of the large companies interviewed mentioned that there is no difference among the specified universities. In fact, this can be a result of difficulty in tracking and remembering all the alma maters of the company’s employees (in case of large companies, where the average number of employees is around 430 people).

**The companies which have had experience of work with foreign specialists from “green” field in the vast majority of cases indicate that there are differences (foreign specialists have advantages) between foreign and local specialists. In the majority of answers this are differences in a set of skills (mainly soft skills), which are considered important qualifications for the employers.**

**Figure 13: Advantages of foreign “green” specialists over Armenian ones**

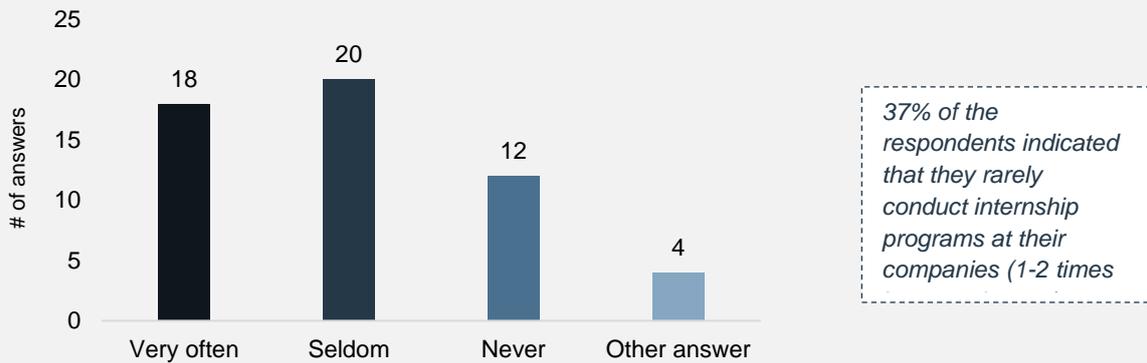


Sample size: 48  
 Source: EV Consulting “green” job market survey, 2018

The most popular differences which the respondents pointed out were soft skills (e.g. preparation of reports, articles, their presentation, networking skills, self-confidence, communication, etc.), analytical skills and practical knowledge.

**The frequency of conducting internships in the “green” companies in Armenia indicate that there is lack of the culture and coordination in the job market and among the participants for development and implementation of well-structured and targeted internship programs, beneficial for both the employers and potential employees.**

**Figure 14: Frequency of conducting internship programs for “green” specialists**

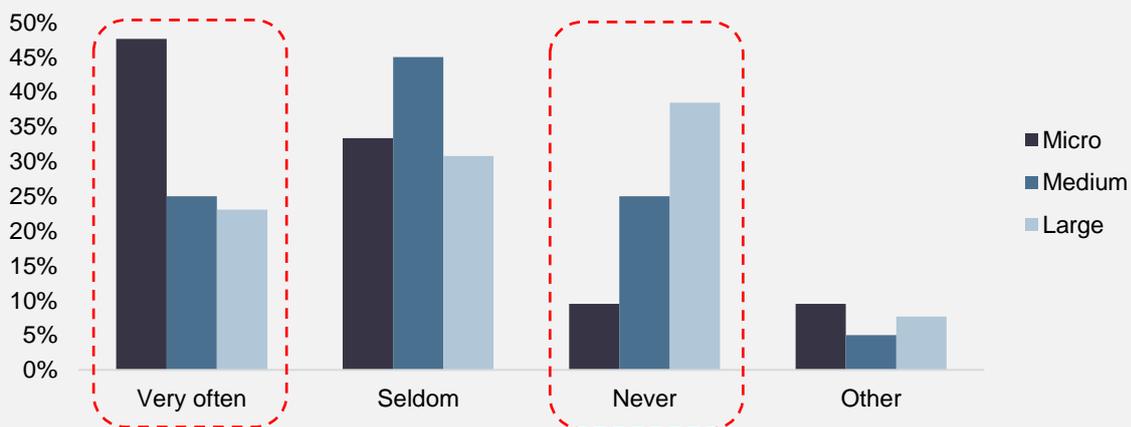


Sample size: 54

Source: EV Consulting “green” job market survey, 2018

There is a correlation between frequency of the conducted internships and size of the company. Thus micro companies have incline towards arranging internships more often than medium and large size companies. Moreover, representatives of large companies gave the highest number of answers (in percentage terms) indicating absence of internships programs at all. This can be a result of some inherent complexity in the structure of large companies which makes more difficult arranging programs, assigning staff members to interns, tracking their results, etc. So generally micro and medium size organizations have higher willingness for conducting internship programs compared to the large companies.

**Figure 15: Frequency of conducting internship programs for “green” specialists, in %**

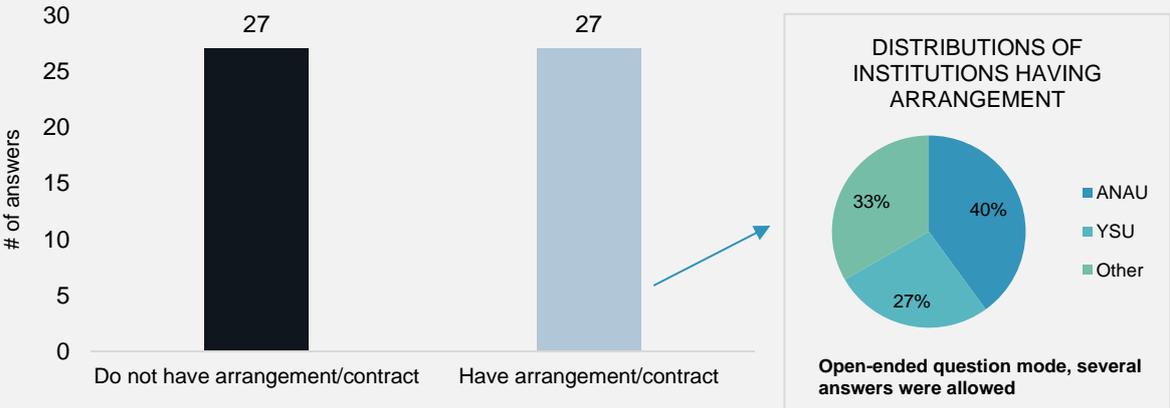


Sample size: 54

Source: EV Consulting “green” job market survey, 2018

Half of the interviewed companies do not have agreements with educational institutions regarding conducting internship programs. This is another factor indicating weak cooperation of the two sectors and poor participation of one another in the conducted activities (thus students rarely participate in the work activities of the job market participants, while the companies almost never engage in the educational activities, like assisting in curricula preparation, public speaking, conducting lectures, etc.).

Figure 16: Existence of any contract/arrangement with Armenian universities for conducting “green”



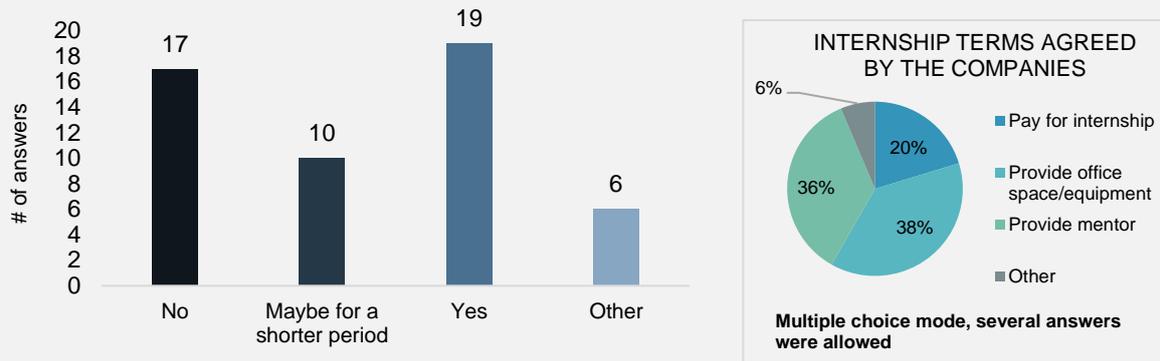
Sample size: 54

Source: EV Consulting “green” job market survey, 2018

Overall respondents are interested in conducting internships and around 35% are ready to have medium-to-long term (3-5 months) internship programs. The interviewed companies in majority of cases are ready to provide office space and equipment for their interns as well as support of the personal mentor during the internship period. Some respondents are ready to pay for the internships (around 20% in the indicated answers).

Dispersion of the answers on question regarding interest in conducting medium-to-long term internships indicates some unwillingness of the “green” companies to conduct internships. This can be a result of previously conducted non-effective and time-consuming programs, where students were barely engaged in the working process and had poor motivation (many respondents mentioned situations when the students did not show any interest in participating in the obligatory internships).

**Figure 17: Interest in conducting medium-to-long term (3-5 months) internship programs for “green” specialists**

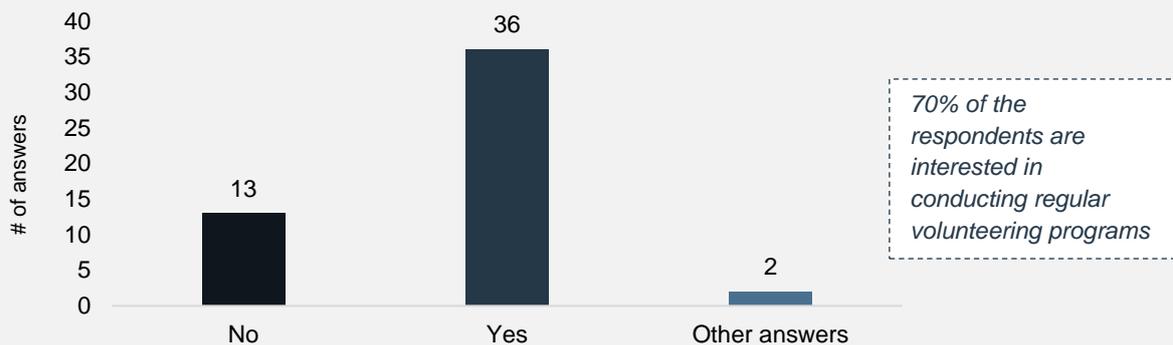


Sample size: 52

Source: EV Consulting “green” job market survey, 2018

The vast majority of the respondents are ready to conduct volunteering programs. The main interests are in organizing tree-planting and waste management and recycling activities.

**Figure 18: Interest in conducting volunteering programs for “green” specialists**

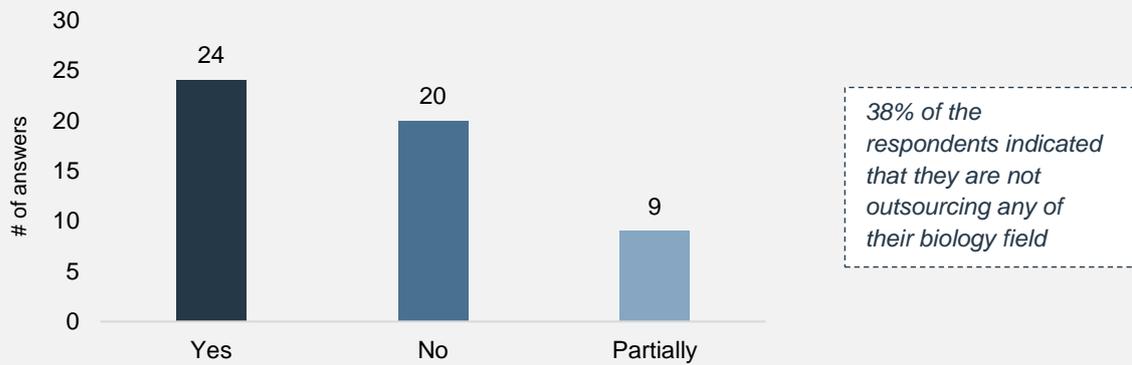


Sample size: 51

Source: EV Consulting “green” job market survey, 2018

The major part of the respondents mentioned that they completely or partially outsource their biology-related services. The spectrum of the outsourced functions varied notably, starting from contracting tourism guides up to forests monitoring and implementation of experiments and analysis (projects mainly requiring specific laboratory equipment).

Figure 19: Outsourcing of services in the “green” sector



Sample size: 53

Source: EV Consulting “green” job market survey, 2018

The survey results indicated that there is an obvious gap and difficulty of passing from education to employment in the green sector of Armenia.

The students and graduates often do not possess the skills and qualifications required by the employers, and the majority of the surveyed students agree that their gained theoretical and practical knowledge only partially correspond to the existing requirements. The capacity of the “green” job market is limited, however respondents often mentioned availability of potential projects, which will require new influx of “green” specialists to the market. Interviewed companies mention that in the majority of cases are ready to conduct internships and volunteering programs, which can indicate some positive shifts towards stronger cooperation between the job market and educational institutions.

Our purpose in this study is to assess what can be done to improve linkage from education to employment in the green sector. By providing new information and analysis, we seek to help employers, education providers, the government, and young people begin to create a different and better system.

## 2. Conclusions and recommendations

Our research demonstrated there is a fundamental mismatch between the expectations and requirements of the employers and the skills developed by the education sector in biology segment of Armenia (not very different from other sectors in the country). While there are certain attempts of cooperation from both sides and certain “pockets of success”, however, these are just fragmented efforts and not systematic. In order to improve the situation, we need to scale these up to serve the whole sector.

We draw a set of recommendations based on our findings in order to facilitate the discussion and serve as a platform for further actions.

### 1. Initiate strong collaboration links between education and employers

Creating effective sector level collaborations can be critical.

It can help to create a practical and vibrant curriculum for the educational sector, that will result in developing needed skilled professionals. It can also facilitate more trainings from the corporate sector/employers organized in a cost-effective manner.

By more practical and vibrant curriculum, we mean curriculum that will include more time for soft skills development, development of English language and theoretical skills that are more demanded by the employers. Such curriculum development will require efforts to have better links with the employers, in order to real time assess what is most wanted by them. Constant work for adjusting the curriculum according to the employers’ demand is necessary.

The collaboration will facilitate the more active involvement of corporate sector members in the outreach activities, to share information in executive trainings for students and become guest speakers for special periodic workshops.

Experience sharing between the sector professionals and students and/or alumni can create robust base for future cooperation. Guest speakers can provide their insights and thoughts about sector development, represent their companies and future projects. This can also direct students towards selection of their desired company to work at in the future and establish network connections with the guest speakers/representatives.

### Carefully developed internship programs

Obligatory internship programs should be carefully designed, implemented and tracked in order to have the desired results. Ideally, job market representatives should participate in the programs’ development process, state the final objectives, define the schedule of the activities and the time frames, track results (together with the educational institution) and assess the effectiveness of the internship. Internship should be a major source of getting practical knowledge and experience for the students during their study years.

### Facilitate the development of corporate trainings

Corporate academies are gaining more and more popularity in the world. The main reason is that they provide the opportunity to learn as speedily as general business doing. Thus,

having a mature system of corporate trainings in the country with strengthened links with higher educational institutions will ensure more effectiveness for both (more developed links between the lecturers, linked events, direct recruitment from universities, etc.).

Corporate universities are the next step of higher education and these have a unique added value, regardless of whether the educational system is otherwise good or bad.

This is a growing phenomenon in the world, with all major corporations having their own corporate learning centers, with the comfort of developing skills in house. The availability of developed corporate universities in Armenia will further enhance the higher education system becoming an important loop in the whole segment.

## **2. Collect high quality database**

Development requires high quality information. Especially in the current realities with disruptive role of data collection, reporting and analysis.

### **Collect and actively disseminate information about career options for students and strategic partnerships with employers**

Students need to be able to make informed decisions, thus a strong database of available partnerships, organizations and companies of the sector will be a good starting point.

This database should have an open access for the students and faculty, aiming to ease the finding process of the target companies (both for the students' recruitment and internship/volunteering programs purposes).

The database will need to be managed and updated in order to become a useful resource rather than an instantly outdated file.

### **Track of students results during the studies and after graduation**

Developed database of the existing students, their employment status and achievements can give robust statistical results and insights required for better coordination and stronger collaboration with the job market. The employment rate will facilitate the tracking of the results, the list of the companies where graduates find jobs will become an effective tool for enhancing future cooperation with the sector.

The graduates should be surveyed periodically after graduation. The information regarding their employment status, salary, positions and other career path issues should be collected and analyzed periodically. The information collected should be open and published in order to assist the current students to make informed decisions.

Later on, these databases can be used to produce key metrics for the University and can be scaled up for all departments.

## **3. Improving the curricula into a more hands on robust practical knowledge set and facilitating entrepreneurial activities**

Closer collaboration with the employers will allow the education sector to have a better understanding of the concrete needs and requirements for their graduates. Having a system

wide effort and a responsible body for the effort can prove to be efficient. The government can take the responsibility of the integrator and initiator for the effort. The basic responsibilities of the initiator in this case should be:

- coordinating and integrating all activity
- accelerating and facilitating stakeholder action in priority areas
- monitoring and managing the quality of results

Besides the major actions and efforts of curriculum improvement, which will require considerable investments, there are certain *low-hanging actions*, that will be relatively easy to implement and will bring in quick results. Examples of such actions can be:

- **Improve the level of English teaching in biology department**
- **Invest in soft skill trainings for students**
- **Purport better utilization of available resources for R&D activities**

Availability of more than 10 laboratories at the campus together with highly professional staff should foster the R&D activities development of the University. The best practices (global) suggest that universities are the ones which frequently make scientific innovations, perform comprehensive research activities and overall contribute to the related industry development in the country.

- **Promote entrepreneurial activities among students**

Limitations of the job market and scarcity in the “green” jobs in the country can be mitigated in case of promotion of entrepreneurial activities among the students and graduates. Engagement in the entrepreneurial activities and establishment of the business can create necessary synergy and development in the sector, fostering the evolution of the “green” field in Armenia and creation of additional jobs. Indeed, the initial investments can be very high in case of establishment of R&D or pharmaceutical laboratory (expensive equipment), but other business activities like environmental consulting or environmental assessment will require way lower capital investments, which makes them more lucrative investment opportunities in case of limited funding.

- **Facilitate e-learning courses, etc.**

#### **4. The role of the government and sector policy can be broader – in order to facilitate the development of overall “green” segment**

Although no distinct definitions exist, it is the accepted practice to label the activities that reduce fossil-based energy-consumption or promote other environmentally beneficial actions as “green.”

Green industries, therefore, produce green products and services, and in so doing require green jobs.

Whatever the definitional scope, there is currently lack of a defined public policy towards promoting the green economy and consequently the green jobs.

The economic development policy of the country should make the green jobs the centerpiece of its actions, with meaningful green job initiatives and strategies developed and implemented at state and marz levels.

Our study failed to find any green job-related policies in the policy portfolio of the government of Armenia. Albeit, necessary to mention, that in the light of current changes the green job movement can become of high interest of the newly formed government. And the current study should follow that aim as well.

The green job policy should have the overarching goal of creating and fostering as many as possible green jobs in the economy. The policy initiatives towards that can be rooted in the following key areas: environmental policy, energy policy, green government initiatives and overall labor policy in the country.

The lack of distinct policies in the sector calls for action for immediate development and execution of such initiatives, with the aim of developing the green sector of the economy.

- **Increasing the importance of “green sectors” and green functions within each corporation**

The government policies should facilitate the sense of urgency in going “green” throughout the economy. Currently, the companies in Armenia engage in the “green” activities mainly because of laws and state requirements rather than on voluntary basis. Armenia lacks the culture of following and implementing “green” initiatives rather than establishing de jure regulations and policies. Mining companies are among the most remarkable examples of implementing “green” policies and recruiting “green” specialists mainly because of existing regulations in the country. More often than not, these specialists perform only formal roles in the companies. The next level government policies should be designed to put in place systemic triggers to facilitate the true environmentally friendly regime.

- **Establishment of broader and strong CSR practices among the Armenian companies can lead to the development of the “green” sector**

Currently international companies are the ones that are mainly engaged in the implementation of CSR practices in the country. This is a volunteer commitment of the companies are not stipulated by law or polices, aiming to conduct business in more ethical way, while taking account of their social, economic and environmental impact, and consideration of human rights. Environmental protection and recycling are commonly among the most popular CSR practices of the companies. These are activities which can directly and positively impact on the increase in demand for “green” specialists majoring in biology.

The educational system and the job market are interrelated organisms which should function together and interconnected. Strong linkage between these two sectors is essential for the mechanism to work properly.

As a whole, today’s education-to-employment system in Armenia lacks synergy and interconnection, required to deliver the desired results of well-functioning economy and sustainable society. “Green” sector is not an exception. Established poor connections

between the job market and educational system cannot provide stable and effective outcomes and outer impulses are required for gaining growth momentum. Educational institutions, job market participants, the Government, or the 3 sectors together can catalyze development of the cooperation, by providing new programs and initiatives and establishing new policies.

### 3. Appendices

#### APPENDIX 1 – Full list of surveyed companies

Company/Organization	Interviewed person	Contact number
Armenian National Agrarian University, Forestry Department and others	Gohar Hovsepyan	010 52 45 41
CARMAC	Anri Mangasaryan	012 55 15 15
"Green Lane" NGO	Lusine Mkrtchyan	010 57 59 95
UN FAO	Sose Amirkhanyan	010 52 54 53
Strategic Development Agency (SDA)	Karina Harutyunyan	010 51 75 28
Ijevan Dendropark	Sayadyan Mekhak	094 52 56 88
Zikatar Center	Andranik Ghulijanyan	010 56 30 81
Caucasus Nature Fund (CNF)	Arman Vermishyan	060 27 30 10
NABU Armenia	Narek Grigoryan	060 27 30 10
"Zangezur" Biosphere Complex	V. Gevorgyan	0285 2 00 64
"Lake Arpi" National Park	Armen Igityan	077 82 88 08
WWF Armenia	Arsen Gasparyan	010 54 61 56
"Preserve and Park Complex" SNCO, RA Ministry of Nature Protection	Lia Ghazaryan	010 67 02 04
Dilijan National Park	Robert Beglaryan	077 72 32 33
Sevan National Park	Arpine Hovhannisyan	0261 2 40 44
Khosrov Forest State Reserve	Bakur Shahnazaryan	099 00 60 30
Foundation for the Preservation of Wildlife and Cultural Assets	Artur Harutyunyan	011 58 58 84
Civil Net	Lilit Muradyan	010 50 01 19
Institute of Molecular Biology	Gohar Meliksetyan	010 28 16 26
Alumni and Career Center of YSU, Faculty of Biology of YSU	Marine Arakelyan Karine Nazaryan	010 55 52 40
Institute of Botany, NASRA	Yelena Khanamiryan	010 62 17 81
"Tapan" Eco-club	Hrant Sargsyan	010 52 32 49
UNDP Sustainable Growth and Resilience Programme Portfolio	Armen Martirosyan	060 53 00 00
UNDP Climate Change Information Center of Armenia	Diana Harutyunyan	010 58 39 32
Swiss Development Cooperation	Sara Allahverdyan	010 52 98 60
OXFAM Aid and Development Charity	Aghavni Zaqaryan	010 20 88 08
oxYGen Advocacy and Development Foundation	Artur Gomkcyan	010 20 88 28
Young Biologists Association	Sargis Aghayan	010 55 69 46
Center for Ecological-Noosphere Studies, NAS RA	Armen Saghatelyan	010 57 29 24
World Bank environmental programmes	Anna Harutyunyan	010 52 09 92
YSU Environmental Law Resource Center	Aida Iskoyan	060 71 02 37
Acopian Center for the Environment, AUA	Alen Amirkhanyan	010 32 40 40
"Sis Natural" CJSC	Ruzanna Navasardyan	010 74 42 88
"Euroterm" CJSC	Kristina Nahapetyan	010 63 41 01
Coca-Cola HBCA	Alexandr Tobakar	010 54 10 28
"State Forest Monitoring Center" SNCO	Arman Avagyan	010 20 15 98
Bioresources Management Agency of the RA Ministry of Nature Protection	Hasmik Ghalachyan	011 81 00 84
RA Ministry of Nature Protection	Meri Babayan	011 81 00 84
Vallex Group Company, "Teghout" CJSC	Suren Yeritsyan	010 51 08 85
"Liqvor Pharmaceuticals" CJSC	Gayane Pepanyan	060 37 88 00
"Renewable Energy Producers Association" Union of Legal Entities	Tatevik Asatryan	010 56 34 48
"High voltage networks of Armenia" CJSC	Davit Babayan	010 72 03 30
"For sustainable human development" NGO	Karine Danielyan	055 52 23 21
"Ecoglobe" LLC	Eliza Petrosyan	099 22 12 95
"FDA Laboratory" LLC	Anna Hakobyan	060 46 00 76
"Ecotour" Co. Ltd	Tigran Abgaryan	093 08 08 80
Armenia Tree Project	Anna Gevorgyan	010 44 74 01
"Khazer" Ecological and cultural NGO	Hambardzumyan Amalya	010 53 46 52
"Ashtarak-Kat" Production Enterprise ("Pargev" LLC)	Topchyan Levon	012 24 98 12
Shen Production	Sona Hovhannisyan	010 42 26 82
"Medical horizon" LLC	N/A	093 08 08 80
Ecolor	Inga Zarafyan	010 56 20 20
"Mer erkir" LLC	Vahan Karapetyan	093 18 86 61
"Bacon Product" Co. Ltd	Colak Tarlamazyan	010 25 20 20
"ArmGar Prod" Cannery	Anush Varzhapetyan	093 43 29 69

## APPENDIX 2 – Survey questionnaire developed for “green” companies

1. Please indicate the current number of employees of your organization
2. Does the company/organization currently employ any of the below-mentioned specialists? You can choose multiple options. Please indicate the number of each group of specialists.
  - a. Biologists
  - b. Biochemists
  - c. Biophysicists
  - d. Environmental specialists
  - e. Other specialists, which you consider as “green job” concept (please specify)
3. Are you outsourcing any functions relating to the biology field (any of the specified professions)?
  - a. Yes
  - b. No
  - c. Partially (please indicate which specific function you outsource)
4. How many “green” specialists did you recruit during the last 3 years? Please provide a number below.
5. Are there current/future projects during which your company/organization needs/will need to recruit “green” specialists? If yes, then please indicate estimated number of specialists (for each of the professions indicated below) you need/will need in the upcoming 5-year period
  - a. Biologists
  - b. Biochemists
  - c. Biophysicists
  - d. Environmental specialists
  - e. Other specialists, which you consider as “green job” concept (please specify)
6. Do you consider it difficult to find a qualified “green” field professional in Armenia?
  - a. Extremely hard
  - b. Difficult, but possible
  - c. Not hard at all
  - d. Other (please specify)
7. Where do you usually find job candidates from? You can choose multiple options.
  - a. Personal network and links
  - b. Via cooperation with educational institutions
  - c. Posting vacancy announcements through job portals
  - d. Recruitments after successful internship completion
  - e. Use of social media sources (e.g. LinkedIn)
  - f. Other (please specify)
8. From which universities do you normally employ “green” specialists? You can choose multiple options
  - a. Yerevan State University
  - b. Armenian National Agrarian University
  - c. Armenian State Pedagogical University
  - d. American University of Armenia
  - e. Russian-Armenian University
  - f. Haybusak University
  - g. Foreign universities and educational institutions
  - h. Other (please specify)
9. What are the most crucial criteria, when choosing the candidate for the position (“green” specialist)? You can choose multiple options
  - a. General educational background
  - b. Work experience
  - c. Professional qualifications (e.g. certificates) or passed trainings
  - d. Interest in work, motivation
  - e. Soft skills (e.g. communication, presentation, flexibility, creativity, etc.)
  - f. Knowledge in statistics
  - g. Experience in working with modern equipment
  - h. Knowledge of basic genetic techniques and methods
  - i. Knowledge of methodologies required for field work studies and research
  - j. Other factors (please specify)
10. What are the major difficulties in working with biology field graduates (from Armenian universities)? You can choose multiple options
  - a. They do not have enough practical knowledge
  - b. They do not have enough theoretical knowledge
  - c. They are not motivated
  - d. They do not have analytical skills required
  - e. They have poor English (or other language required) knowledge
  - f. They are overqualified for the existing job vacancies
  - g. Other specific characteristics (please add)
11. Do you have foreign specialists (biology field) or Armenians which have graduated from foreign universities that worked/currently working at your company/organization? If yes, please specify what the main differences are of graduates from Armenian universities and those foreign employees and why you prefer/may prefer them over Armenian specialists?
12. How often do you conduct internship programs at your company/organization?
  - a. Very often (up to several times a year)
  - b. Seldom (1-2 times in several years)
  - c. Never

- d. Other (please specify)
13. Do you have an agreement/contract with any of the universities or educational institutions in Armenia for arranging scheduled internship programs for their students? If yes, please specify with which university (if it is not confidential information) and describe the program (length, intensity, nature, etc.)
- a. No
  - b. Yes
14. Will you be interested in having middle-to-long time (3-5 months) internship programs for Bachelor and Master students from the "green" field?
- a. No, that is time-consuming and non-efficient
  - b. Maybe, but for shorter period
  - c. Yes, will be glad to (please indicate what sector specialists e.g. biologist, biophysicist or biochemist you are primarily interested in)
  - d. Other (please specify)
15. In case you are interested in organizing internship programs, please indicate which of the below mentioned contributions your organization is ready to make? You can choose multiple options
- a. Pay for the internship
  - b. Provide office space or equipment
  - c. Provide mentor/supervisor
  - d. Other (please specify)
16. Will you be interested in arranging environmental volunteering programs/events for students on regular basis (e.g. tree-planting, waste management, etc.)?
- a. No, that is time-consuming and unnecessary activity for our organization
  - b. Yes, will be glad to (please indicate in what specific volunteering activities are you particularly interested in?)
  - c. Other (please specify)

### APPENDIX 3 – Survey questionnaire developed for students and alumni of YSU Biology faculty

1. Have you ever applied for a job in your specialization? If yes, please, name the organization.
  - a. Yes
  - b. No
2. Were you employed? If no, please, state the main reason you think you were rejected for.
  - a. Yes
  - b. No
3. How do you assess your chances to get a job in your specialization?
  - a. Extremely difficult
  - b. Difficult but possible
  - c. Easy
  - d. Other
4. What do you think are the main job requirements in this sphere (you may choose more than one option)?
  - a. University education
  - b. Experience
  - c. Participation in trainings/seminars
  - d. motivation
  - e. Scientific and research skills
  - f. Basic knowledge in genetic technologies and methods
  - g. Others
5. Do you think the University education is relevant to employers' requirements?
  - a. Absolutely relevant
  - b. Partly relevant with some gaps and disadvantages
  - c. Not relevant at all
6. Have you ever had an experience in the sphere of your specialization? If yes, please, name the main difficulties you have come across (you may choose more than one option):
  - a. No experience
  - b. Insufficient salary
  - c. Absence of HR strategy
  - d. Insufficient technical and working conditions
  - e. Absence of perspectives in career advancement
  - f. Others
7. Which sources do you use in looking for a job (you may choose more than one option)?
  - a. Personal networking
  - b. YSU alumni and career center
  - c. Job agencies
  - d. Social media sources (for ex. Facebook, LinkedIn)
  - e. Other sources
8. Please, name the 3 leading companies in the sphere you would like to cooperate with





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