European Training Foundation

OVERVIEW OF NATIONAL POLICIES AND ITS RELATION TO GREENING

Ukraine

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CONTENTS

Executive summary 3

Introduction 4

Policy and institutional framework 5

- Transport 6
- Agriculture 6
- Industry development 7
- Energy and energy efficiency 8
- Safe environment 9
- Waste management 11

CSO initiatives 111

Curricula adaptation to green elements 12

- Primary education 133
- General secondary education 14
- Vocational education and training 155
- Higher education 177

Skills for greening in occupational standards 19

Skills for greening in adult training 20

Private sector, including CSOs/NGOs, initiatives 21

Conclusions 23

Limitations and further research 25

Executive summary

In recent decades climate change has become one of the common challenges for all countries in our World and for civilisation wellbeing in general. Using the internationally recognised mechanisms and tools many countries, and Ukraine in particular, have committed certain efforts to the development of the national and international policies and strategies that would facilitate the process of overcoming the present and future consequences of the climate change in a global scale.

A transition towards greener, more circular ways of living, working and doing business has become a vital and urgent necessity for any individual, company and organization. And in this regards the European Green Deal (EGD) accumulates different strategies and tools for moving EU members and other countries towards a resource-efficient, sustainable and clean economy ensuring that “no person and no place is left behind”.

Ukraine has ratified main international conventions, however, only with signing Association Agreement with the European Union and further actions aimed at national policies’ compliance with European Green Deal such concepts as “sustainable development”, “greening economy”, “green jobs”, “circular economy” have become a very crucial both for the authorities and for business.

To make correspondent processes more sustainable and systematic, Ukrainian authorities (the President, Parliament (Verkhovna Rada of Ukraine) and the Cabinet of Ministers) have adopted several national and sector policies which foresee actions related to greening different sphere of economic and social life and to support formation of circular economy. In particular, these documents are grouped in the following spheres:

- Transport;
- Agriculture:
- Industry development;
- Energy and energy efficiency;
- Biodiversity preserving.

The actions taken at the national and regional level are supplemented with the activities of different Civil Society Organisations (CSOs), which act in close cooperation with Governmental agencies and provide independent monitoring of Sustainable Development Goals (SDGs) and Association Agreement (AA) provisions related to formation of “green” and circular economy in Ukraine.

It’s obvious, that educational system should complement process of “greening” economy and formation of circular economy with specialists who possess necessary knowledge and skills. Analysis of the content of all spheres of education shows how the green skills and knowledge are implemented in the curricula and shows how the obtained knowledge and skills are preserved and developed at the latest stages of education. Specifically analysis shows the capability and readiness of Ukrainian Vocational Education and Training (VET) system to respond the challenges that process of national economy “greening” and formation of circular economy put against it in terms of training the needed specialists.

Continuous vocational training (CVT) provide additional possibilities for adult people to obtain necessary skills and knowledge important in the new context of increasing demand for “green” skills from the private and public sectors.

Main achievements of Ukraine in the spheres of SDG and EGD are listed in the “Matrix of country SDG and EGD indicators”, which in a very formal form shows the progress of Ukraine in ratification of international agreements and follow up action plans, national development strategies and sector policy

documents, education curricula, occupational standards development and private sector initiatives. Completed Matrix provide formal material for objective comparison of the country progress in the SDG and EGD realisation.

Introduction

Since 1992 when Ukraine has signed the Framework Convention on Climate Change (UNFCCC) and then ratified it in 1996,[1] the issues of sustainable development closely linked to the climate change have become one of the corner stones of the international and national policies of Ukraine.

A series of reforms have been launched in Ukraine since 2015, aiming to implement socio-economic transformations and strengthen its democratic system. In 2016, Ukraine signed and then ratified the Paris agreement[2].

An inclusive process of the SDGs adaptation, which was tailored to the national development context, resulted in a national SDGs system consisting of 86 national targets with 183 monitoring indicators. The Government established the Inter-Agency Working Group on SDGs. Responsibilities of the ministries for the SDG targets were defined, the President of Ukraine issued a Decree setting the SDGs[3] as a benchmark for programming and forecasting documents, the SDGs monitoring system was developed, the assessment of mainstreaming the SDGs into national and subnational planning produced. So now, the SDGs are integrated into the state policy on 'leave no one behind' basis.

Despite some progress in achieving SDGs, there was only some progress in ensuring environmental sustainability. Due to anthropogenic load, about 70 percent of surface water and a significant proportion of groundwater reserves in Ukraine are no longer suitable as a source of drinking water. Waste management and the lack of a centralized water supply to the population living in rural areas are still major issues. About 4 million tons of pollutants are released into the air annually. Greenhouse gas (GHG) emissions and discharges of pollutants into the environment and the quantity of waste generated have been significantly reduced, largely due to the economic recession. It was possible to increase the country's forested areas and the size of nature reserves and national parks. However, there has been little or no progress in the energy sector, especially in terms of energy efficiency and renewable energy[4].

Such little progress in achieving SDGs related to environment protection, climate change and waste management provoke additional efforts for the next decade, in particular, "amending the environmental policy, upgrading waste management, and terminating unsustainable use of land, forest and water resources"[5].

Mentioned above explains why SDGs and related issues were incorporated in one of the main strategic documents - Association Agreement between the European Union and Ukraine (2014)[6] - that defined the general course of Ukraine's development towards EU integration (art. 3).

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[1] https://zakon.rada.gov.ua/laws/show/435/96-%D0%B2%D1%80#Text
[2] https://zakon.rada.gov.ua/laws/show/995_l61#Text
[3] https://zakon.rada.gov.ua/laws/show/722/2019#Text
[4] Sustainable Development Goals: Ukraine. 2017 National Baseline Report, p.7
[5] https://sustainabledevelopment.un.org/memberstates/ukraine
[6] https://zakon.rada.gov.ua/laws/show/984_011#Text

Since European Green Deal (EGD) adoption, Ukraine and the EU have identified three priorities for cooperation on the implementation of the “green course”: energy efficiency, hydrogen and the transformation of coal regions. In January 2021, an interagency group was launched to implement the European “green” course. The interagency working group has several tasks: coordinating actions to overcome the effects of climate change, developing mechanisms for a "green" economic transition, developing electricity from renewable energy sources (RES) and alternative fuels, and decarbonizing urban transport.

In addition to Association Agreement between Ukraine and EU, there are two general policy documents that should be mentioned in relation to SDGs realisation in general and EGD in particular:

- National Security Strategy of Ukraine (2020)
- National Strategy on Human Rights (2021)

National Security Strategy of Ukraine[7], adopted by the Decree of the President of Ukraine on September 14, 2020 envisages “sustainable development of the national economy and its integration into the European economic area” among the key priorities of Ukraine in securing national interests. More specific, in the context of energy security (par.54), the Strategy foresees to “ensure further development of the fuel and energy sector in terms of sustainable development and environmental safety, taking into account the latest technologies for renewable energy production and storage”.

National Strategy on Human Rights, adopted by the Decree of the President of Ukraine on March 24, 2021[8], in its section 15 “Ensuring environmental rights” is aimed at the implementation of the basic principles of environmental protection in all areas of state policy and in the spheres of human activity. In addition, the Strategy foresees establishment of the mechanism for mandatory strategic environmental assessment and taking into account its results during the preparation of state planning documents, in order to analyse properly their impact on the environment, including public health.

Policy and institutional framework

The main policy document to identify priorities for socio-economic development of Ukraine until 2030 is National economic strategy until 2030, adopted by the Government of Ukraine on March 3, 2021[9] . Among the main values and principles, the National strategy identifies “decarbonisation of the economy (energy efficiency, development of renewable energy sources, development of a circular economy and synchronization with the European Green Deal initiative)”. There are several parts in the National economic strategy that touch spheres envisaged in European Green Deal (EGD), in particular:

- Transport;
- Agriculture:
- Industry development;
- Energy and energy efficiency;
- Biodiversity preserving.

[7] Про рішення Ради національн... | від 14.09.2020 № 392/2020 (rada.gov.ua)
[8] Про Національну стратегію у... | від 24.03.2021 № 119/2021 (rada.gov.ua)
[9] https://www.kmu.gov.ua/npas/pro-zatverdzhennya-nacionalnoyi-eko-a179

Transport

There are several goals foreseen by the National Economic Strategy to be achieved until 2030 in the sphere of transport. In particular, within strategic goal three “Ensuring effective and fair regulation of pricing policy in the field of transport” it is stipulated “providing incentives for the transformation of public transport and infrastructure in terms of the transition to low-carbon fuels, the promotion of “green” public transport”.

In addition to the mentioned provisions of the National Economic Strategy, on May 30, 2108 there was adopted National Transport Strategy until 2030[10]. Among the basic for elaboration of the National Transport Strategy international documents, ratified by Ukraine, there were mentioned United Nations Framework Convention on Climate Change (1992) and Paris Agreement (2016). The mentioned Strategy takes into account the use of alternative types of fuels, “green” modes of transport, priority of environmental protection needs and preservation of valuable protected areas during the development of transport infrastructure.

There is no provision on skills and knowledge needed to implement the National Transport Strategy.

The Action plan for the realization of the National Transport Strategy until 2030[11], adopted on April 7, 2021 contains only one specific provision related to EGD - ensuring interstate cooperation in solving problems in the field of environmental protection through participation in international projects in the field of “European Green Deal”.

Another strategic document in the sphere of transport is Strategy on development of seaports[12], adopted by the Governmental resolution on December 23, 2020. This Strategy foresees the task to ensure the functioning of seaports on an innovative basis in accordance with the concepts of “smart port”, “energy efficient port” and “green port” (reducing the negative impact on the environment). However, there is no further clarification of these measures. In addition, there is no indication of necessity to develop skills and knowledge in this sphere.

Agriculture

There are several goals foreseen by the National Economic Strategy to be achieved until 2030 in the sphere of agriculture. In particular, within strategic goal one of the part dedicated to the agriculture it is foreseen elaboration of the State policy in the agro-industrial sector on environmental protection and management of natural resources in agriculture. In particular, this State policy should include:

- approximation of national legislation, standards and practices to the common European principles of sustainable agricultural policy and good agricultural practices, gradual harmonization of state agricultural policy with the EU Green Deal in agriculture
- development and monitoring of indicators of the impact of agricultural activities on the state of ecosystems
- developing, facilitating the implementation and monitoring of compliance with minimum environmental standards
- introduction of a national report on the level of greenhouse gas emissions during the production and circulation of crops

[10] Про схвалення Національної тра... | від 30.05.2018 № 430-р (rada.gov.ua)
[11] Про затвердження плану заходів... | від 07.04.2021 № 321-р (rada.gov.ua)
[12] Про внесення змін до Стратегі... | від 23.12.2020 № 1634-р (rada.gov.ua)

- introduction of economic incentives for land use and protection and increase of soil fertility, reduction of pollution of waters and other components of environment from agricultural sources, improvement of land and land structure of the country, restoration of anthropogenically changed ecosystems, introduction of sustainable land use and achievement of neutral land degradation.

In addition, in the sphere of agriculture, on August 14, 2019 Strategy on irrigation and drainage in Ukraine until 2030 was adopted[13]. There are provisions dedicated to the sustainable using of water resources in the agriculture in the Strategy. One of the goals of the Strategy is to determine the strategic directions of state policy on irrigation and drainage, ensuring sustainable eco-balanced development of agriculture in Ukraine, especially for efficient and sustainable agriculture in the context of global climate change.

The Action plan for the realization of the Strategy on irrigation and drainage in Ukraine until 2030[14], adopted on October 21, 2020, foresees the introducing into the vocational education and training (VET) curricula a special module dedicated to the basics of effective management and introduction of innovative approaches in the field of irrigated agriculture. In addition, the Plan foresees the exploring the possibility of using renewable energy sources to meet the needs of irrigation and drainage.

Industry development

As it is stated in the National Economic Strategy, Ukrainian industry is resource inefficient (due to the low level of waste disposal), with a high level of coal and energy consumption. The amount of CO_2 emissions from stationary sources in Ukraine is relatively small - 124 million tons in 2017, which is less than in neighbouring Poland (301 million tons of CO_2) or Germany (670 million tons). In addition, Ukraine has an annual reduction in CO_2 emissions. However, the coal intensity of industrial production is much higher than in the EU.

Therefore, as envisaged in the National Economic Strategy, to achieve the strategic goal three in this section “Strengthening the competitiveness of industrial products produced in Ukraine, introduction of resource- and energy-efficient technologies”, the respective authorities should stimulate the development of a circular economy, in particular by:

- creation of transparent and competitive markets for secondary raw materials by improving and harmonizing the legislation of Ukraine with the relevant legislation and norms and rules of the EU
- stimulating the reduction of waste generation
- simplification of the procedure for carrying out operations with scrap metal
- formation of circular economy policy
- introduction of an extended producer responsibility system
- introduction of a set of measures for the commercial development of industrial dumps.

Also among the priority measures in the National Economic Strategy, it is specifically stressed on the improving resource efficiency. Among main actions that should be taken to achieve this goal are:

- introduction of effective regulation in the field of resource conservation and use of renewable energy sources

[13] Про схвалення Стратегії зрошен... | від 14.08.2019 № 688-р (rada.gov.ua)
[14] Про затвердження плану заході... | від 21.10.2020 № 1567-р (rada.gov.ua)

- ensuring access to high-quality energy audits
- ensuring the implementation of energy management systems
- development of sustainable public procurement by raising awareness of market participants and methodological support for the application of sustainability criteria
- introduction of a system of tax incentives for eco-modernization
- introduction of a system of trading in greenhouse gas emission allowances and other instruments for setting the price of greenhouse gas emissions.

As for the skills development in industry, the strategic goal 2 of Industry development section of the National Economic Strategy contains a separate sub-section “Strengthening the training of professional staff” where the following measures are foreseen:

- implementation of dual form of vocational education and training
- promoting the development of training in the workplace, in particular at enterprises’ training centres
- providing grants for education and training
- ensuring the necessary quantity and qualification level of specialists in accordance with the needs of the labour market trained at the regional level
- development of occupational standards for the professions of the industrial sector
- improving the system of retraining of specialists.

Energy and energy efficiency

There are several strategic goals envisaged in the National economic strategy in the section “Energy and energy efficiency”. In particular, the closes to the subject of this assignment are “Ensuring a high level of energy security” and “Integration of Ukraine into the European energy market”. To achieve these goals, the Government foresees:

- introduction of the environmental management and audit system (EMAS)
- stimulation of energy efficiency at the level of consumers, formation of energy efficient behaviour of citizens
- reduction of energy consumption in the systems of transportation and distribution of electric and thermal energy through technical, technological modernization and conceptual revision of energy supply schemes
- creation of the necessary energy infrastructure for further sustainable development of the country on a competitive basis
- ensuring market balancing of hydropower capacities
- increasing the energy efficiency of the economy and ensuring the environmental friendliness of the energy sector
- ensuring the introduction of the latest technologies and the exchange of information on the utilization of waste fuel and energy complex
- implementation of initiatives to decarbonise the economy (energy efficiency, development of renewable energy sources, development of a circular economy and synchronization with the initiative “European Green Deal”).

In addition to the National economic strategy, the Energy Strategy of Ukraine for the period up to 2035 "Security, energy efficiency, competitiveness"[15] was adopted on August 18, 2017. As it is seen from the date of adoption, the Energy Strategy of Ukraine was elaborated and adopted before EGD. However, the questions of:

- Conscious and energy efficient society
- Energy independence, reliability and stability of fuel and energy complex
- Investment attractiveness, including implementation of EU requirements in EU legislation
- Network integration, in particular integration of gas and electricity markets and related transport networks of Ukraine into the EU energy space
- Modern management system, including training of staff to work on new models of energy markets operation, staff and modern scientific and technical software

are present in the Strategy and are in line with EGD provisions and goals.

As for the skills development in energy sector, it should be mentioned that the correspondent chapter of the National economic strategy doesn't contain any information on this. The Energy Strategy of Ukraine contains many future oriented lines of national energy system development such as:

- Increasing the use of biomass in the generation of electricity and heat;
- Increasing the use of geo- and hydrothermal energy;
- Introduction of storage systems to balance the energy system
- Promoting the creation of a system for forecasting electricity generation
- Stimulating the production and consumption of second-generation biofuels, as well as the use of electricity in transport and many other.

However, the Strategy doesn't contain any provision on necessary for realisation of abovementioned directions knowledge and skills.

Safe environment

The National economic strategy has quite a sufficient chapter dedicated to safe environment. Within the goal "Ensuring a safe environment for the population" it is foreseen:

- improving the institutional and technological capacity of environmental impact assessment and strategic environmental assessment of the implementation of state environmental standards and environmental requirements in new economic activities and in public administration and planning
- development of Ukraine's position on participation in the "European Green Deal" and adaptation of public policy in accordance with such a course
- introduction of the ecosystem approach in the sectoral policy and improvement of the system of integrated ecological management
- promoting eco-modernization of Ukrainian enterprises through environmental tax and access to international financing
- adoption of a law on state environmental control in accordance with the best practices of EU countries.

[15] Про схвалення Енергетичної стр... | від 18.08.2017 № 605-р (rada.gov.ua)

There are many other measures to be taken in the spheres of:

- forestry development
- land resources using
- biodiversity preserving
- nature reserve fund
- water resources and seas
- subsoil exploitation.

In addition to describing sectoral measures, the National economic strategy contains more overarching principles of sustainable development and gradual transition to the “green economy” that are planned to have more general impact on Ukrainian society and economy. Among those there could be specified:

- adoption of a substantiated second National-determined contribution of Ukraine to the Paris Agreement, taking into account the prospects for the restoration and increase of production of Ukrainian industry
- implementation of a system for monitoring, reporting and verification of greenhouse gas emissions at the plant level
- introduction of a national greenhouse gas emissions trading system
- approval of an integrated plan to combat climate change and energy development until 2030
- development and implementation of the Framework Strategy for Adaptation to Climate Change in Ukraine until 2030
- implementation of sectoral climate policies for energy, industry, transport, housing and communal services, agricultural sector and other industries.

It is necessary to admit that the actions foreseen by the correspondent chapter of the National economic strategy do not have any provisions related to skills and knowledge development for the purposes of safe environment.

In addition to the mentioned provisions, State Strategy of ecological policy in Ukraine until 2030[16] was adopted by the Law of Ukraine (2019). The Strategy sets the general landscape of the measures and goals of the state policy in the environment protection sphere and aimed at the realization of the following main tasks:

- Formation of ecological values and principles of sustainable consumption and production
- Ensuring sustainable development of Ukraine's natural resource potential
- ensuring the integration of environmental policy in the decision-making process regarding the socio-economic development of Ukraine
- Reduction of environmental risks in order to minimize their impact on ecosystems, socio-economic development and public health
- Improvement and development of the state system of environmental management

The Strategy contains many provisions related to EGD issues, such as relation to the Paris Agreement, clear identification of the main sectors that produce the majority of pollutions (transport, energy and agriculture) etc. There are not many provisions related to the skills in the sphere of sustainable growth and environment protection. There are mostly some general statements on introducing “continuous environmental education and upbringing of the younger generation by supporting the activities of out-

[16] Про Основні засади (страте... | від 28.02.2019 № 2697-VIII (rada.gov.ua)

of-school educational institutions, ecological and naturalistic centres and natural sections of children's and youth centres and relevant public organizations".

Waste management

The National economic strategy doesn't contain significant parts concerning the waste management policy in Ukraine. However, this sphere is integral part of general course for sustainable growth and fulfilment of the Ukraine's obligations under approximation of Ukrainian legislation to the EU approaches to waste management.

The high level of waste generation and low rates of their use as secondary raw materials have led to the fact that in Ukraine every year are accumulated significant amounts of solid waste produced both by industry and households, of which only a small part is used as secondary material resources, the rest end up in landfills.

The difference between the situation with waste in Ukraine compared to other developed countries is the large volume of waste generation and the lack of infrastructure for waste management.

To address this issue, in 2017, the Cabinet of Ministers of Ukraine approved the National Strategy for Waste Management in Ukraine until 2030[17]. The strategy envisages, in particular, the establishment of regional waste disposal centres, the introduction of cyclical economy principles and expanded producer responsibility, which should encourage businesses to minimize waste generation and pay more attention to the recycling processes. The Strategy also introduces a five-level hierarchy of waste management similar to the system operating in the European Union.

There are several stages of Strategy realisation, and at the second stage during 2019 – 2023, it is foreseen to recycle of at least 15% of household waste by 2023 - through the commissioning of waste sorting lines and waste processing plants. Another indicator of successful realisation of this stage is increase in the share of the population that collects household waste separately, at least up to 23%.

It is necessary to admit that this stage of Strategy realization envisages development of educational standards and curricula to train the specialists for the sphere of waste management. Another dimension of skills and knowledge development in the waste management sphere is stakeholders' rising awareness by providing the advocacy campaigns, consultations on the minimization of waste creation, safety and proper waste management.

The Strategy foresees development of national and regional waste management plans of its realization. The National plan of waste management until 2030[18] (2019) foresees the empowerment of Higher education institutions to include waste management provisions in their educational standards within the process of its development (par. 10) however, this is not obligatory for them. In addition, the Plan mentions conducting awareness-raising activities on waste management in schools and preschool institutions (par. 16) but there is no concrete indicators of realization of both mentions points of the Plan.

CSO initiatives

There are not many expert organisations dealing in the sphere of analysis of EGD implications, threats and benefits for the country. In particular, it worth mentioning the Civil Society Organisation (CSO)

[17] https://zakon.rada.gov.ua/laws/show/820-2017-%D1%80#Text
[18] Про затвердження Національного... | від 20.02.2019 № 117-р (rada.gov.ua)

"Resource-analytical centre "Society and Environment", established in 2006 to conduct independent research and training and information events in Ukraine and the region of Eastern Europe, the Caucasus and Central Asia[19]. Its recent analytical paper "European green course: opportunities and threats for Ukraine" developed in cooperation with other CSO – DiXi group[20].

The report examines the purpose, main objectives and key components of the European Green Deal, analyses each component of the EGD (climate change, energy, transport, industrial strategy, agriculture, zero pollution, biodiversity, finance, trade) in terms of opportunities and threats for Ukraine. The analytical document contains recommendations for stakeholders in Ukraine and the EU in the context of the European Green Course and Ukraine[21].

In accordance with articles 469 0 470 of Association Agreement[22] between Ukraine and EU Civil Society Platform (CSP) was established as one of the four bodies of the Association along with the Association Council, the Committee and the Parliamentary Committee of Association. The mission of the CSP is to ensure the proper role of the CSOs in the process of implementing the Association Agreement. Ukrainian side of CSP is composed from 15 members – representatives of three CSO sectors of Ukraine – employers' organisations, unions and analytical thin-tanks[23]. One of the main fields of CSP in general and its Ukrainian side is to develop and present analytical reports that touch different parts of EU-Ukraine association process and draw attention of both Ukrainian Government and EU bodies to the problems and challenges identified by CSP.

One of the recent initiative related to EGD sphere was development and presenting on July 2, 2021 Position Paper "Economy, Environment, and Education: Possible growth points for Ukraine?" The presentation of the Position paper was done at the round table within the framework of the International Conference on Reforms in Ukraine, with participation of representatives of Ukrainian Government, Lithuania and the EU bodies. The Policy Paper considers COVID-19 pandemic as one of the potential development factor for the civilization vitality and green recovery, providing incentives for economy development, creation of new jobs, accelerating transition to a more sustainable and clean future based on three pillars - new quality of education, growth points of the economy and new environmental policy[24].

Curricula adaptation to green elements

In Ukraine, there is centralised curricula development at the level of secondary education done under the control of the Ministry of education and science of Ukraine, responsible for the realization of state policy in the sphere of education.

In 2016, the concept of New Ukrainian School[25] was adopted by the decision of Collegium of Ministry of education and science of Ukraine. The Concept declares that new educational standards, especially for

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[19] https://www.rac.org.ua/en/about-us/mission-history-programs

[20] https://dixigroup.org/en/home-en/

[21] https://www.rac.org.ua/vydannya/analitychni-dokumenty/evropeyskyy-zelenyy-kurs-mozhlyvosti-ta-zagrozy-dlya-ukrayiny-analitychnyy-dokument-2020

[22] https://zakon.rada.gov.ua/laws/show/984_011#Text

[23] https://eu-ua-csp.org.ua/en/what-is-eu-ua-csp/

[24] https://eu-ua-csp.org.ua/news/255-ekonomika-dovkillya-osvita-mayut-stati-tochkami-zrostannya-pislya-kovidnoyi-krizi/

[25] https://mon.gov.ua/storage/app/media/zagalna%20serednya/Book-ENG.pdf

the secondary school, would be based on the Recommendations of the European Parliament and of the European Council, on key competencies for lifelong learning[26] (18 December 2006). The Concept, not limiting itself only with competences, mentioned in the Recommendations, introduces «Environmental awareness and healthy lifestyles» competence as ability to use natural resources in a prudent and rational way within the framework of sustainable development, the realization of the role of the environment in human life and health, and the ability and willingness to live a healthy lifestyle. This Competence among others forms the State standards for primary education[27] (2018) and basic secondary education[28] (2020).

Both standards define the purpose and principles of the educational process in primary and basic secondary education institutions, give general description of the content of education, explains the requirements for mandatory learning outcomes and guidelines for their evaluation. Standards are obligatory for use in all state and municipal educational institutions and form the basis for the development of general secondary education institutions educational programs.

Primary education

The State standard for primary education (2018) determines, among other issues, the requirements for compulsory learning outcomes and competencies of learners. The State Standard is the basis for the development of educational programs by general secondary education institutions.

Requirements for compulsory learning outcomes are determined in the key competencies. With respect to the EGD, among the key competencies we could find ecological one, which foresees awareness of the basics of ecological nature management, compliance with the rules of environmental behaviour, sustainable use of natural resources, understanding the importance of nature preservation for sustainable development of society.

The purpose of the education in the sphere of ecology, environment protection and preserving biodiversity is to form environmental key competence by mastering knowledge and skills that ensure successful interaction with nature, forming the basis of scientific worldview and critical thinking. This competence also foresees forming of responsibility towards safe and environmental behaviour of pupils based on awareness of the sustainable development principles.

A pupil:

- discovers the world of nature, gains experience of its research, seeks answers to questions, observes the world around, experiments and creates educational models, shows curiosity and gets joy from learning about nature;
- processes and systematizes information of natural content, obtained from available sources, and presents it in various forms;
- is aware of the diversity of nature, the relationship of its objects and phenomena, explains the role of natural sciences and technology in human life, behaves responsibly in the world;

[26] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2006.394.01.0010.01.ENG&toc=OJ%3AL%3A2006%3A394%3ATOC
[27] https://www.kmu.gov.ua/npas/pro-zatverdzhennya-derzhavnogo-standartu-pochatkovoyi-osviti
[28] https://www.kmu.gov.ua/npas/pro-deyaki-pitannya-derzhavnih-standartiv-povnoyi-zagalnoyi-serednoyi-osviti-i300920-898

- critically evaluates facts, combines new experience with previously acquired and creatively uses it to solve natural problems.

For the period of primary education (4 years), it is envisaged 420 learning hours to form the ecological competence (105 learning hours per year). All curricula are updated based on the mentioned standards in 2020 – 2021[29].

General secondary education

Similar to the mentioned above provisions on the ecological competence contains the State standard for general secondary education (2020).

Key "ecological" competence (# 6 in the competences list provided in the standard) foresees awareness of the ecological basics of nature, the need for nature protection, compliance with the rules of conduct in nature, the economical use of natural resources, understanding the context and relationship of economic activity and the importance of nature conservation to ensure sustainable development.

The purpose of environmental education (which contributes to the ecological competence development) is to form a learner who knows and understands the basic laws of animate and inanimate nature is aware of the integrity of the nature, able to assess the impact of science. techniques and technologies for the sustainable development of society and the possible consequences of human activities in nature, responsibly interacts with the environment.

Requirements for compulsory learning outcomes of students in the field of environmental education provide among other that the learner:

- is aware of the laws of nature, the role of natural sciences and technology in human life; behaves responsibly to ensure the sustainable development of society;
- develops own scientific thinking, gains experience in solving problems of environmental content (individually and in collaboration with others).

Despite the adoption of the State standard for general secondary education in 2020, the typical curricula elaborated according to the previous State standard for general secondary education (2011) and approved by the Ministry of education and science of Ukraine in 2018[30], is still realising in schools. Its adaptation to the new State standard for basic secondary education is in process. However, its analysis let us see the following:

- The curricula contains the "ecological competence" which is named "Environmental literacy and healthy living";
- Among the skills this competence sets:
  - to analyse and critically evaluate socio-economic events in the country on the basis of various data;
  - to take into account the legal, ethical, environmental and social consequences of decisions;
  - to recognize how interpretations of problem-solving results can be used for manipulation.
- Among the attitudes the competence contains:

[29] http://school18.pp.ua/osvitnij-protses/osvitni-prohramy/osvitnya-programa-2020-2021-n-r-rozdil-i-2 (as example)
[30] https://zakon.rada.gov.ua/rada/show/v0408729-18#Text

- awareness of the relationship between each individual subject and environment on the basis of different data;
- thrifty attitude to natural resources, cleanliness of the environment and observance of sanitary norms of life;
- consideration of comparative characteristics regarding the choice of a healthy lifestyle;
- own opinion and position on alcohol, nicotine abuse, etc.

- The competence is formed through the formation of learners' social activity, responsibility and environmental awareness, willingness to participate in addressing environmental issues and society, awareness of the importance of sustainable development for future generations.
- Among the tools used to form the competence are mentioned exercises promoting the development of respect for the environment, ecology, the formation of critical thinking, the ability to solve problems, to critically assess the prospects for the development of the environment and human civilisation.

There are four main disciplines that help to form this competence: “Natural science” (2 hours per week), “Biology” (8 hours per week), “Basics of health” (5 hours per week) and “Geography” (7,5 hours per week). In total, the number of learning hours aimed at formation of “ecological competence” in the secondary school is 22,5 which is appr. 10,3 % from the total number of learning hours per week.

The State standard for primary education stipulates that teachers must work according to new approaches, so during 2018-2019 a large-scale retraining of primary school teachers has been taking place. This training included both distance learning[31] and many off-line trainings, where such approaches were explained and more than 900 teachers have already passed such training in 2019 and more than 2000 are expected to pass it in 2021[32]. The number is significantly low and doesn’t exceed 1% of all teachers, as according the State Statistics there are 440 000 teachers in secondary schools of Ukraine[33]. For some trainings there were several handbooks developed, mostly of general content, however, they explain, for example, the meaning of the ecological competence[34].

Vocational Education and Training

Curricula for VET sphere are developed according to the approved State VET Standards. Such standards are annually approved by special decree of the Ministry of Education and Science of Ukraine[35]. According to the information of the Institute for modernization of education content, there are approximately 400 VET standards actual for VET education and training[36]. The oldest VET standard was approved in 2006, however, the process of the actual VET standards updating is ongoing and as it was mentioned above, for 2019 – 2020 98 VET standards were updated and approved.

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[31] https://courses.ed-era.com/courses/course-v1:MON-EDERA-OSVITORIA+ST101+st101/about

[32] https://mon.gov.ua/ua/news/nastupnogo-roku-sertifikaciyu-zmozhut-projti-2-tis-vchiteliv-reyestraciya-rozpochnetsya-18-sichnya

[33] http://www.ukrstat.gov.ua/operativ/operativ2005/osv_rik/osv_u/znz_u.html

[34] https://edera.gitbook.io/glossary/zagalnii-oglyad/kompetentnyst

[35] For 2019 - https://mon.gov.ua/ua/osvita/profesijno-tehnichna-osvita/derzhavni-standarti-navchalni-plani-ta-programi/zatverdzheni-standarti-profesijnoyi-osviti-2019; for 2020 - https://mon.gov.ua/ua/osvita/profesijno-tehnichna-osvita/derzhavni-standarti-navchalni-plani-ta-programi/zatverdzheni-standarti-profesijnoyi-osviti-2020

[36] https://imzo.gov.ua/osvita/profesiyno-tehnichna-osvita-2/profesiyna-osvita/ctandarty-profesiyno-tekhnichnoi-osvity/

In general, content analysis of the VET standards approved after 2019 shows presence of general (typical) thematic blocks of competences and/or knowledge linked to EGD provisions. There is one general competence in this sphere - Energy efficient and environmental competence –, which typically foresees acquiring of the following knowledge:

- basics of energy efficiency;
- ways of energy efficient use of materials and resources in professional activities and in everyday life;
- basics of rational use, reproduction and preservation of natural resources;
- ways to preserve and protect the environment in professional activities and in everyday life.

VET standards for occupations, that are included in the specific types of economic activity (insulation, coal extracting, oil and gas transportation) have additional content:

- concepts of energy, energy saving, energy, energy science, energy system;
- energy resources, types of energy;
- fuel, types of fuel, the concept of conventional fuel
- heat of combustion;
- traditional energy sources;
- issues of traditional energy;
- international standard ISO 50001, requirements of ISO 50001 to the energy management system of the organization;
- conducting an energy audit;
- energy saving solutions.

In 2018 by the Order of Ministry of Education and Science of Ukraine[37] there was initiated training of "Masters of installation and maintenance of renewable energy systems". As of today, there is no special VET standard developed and approved, however, due to the mentioned Order training is provided in two VET providers – Kyiv[38] and Ternopil[39] colleges with enhanced military and physical training. The experiment is not finished (lasts till December 2021) and in case of its success the VET standard and correspondent curricula would be developed and proposed for training in other VET institutions.

According to the open information, the specialist would be able to:

- perform simple work during installation and maintenance of renewable energy sources (RES);
- install structures for fixing elements of RES systems in designated places;
- carry out laying of cables and pipelines to the place of installation of system;
- carry out installation of separate units of installation;
- use technical documentation and instructions for operation of machines and mechanisms;
- compose and use assembly drawings and drawings of electrical diagrams;
- detect failures and malfunctions of renewable energy systems;
- monitor the external condition of the RES system etc.

[37] https://ivet.edu.ua/images/activity/eksperymentalna-robota/perelik_eksperymentiv/Radkevych_1141_vid_19_10_19.pdf
[38] https://pkvfp.kiev.ua/proffession_pages/mayster-ve/
[39] https://tpkpvfp.org.ua/majster-z-montazhu-ta-obslugovuvannya-system-vidnovlyuvalnoyi-energetyky/

As for the farming, there are two VET standards in this sphere – “Farmer” and “Farmer assistant”. Both standards were approved in 20146 and were not updated since that time. There are quite general provisions concerning environment protection in these standards.

The specialists should know:

- Basics on environment, ecology, anthropogenic impact, natural resources, nature management (rational and irrational), habitat, biosphere;
- legislation on environmental protection;
- techniques of application of chemicals, work with colloidal solutions; rinsing
- Agrotechnical measures for protection of soils from water and wind erosion
- Types of environmental pollution in the conduct of commercial agricultural production and their effects on the environment.

Despite mentioned above, such things like “”green jobs”, “green skills and knowledge” are not included in the majority of VET standards and curricula, which leads to not preparing youth for new challenges and jobs requirements in “green” economy. This requires planned activity of Ministry of education and science of Ukraine for organization of revision process of VET standards used by VET providers of Ukraine.

Higher education

The strategy for Higher education (HE) development for 2021 – 2031[40] doesn’t contain many provisions related to the principles and ideas of EGD. It is mentioned that Higher Education should address some specific future knowledge and skills, in particular “skills of system thinking, programming, cross-sectoral communication, the ability to work in conditions of uncertainty, multiculturalism and multilingualism, environmentally friendly thinking, multifunctionality” (p.30). Among the priorities of HE of Ukraine development there were mentioned orientation at delivering training for the specialists of technician and IT spheres, closely linked to biological occupations, that requires strengthening natural science training of future professionals along with their acquisition of IT skills (p.32).

As it was said above, curricula development in HE sphere is organized in a different to VET system way. There is special agency – National Agency for Higher Education Quality Assurance[41] –, which is an authorized body for accreditation of HE training programs. There is special register of the HE programs, accredited by this Agency[42], which for 2019 – 2020 years contains 2296 programs that the Agency has considered. Unlike VET standards, HE programs in Ukraine contain quite general description of the learning results acquired by students after graduation. For example, if we look at the HE programs for the “Ecologists”, accredited by National Agency for Higher Education Quality Assurance in 2019, we would be able to see there the following competences:

- development and approval of environmental documentation for industrial enterprises;
- development and implementation of innovative technologies and management methods in the field of environmental safety for industry and transport;
- organization of the system of management, monitoring, reporting and greenhouse gas emissions at the level of enterprises, controlling bodies and state authorities;

[40] https://mon.gov.ua/storage/app/media/rizne/2020/09/25/rozvitku-vishchoi-osviti-v-ukraini-02-10-2020.pdf

[41] https://en.naqa.gov.ua/

[42] https://docs.google.com/spreadsheets/d/e/2PACX-1vRMzqz6RMhzh58rv5BWQG7ITw7QBSohPckn2IkQqJwJ66L5b2G5dm1vkHZMZBF9FmuyqYtaA5aCv6CO/pubhtml

- conducting environmental and energy audits of enterprises, institutions and organizations;
- organization of environmental management and control system[43].

However, not all HE providers identify such a list of competences; in many cases, accredited HE program just contains the list of subjects with credits[44].

Sometimes the HE program (following the example of "Ecologists") contains the following "professional competences":

- Awareness of the latest achievements required for research and / or innovation in the field of ecology,
- environmental protection and sustainable use of nature.
- Ability to apply interdisciplinary approaches with critical understanding of environmental issues.
- Ability to use principles, methods and organizational procedures for research and / or innovation activities.
- Ability to apply new approaches to analysis and forecasting of complex phenomena, critical comprehension of problems in professional activity.
- Ability to bring knowledge and own conclusions to professionals.
- Ability to manage the strategic development of the team in the process of carrying out professional activities in the field of ecology, environmental protection.
- Ability to self-educate and improve skills based on innovative approaches in the field of ecology, environmental protection.
- Ability to develop independently environmental projects by creative application of existing and generation of new ideas.
- Ability to assess the level of negative impact of natural and anthropogenic environmental hazards.

As it is seen, the "professional competences" mentioned in the HE training program seem quite general and hardly applied to the real professional responsibilities of a person who graduated from the HE institutions after this program. The approach of forming and accreditation of HE training programs should be revised and closer link to the needs of labour market, as the graduates after successful completion of this program could work as:

- Heads of production units in rural, forest and water management, fish farming, fishing and
- Managers of ecological systems
- Biologists, botanists, zoologists
- Professionals in agronomy, water and nature reserves management, forestry.

One of the most attractive spheres of Higher education related to EGD and aimed at development of specific skills and knowledge is **energy audit**.

In 2017, Low of Ukraine "On energy efficiency of buildings" was adopted and among other issues, the law has foreseen the clear qualification requirements for specialists who can provide audit services. According to the law, there is a basic requirement for auditors - qualification certificate – which certifies that the specialist has the necessary experience for the survey and sufficient information to perform calculations. Such certificate can be obtained by passing the appropriate exam in a higher education institution or self-regulatory organization operating in the field of energy efficiency. For example, the Department of unconventional and renewable energy sources of National Technical University of

[43] https://rcf.khadi.kharkov.ua/kafedri/ekologiji/abiturijentu/
[44] https://drive.google.com/file/d/1Hp9R-IA-Q7OL2rOcwi9w4hc3ZpgiG_rD/view

Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"[45] provides bachelor and master courses for future "Engineers for unconventional and renewable energy sources". Its graduates could work in photovoltaic, wind power thermal and hydroelectric power plants, bioenergy plants for the production of biogas and electricity, energy departments of enterprises, design bureaus for the design of power plants etc.

For the graduates, there is a possibility to pass the exam and obtain qualification of an **Auditor in the sphere of energy efficiency of buildings audit**[46].

It's necessary to mention that there is no specific plans or incentives from the central level (for example, from the Ministry of Education and Science of Ukraine side) that would somehow influence on the HE providers decision to put related to EGD positions in their training programs. Mostly there is a competition between HE providers for the contingent and the relatedness of the training program with, for example, EGD could be a part of HE provider marketing strategy.

Skills for greening in occupational standards

The occupational standards development process is regulated at the national level. Two main legal acts contain a complex procedure of how to develop the occupational standards and how it should look like:

- Procedure on development of occupational standards (2017)[47],
- Methodology of occupational standards development (2018)[48].

As of July 2021, there are 169 occupational standards and Ministry of economy is responsible for their approval and registration[49].

The process of occupational standards development is not planned (from the sector point of view), it means that despite two authorized bodies (mentioned Ministry of economy and National Qualification Agency[50]) which manage the process of occupational standards development there is no plan of their development and mostly the process is business (both private and state) driven. From the private business side the most active are enterprises from metallurgical and energy sectors, from the state business side the Ukrainian Railways Company is the only example of such activities.

All standards have been developed according to functional analysis approach and contain only those professional competences that directly are used at the workplace.

Analysis of the occupational standards content for professions that deals with environmentally hazardous types of waste proves that there are specific professional competences directly linked to environment protection and waste management. Among such examples, it's possible to mention the following occupational standards:

- "Gasifier of coke coal ovens" (2020), Control post operator (coal mining) (2020), Doors' master (coke coal production) (2020)
    - Ability to study and comply with the requirements of environmental safety rules

[45] http://vde.kpi.ua/index.php/2016-01-18-07-42-06/menu-spec-vde
[46] More details at p.21
[47] Про затвердження Порядку розробл... | від 31.05.2017 № 373 (rada.gov.ua)
[48] Про затвердження Методики розробл... | від 22.01.2018 № 74 (rada.gov.ua)
[49] Міністерство економіки України -> Професійні стандарти -> Реєстр професійних стандартів (me.gov.ua)
[50] Головна (nqa.gov.ua)

- Ability to collect all generated waste separately by type in containers.

This competence requires some specific knowledge, starting from Ukrainian environmental legislation and ending with environmental management system of the company.

Due to the not very long period of occupational standards development (the oldest as adopted in 2018), the period of their revision has not yet come (the Procedure for development and approval of occupational standards (2017) foresees the obligatory revision of occupational standards after 5 years since their approval[51]. This means that no occupational standard was revised. In addition, the link between developed and approved occupational standards and educational ones is not very strong. Despite the fact that occupational standards are to be used in the sphere of education for:

- development of educational programs / standards, curricula, educational and methodical materials for all forms and types of education, training of workers, pedagogical staff and researchers;
- development of standards for assessment of learning outcomes, assignment of professional qualifications to applicants, assessment of compliance with the obtained professional qualifications of employees, graduates of educational institutions;
- conducting procedures to validate the results of informal and non-formal vocational training of persons;
- career guidance of the people, including pupils, students, workers and the unemployed persons[52] in Ukraine there is no practice of revision of educational standards / curricula according to the adopted occupational ones, so it's difficult to understand how is the educational system going to compose correspondent educational parts.

Skills for greening in adult training

Due to not-developed system of Continuous Vocational Education and Training (CVET) in particular and Life-Long Learning (LLL) adult employed population have quite limited possibilities to improve their professional skills and knowledge.

In general, there is general provision in Law of Ukraine "On professional development of workers" (2012), article four of which foresees providing in-service training directly to the employer or in educational institutions, as a rule, at least once every five years. More or less the same requirements contain General Agreements (National collective agreements concluded at the national level between Government and representative employers' and employees' organisations). In fact, the number of employed who passed the training in the professional life in 2010[53] was around 10,6%[54] from the total number of employed (1,16 mln. out of 9,07mln. of total number of officially employed[55]).

Speaking about the CVET possibilities, we can identify at least three categories of employed people who are able to benefit from CVET programs:

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[51] Про затвердження Порядку розробл... | від 31.05.2017 № 373 (rada.gov.ua) (par.31)

[52] Methodology of occupational standards development, par.5 (Про затвердження Методики розробл... | від 22.01.2018 № 74 (rada.gov.ua))

[53] Since 2011 the obligation of private sector to provide the State Statistics Service with information on the volume of employees who passed the training for the professional purposes was cancelled so no statistics since that period is available.

[54] https://pidru4niki.com/82062/menedzhment/organizatsiya_profesiynogo_navchannya_robitnikiv_organizatsiyi

[55] https://ukrstat.org/uk/operativ/menu/menu_u/sze.htm

- Employed in so-called “regulated occupations” (occupations, which qualification requirements, including CVET requirements, are foreseen in the legislation, e.g. civil and public servants, pedagogical staff, health care sector, military and police service, lawyers, judges etc.) who participate in different CVET programs obligatory as the legislation foresees. For example, according to the data of National State Agency for Civil Service in 2020 out of 180,1 thousands civil servants 49% passed professional training[56];
- Employed in private sector (big and medium national, international companies, representative offices of international companies, international organisation staff) who participate in CVET programs according to internal regulations of employer;
- Employed in micro and small business, self-employed, who often do not have any specific policy on participation of their staff in CVET programs and do it on the *ad hoc* basis.

Additional options for professional training and re-training have temporary unemployed persons, who have registered as unemployed at State Employment Service (SES)[57] and could benefit from the system of training and re-training. Such training are short termed, offered both by SES’s training centres (11 in Ukraine) and by education providers which delivers such services base on the agreements with SES. There are 95 working occupations provided in such trainings, which are based on the VET standards used by VET providers for Initial Vocational Education and Training (IVET). In 2020 out of 249 000 persons officially registered as unemployed 14, 4 thousands passed the professional training (5, 7%). The amount seems quite low but it is related to the situation with COVID-19 pandemic restrictive measures, which didn’t let many of unemployed to use this possibility (in 2019 this figure was at the level of 14%)[58].

Private sector, including CSOs/NGOs, initiatives

One of the most typical examples from the private sector in the spheres related to EGD, and in particular, energy efficiency, is the Energy Audit and Energy Management Training Centre of the Association of Energy Auditors created to increase the level of practical knowledge and skills in the field of energy audit and energy management of Ukraine[59]. Among available courses that the training centre provides are:

- Energy audit of buildings
- Thermal imaging
- Setting up individual heating points
- Energy audit of hospitals
- Energy audit of heat supply companies
- Energy audit of water utilities
- Energy audit of enterprises
- Municipal energy management

[56] https://pdp.nacs.gov.ua/news/u-2020-rotsi-profesiine-navchannia-proishly-49-derzhavnykh-sluzhbovtsiv
[57] https://www.dcz.gov.ua/
[58] https://www.dcz.gov.ua/analitics/68
[59] https://aea.org.ua/training/

Besides general knowledge and skills, there is a possibility to pass the exam and obtain qualification **Auditor in the sphere of energy efficiency of buildings,** which is proved by a specific Certificate.

Such kind of certificates do not have correlation to National Qualification Framework[60], they do not specify the level of qualification obtained. The information listed in such kind of certificates indicates:

- name of the auditor;
- name of the attestation commission and requisites of its decision;
- term of validity of the certificate (usually, 5 years).

Independently from the place and provider that issued the certificate, all certified specialists are included into an open database, which is placed on the website of the State Agency for Energy Efficiency[61], where everybody has a chance to choose an energy auditor and view his/her professional profile. The database will also indicate the centre that issued the professional certificate.

There are also other initiatives aimed at the delivering different trainings to adults (e.g. training of personnel that will ensure the stable operation of the biogas plant[62], development of Energy Innovation Hubs (platforms for training qualified professionals in the field of energy efficiency) with support of international donors[63]).

[60] Про затвердження Національної р... | від 23.11.2011 № 1341 (rada.gov.ua)
[61] https://saee.gov.ua/uk/content/energy-auditors-attestation
[62] https://ecodevelop.ua/service/obuchenie-personala-zakazchika/
[63] http://see.org.ua/en/projects-en/energy-innovation-hub-project/

Conclusions

The current project examined national readiness to o carry out actions on the undertaken obligations within the framework of Sustainable Development Goals in general and European Green Deal as more oriented at climate change overcoming and circular economy development at national and international levels.

Project activities included desk study, which delivered a large amount of information and data used in the design of the *Matrix of country SDG and EGD indicators*, which is the intended outcome of the project. The purpose of the *Matrix* is to provide the European Training Foundation with concrete data toward current stage of Ukraine progress in SDG and EGD realisation.

Report, which is the Project outcome, has shown that Ukraine in principal follows the principles of climate change overcoming set in the international documents. The concrete actions are foreseen in a number of sector policy documents and action plans. The developmental sectoral strategies in Ukraine cover the following spheres: agriculture, transport, environment protection, energy production, biodiversity preserving. However, almost all of them do not contain the skills dimension, in particular, new skills development programs, re-skilling and up-skilling targeting either students, youth, entrepreneurs, management, workers, and public institutions, knowledge and peer exchange within a sector or country or internationally with focus on green skills.

Regarding the existing education strategies, it's necessary to mention that partly they address the green transition. For example, curricula at school level, in particular primary and secondary school levels, include competences aimed at forming sustainable way of thinking and respect for nature. It's also worth mentioning that current education strategies limit themselves only with formation of general competences, not tailored to objectives related to green economy and do not include concrete measures to address them.

In terms of initial VET (IVET), Ukraine realises quite passive policy on adapting curricula to include green transition competences (in particular, environmental awareness, climate change, recycling and circular economy). Existing VET educational standards contain quite basic knowledge on energy saving measures and environment protection. VET standards that dedicated to the professions that relate to the specific areas (e.g. (insulation, coal extracting, oil and gas transportation) have additional content, including, e.g. international standard ISO 50001, requirements of ISO 50001 to the energy management system.

The general analysis of existing educational standards (for both VET and Higher education) shows that there are very few occupations relevant for the green transition. Among the examples in VET there could be mentioned "Farmer", "Farmer assistant" and "Master of installation and maintenance of renewable energy systems" (delivered since 2018); and for the Higher education there could be mentioned qualification different types of managers of ecological systems. Nevertheless, these rare examples only prove that there is no defined trend in training specialists for the spheres related to SDG and EGD.

The occupational standards started developing since 2018. General analysis of the variety of approved occupational standards demonstrate that there is no more or less generalised block of competences related to "green" economy needs. The method used to elaborate occupational standards foresees only functional analysis, which means that occupational standard should be developed for the concrete occupation and in many cases to the concrete workplace. For our analysis this means that if the

occupation does not foresee the functions related, e.g. to greening certain working processes this is not foreseen in the occupational standard.

Adult education in Ukraine (CVET) is closely linked to the existing system of training and re-training of temporary unemployed persons. Due to the absence of the institutionalised system for adults' education, an adult person could either use the mentioned above system for training of temporary unemployed persons (however, t benefit from it he/she needs to obtain correspondent status through legally set procedure), or use the opportunities that provide the private sector. The private sector offer in the sphere of "green" economy is mostly limited with the very specific trainings, typical example of which is "Auditor in the sphere of energy efficiency of buildings audit".

Like in any other reform effort, the implementation of sustainable development and environment protection principles in Ukrainian life as a key step in the "greening" society in general and economy in particular will require certain adjustments of the current legal framework. From our point of view, the most significant challenges would face education in general and VET in particular. The project has shown that the challenges that the VET system of Ukraine is facing are considerable and there can be no doubt that further reforms will require major efforts. However, if addressed adequately step by step and with the continuous support of international expertise, those efforts will result in a VET system that provides its graduates with the knowledge and skills they need in their personal and professional lives and employers with a workforce that allows them to be competitive both at the national and international level.

Limitations and further research

Ukrainian education system is quite large and complicated. All spheres of education has different procedures for designing, approval and implementation of curricula and other training content. For primary and secondary schools there are state standards that in major terms set the content of education and provide with the typical curricula that every provider have the right to adapt both in term of language and specialisation of the school (math and physics, biology, language etc.). This means that deep and comprehensive understanding of the training content related to formation of “ecological” (sustainable, green) competences is possible only after more detailed analysis of the school programs.

Regarding VET, the limitation is linked, first, to a number of VET standards (hundreds) that are used by the VET providers across Ukraine, and, second, to the absence of the modern occupations designed to be used in the spheres of “green” (circular) economy. This absence could lead us to the conclusion that Ukrainian economy doesn’t require specialists in this spheres. From our point of view such conclusion does not stand up to any scrutiny as we observe in Ukraine the increase of companies that offer services on installation of solar energy systems, heat pumps, “smart house” devices which in turn require specialists to provide service for such products. Most likely this situation is provoked by conservatively and rigorousness of Ukrainian VET system that doesn’t respond quickly and adequately to the private sector request, from one side, and of course the lack of trust from the side private sector to the VET system in its capability to train necessary specialists. However, such personal conclusions and assumptions should be explored in other follow-up researches.

In many ways, the above applies to the Higher education. Due to the high level of universities and colleges autonomy, the variety of educational programs delivered by the high education providers calculates in thousands which causes quite a big challenge to make a comprehensive analysis of the training content related to “greening”. In order to make some proved conclusions a separate study should be organized.