MINISTRY FOR DEVELOPMENT OF
ECONOMY, TRADE AND AGRICULTURE
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STUDY

CROSS-SECTOR EXPORT STRATEGY SKILLS DEVELOPMENT

2019-2023

Trade with Ukraine

Ukraine NOW ua

CONTENTS

LIST OF BOXES

ACRONYMS AND DEFINITIONS

CI	Creative industries
CRC	Cooperative Research Centers
EDB	Economic Development Board
ESU	Export Strategy of Ukraine: Strategic Trade Development Roadmap for 2017–2021 and Action Plan
ETF	European Training Foundation
HE	Higher Education
ILO	International Labor Organization
ITC	International Trade Centre
IATA	International Air Transport Association
LMIS	Labor Market Information System
LMO	Labor Market Observatories
MoES	Ministry of Education and Science of Ukraine
MRO	Aircraft Repair and Maintenance
SME	Small and Medium Enterprises
TAFE	Technical and Further Education
VET	Vocational Education and Training

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The views expressed herein may not reflect the views of the German federal company Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Non-Governmental Union "Foundation for Support of Reforms in Ukraine" and the Ministry for Development of Economy, Trade and Agriculture of Ukraine, or individual participants of the three rounds of National Consultations on the Development of Sector and Cross-sector Export Strategies.

EXECUTIVE SUMMARY

The Plan of Action included in the Cross-sector Export Strategy "Skills Development" is designed to strengthen the links between a highly skilled and flexible workforce and national economic development. The International Trade Centre, the Ministry for Development of Economy, Trade and Agriculture of Ukraine and the Ministry of Education and Science of Ukraine (MoES) have jointly developed the strategy, with inputs from industry stakeholders, unions, Higher Education (HE) and Vocational Education and Training (VET) institutions, business schools and educational providers.

A highly skilled and flexible workforce is a key ingredient in the competitiveness of any company and is vital to the economic growth of a country. Countries can gain a competitive edge through the skills of their population. The challenge is ensuring that the right skills are available when they are needed so as not to limit growth.

Skills are not qualifications. The level of education obtained does not equate to skills acquired by an individual. An individual with a high qualification level may still be considered low skilled if the capabilities developed to obtain the qualification have no relevance to the job market. The strategy has taken into consideration the global trends towards automation and digitalization of certain roles that could end up eliminating roles such as cashiers, tickets sellers, financial analysts, accountants, and auditors among many others.

This strategy cuts across all economic sectors in Ukraine, but its primary focus is on the skills that are required to develop a successful export economy. The strategy is grounded on the overall trade development framework defined in the "Export Strategy of Ukraine: Strategic Trade Development Roadmap for 2017–2021 and Action Plan" (ESU).

It also covers skills development objectives, defined in the sector and cross-sector export strategies, official documents of the Government of Ukraine in general and the MoES in particular as well as worldwide trends in skills development.

The overall vision of this skills development strategy is "the development of a highly-skilled workforce supported by initial and continuous market-relevant learning programs leading to export competitiveness and growth".

The three strategic objectives are as follows:

1. To stimulate entrepreneurship spirit among the youth and to develop the managerial skills in SMEs.

   This objective aims to promote an entrepreneurial mindset in the country. This objective is twofold: on the one hand, it will promote the establishment of innovative companies; on the other hand, it will encourage labor mobility[1]. Achieving this objective will contribute to upgrading the managerial skills within existing enterprises, in particular, SMEs. It aims to improve the managerial skills of managers to help them define their business better and deal with the production, marketing, and finance functions.

2. To align the offering of the education system to the needs of the enterprises, in particular, SMEs.

   At the operational level, the objective is supported by several operational objectives:

2.1. Collecting consistent, up-to-date labor market information to meet the priority sectors workforce development needs.

   This operational objective is geared to identify labor market skills demand in partnership with industry to enable trade development; analyze workforce dynamics to develop strategies to attract and retain highly skilled workers in the priority sectors; and to

[1] These strategic goals are defined as operational goals in the Export Strategy of Ukraine: Strategic Trade Development Roadmap for 2017–2021 and Action Plan.

develop labor market–oriented careers information to meet the aspirations of young people to choose jobs in high demand export growth areas.

2.2. Creating an ongoing supply of highly skilled talent for competitive export activities.

This operational objective is supported by operational objectives that aim at providing high–quality learning opportunities for new and existing export businesses; increasing economic prosperity by developing the skills of new entrants and existing worker skills in export–related activities; developing a continuous professional development for teachers and instructors, covering initial training and ongoing professional development; increasing economic inclusion by fostering innovation, soft skills through learning strategies and learning activities related to export competitiveness; and enhancing industry, HE and VET collaboration to deliver a high quality up–to date skilled workforce by offering greater flexible learning arrangements for new and existing workers in the priority sectors and their channels.

2.3. Establishing a platform for communication between government and industry for collaboration and planning at the national level to develop skills for export growth and competitiveness.

This operational objective is about establishing a policy and planning body involving key stakeholders to steer and strengthen the responsiveness of HE and VET for export growth and competitiveness; developing clear roles and responsibilities and memoranda of understanding for the inter–ministerial and stakeholder bodies, by defining clear lines of responsibility; introducing evidence–based policy setting to determine skills development priorities to underpin export growth; and ensuring flexible and diverse HE and VET delivery options are widely available to develop a vibrant and responsive HE and VET sector, support establishment of private and industry–led education providers.

3. To create a national clusters program for collaboration and planning at the national level to develop skills for export growth and competitiveness.

Decentralization is a crucial trend in the institutional environment in Ukraine. Decentralization creates additional opportunities for local authorities to work in close partnership with the industry and educational institutions. This cooperation will reinforce the overall value of clusters. Hence, some case studies of priority cluster formation are presented as a possible perspective to look at skills development in Ukraine.

The strategic objectives group into three categories; meeting immediate business export skills development needs, in the mid–term establishing a skills development system of supply that produces graduates and up–skilling existing workers with the skills essential to the exporting activities of the priority sectors, and finally, is ensuring that the skills development system continues to be responsive to the changing and emerging needs of the priority sectors. Each of the priority sector activities identified through the consultations relates directly to the operational objectives in the Plan of Action.

Implementation of the strategy

This strategy is part of a comprehensive Export Strategy of Ukraine. It is designed to identify constraints and opportunities to trade development as well as priorities that the country should focus on to develop the skills for exporting. Simultaneously, it presents a plan of action to achieve results that are fundamental to export competitiveness.

The ESU caters for the necessary governance structures to ensure the correct implementation of the plan of action over the next five years. To obtain early results, this plan of action details a series of activities to be implemented in the short– to medium–term timeframe. The effectiveness of implementation is likely to be contingent on the stakeholders' ability to align the efforts of the various institutions – public, private, and civil society – with the priorities identified. The public–private dialogue platform established to design the strategy should play a leading role in its implementation. It should be strengthened further to enable the successful management, monitoring, and measurement of the implementation phase. This strategy and its Plan of Action are agreed and developed through a series of consultations with key stakeholders from industry, employers, unions, HE and VET institutions, government, business schools, and training centers.

BACKGROUND

This background section discusses a range of issues confronting most countries globally and looks at some of the initiatives being implemented to overcome unproductive workforces.

What are skills

Skills development in this document is understood in broad terms to be covering both soft and hard skills. Soft skills are "desirable qualities for certain forms of employment that do not depend on acquired knowledge: they include common sense, the ability to deal with people, and a positive flexible attitude"[2].

In contrast, hard skills are learned abilities that are acquired and enhanced through practice, repetition, and education[3]. They generally involve:

- general competences (e.g. knowledge of foreign languages or computer skills);
- managerial competences (e.g. leadership or project management);
- function and/or industry–specific competencies (e.g. programming in ICT or search engine optimization (SEO) in marketing).

Skills are not qualifications. The level of educational attainment does not equate to skills acquired by an individual. An individual with a high qualification level may still be considered low skilled if the capabilities developed to obtain the qualification have no relevance to the job market. Skill development systems that produce skills that are not relevant to the workforce needs are ineffective and inefficient for individuals, employers and governments.

Most contemporary definitions of skills expand beyond a narrow technical definition to include social and soft skills along with the underpinning body of knowledge required to navigate work and social life successfully. Skills are acquired, adapted and refined throughout one's working and social life. According to the World Bank, skills comprise cognitive, socio–emotional, technical and professional competences.

Contemporary labor markets require workers with a complement of technical, soft and social skills, along with the ability to be adaptable in meeting changing workplace demands. Investing in skills is a vital underpinning plank of a country's economic growth and competitiveness and providing a balance between strong broad–based skills as well as specific skills for particular jobs, is an ongoing challenge for many governments.

Global trends

A skilled, flexible workforce is a key ingredient in the competitiveness of any company and is vital to the economic growth of a country. The challenge is ensuring that the right skills are available when they are needed so as not to impede growth. An expanding body of research (OECD 2004, Froy 2013, Giguère 2008) details the importance of matching supply (the skills of graduates) with demand (business labor requirements).

According to the European Investment Bank, countries can gain comparative advantage through the skills of their population. The quality of their Higher Education and Vocational Education and Training systems and the alignment with industries' skill requirements are brought about through close collaboration with industry.

The World Economic Forum in its "Future of Job Report 2018" shows the threat to some new roles which can be automated. At the same time, development of technologies and soft skills with propelling importance of new roles, AI & Machine Learning Specialists or People & Culture Specialists (see Example of stable, new and redundant roles, all

[2] https://www.collinsdictionary.com/dictionary/english/soft-skills
[3] https://www.investopedia.com/terms/h/hard-skills.asp

industries). Overall changes in the job market are crucial for mid– and long–term decision–making so that the government or industry does not invest into the development of the skills for the job roles that will disappear in the nearest future.

Table 1: Example of stable, new and redundant roles, all industries (World Economic Forum)[4]

Stable Roles	New Roles	Redundant Roles
Managing Directors and Chief Executives General and Operations Managers* Software and Applications Developers and Analysts* Data Analysts and Scientists* Sales and Marketing Professionals* Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products Human Resources Specialists Financial and Investment Advisers Database and Network Professionals Supply Chain and Logistics Specialists Risk Management Specialists Information Security Analysts* Management and Organization Analysts Electrotechnology Engineers Organizational Development Specialists* Chemical Processing Plant Operators University and Higher Education Teachers Compliance Officers Energy and Petroleum Engineers Robotics Specialists and Engineers Petroleum and Natural Gas Refining Plant Operators	Data Analysts and Scientists* AI and Machine Learning Specialists General and Operations Managers* Big Data Specialists Digital Transformation Specialists Sales and Marketing Professionals* New Technology Specialists Organizational Development Specialists* Software and Applications Developers and Analysts* Information Technology Services Process Automation Specialists Innovation Professionals Information Security Analysts* Ecommerce and Social Media Specialists User Experience and Human-Machine Interaction Designers Training and Development Specialists Robotics Specialists and Engineers People and Culture Specialists Client Information and Customer Service Workers* Service and Solutions Designers Digital Marketing and Strategy Specialists	Data Entry Clerks Accounting, Bookkeeping and Payroll Clerks Administrative and Executive Secretaries Assembly and Factory Workers Client Information and Customer Service Workers* Business Services and Administration Managers Accountants and Auditors Material-Recording and Stock-Keeping Clerks General and Operations Managers* Postal Service Clerks Financial Analysts Cashiers and Ticket Clerks Mechanics and Machinery Repairers Telemarketers Electronics and Telecommunications Installers and Repairers Bank Tellers and Related Clerks Car, Van and Motorcycle Drivers Sales and Purchasing Agents and Brokers Door-To-Door Sales Workers, News and Street Vendors, and Related Workers Statistical, Finance and Insurance Clerks Lawyers

Note: Roles marked with * appear across multiple columns. This reflects the fact that they might be seeing stable or declining demand across one industry but be in demand in another.

◇ Avoiding stagnation

The Global Competitiveness Report 2015–2016 emphasizes that strong vocational skills are an important source of comparative advantage for companies[5]. Training matched to the skill needs of enterprises, not only benefits companies and their sectors, but linkages with employers are the most significant influence on the success of training outcomes, with students more likely to gain employment[6].

According to Cedefop, evidence from European countries show that a 1 per cent increase in training days leads to a 3 per cent increase in productivity, and the share of overall productivity growth attributable to training is around 16 per cent[7] when learning aligns to specific industry needs. In recognition of the need to ensure a productive and efficient workforce, Ukraine has commenced a process of aligning the education sector with good European practice.

The 2008 global financial crisis led many countries to examine skills development and retraining as a way to deal with employment issues and as a strategy to move from lower to higher value–added producers of goods and services. Countries like Singapore provide a clear example of how a comprehensive skills development strategy can underpin economic growth and renewal.

[4] World Economic Forum. The Future of Jobs Report: http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf (retrieved on April, 2, 2019).
[5] Schwab, K., ed. The global competitiveness report 2015–2016. World Economic Forum. 2015. Available at: http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf.
[6] Asian Development Bank. Good practice in technical and vocational education and training. Mandaluyong City, Philippines: Asian Development Bank, 2009.
[7] CEDEFOP (European Centre for the Development of Vocational Training). 2007. Building a European VET area, Agora conference (Thessaloniki).

Box 1. Singapore workforce development strategy

The Singaporean Government's three economic restructuring phases involved developing a manufacturing base, then moving to become a services economy and more recently regarding knowledge-based services to encourage higher value-added activities. The Singaporean Economic Development Board's (EDB) primary mission was to promote investment during each of these prioritized phases.

EDB also played a crucial role in human resource training and development through the Skills Future initiative, which provided training incentives for companies. The EDB was also responsible for promoting the expansion of training and developed incentives that helped strengthen the public Vocational Education and Training (VET) system, such as giving companies a levy reduction if they took on VET students for work-based learning. The emphasis on VET and the development of human resources became a priority in order to promote and successfully achieve economic growth. The EDB assumed a central and successful role in up-skilling workers to accelerate industrial restructuring, with the number of skilled workers doubling during each stage of the reforms. For more information, see Annex A.

Singapore is rather a small and centralized country with a strong foundation for a whole-of-government approach in change management. Ukraine is one of the largest countries in Europe with limited institutional capacity for implementation of a whole-of-government change. At the same time, not only central but also local authorities can become drivers of cluster development in Ukraine. Local authorities, with the ongoing decentralization, have much more instruments, including fiscal, to promote both young workforce training as well as retraining of the current workforce.

By ensuring that skills are utilized effectively, local economies can become more competitive and provide better quality and higher paid jobs, while simultaneously improving living standards and stimulating innovation[8]. Much of the research demonstrates that it is not just investment in the supply of skills, which counts, but also close relationships with employers to ensure that the skills developed are effectively harnessed and skills fully utilized. Recognizing this, many governments have developed initiatives to strengthen engagement with the private sector and employers.

Venture Funds, Accelerators and other entrepreneurship-oriented in-process training are led mainly by private funds. At the same time, France, Germany, UK, Finland, Estonia and other European countries establish government initiatives to develop entrepreneurs' skills.

Results from the European Investment Bank Investment Survey suggest that firms increasingly view the limited number of people with the right skills as an obstacle to growth. More than seven in ten European firms see it as an impediment to investment[9]. While a McKinsey survey of nine countries noted that only 43 per cent of employers found the skills they needed in entry-level workers[10]. Notably, for Ukraine's neighbors, companies in Central Eastern and South-Eastern Europe, where economies are catching up with the technology frontier they identify limited availability of skills as a problem.

A lack of the right skills is also viewed increasingly as a problem in countries close to their potential[11]. The mismatch of skills raised by Ukrainian companies during the International Trade Centre workshops for the five priority sectors of ICT, food and beverages, creative industries, machinery, and aircraft repair and maintenance (MRO) is also highlighted in the World Bank, Skills for a Modern Ukraine report.

[8] Froy, F., Giguère, S., and Meghnagi, M., Skills for Competitiveness: A Synthesis Report. LEED Project, OECD 2012.
[9] European Investment Bank, 2017. Investment Survey – Tracking investment needs and constraints across Europe. EIB: http://www.eib.org/en/about/economic-research/surveys-data/investment-survey.htm.
[10] Mourshed, M., Farrell, D. and Barton, D. Education to employment: Designing a system that works. McKinsey Centre for Government. 2012. Available at:
http://www.mckinsey.com/client_service/public_sector/mckinsey_center_for_government/education_to_employment
[11] European Investment Bank, April 2018. Investing in Europe's future: the role of education and skills. Economics: Thematic Studies. European Investment Bank.

Whole of government approach

A whole of government approach to skills development planning is recognized internationally as an important step in identifying relevant skills, avoiding duplication and developing a coherent approach to planning and implementation. Inter-ministerial coordination repositions skills development as a nationally strategic platform to support economic development and regional competitive advantage for foreign direct investment. Inter-ministerial coordination can improve the responsiveness of skills development systems and can address issues such as removing regulatory barriers for the movement of new and existing workers from remote regions to where employment is available.

A Whole of government coordination can offer greater coordination of resources and contribute to the strategic design of skills development responses. Such management also enables the efficient allocation of limited financial and human resources to support the implementation of training programs[12]. These arrangements can include the relevant ministries involved in HE, VET, employment, economic development and sectoral line ministries involved in skills development.

Global value chains and skill development

The global significance of value chains means that participating companies are more likely to be bound by:

- international standards and certifications (such as quality, handling processes and product standards);
- a level of technical skills determined by the lead companies or major customers' product or service demand.

Companies participating in a value chain will likely have very clear training requirements because of international standards, certifications and product specifications. While domestic and regional value chains may not have the same pressure to meet international standards, certifications and product specifications. However, many countries recognize that developing managerial, process and technical skills that match international standards, certifications or value-added technical expertise helps improve the competitiveness of domestic companies and position them to become part of global value chains.

The growing number of supply chain certifications in areas such as pharmaceuticals, quality, Fairtrade, sustainability and environmental safety, means that large anchor companies or sector associations are working to strengthen their value chains through skills development and business support. The trend is likely to continue as more governments look for practical solutions to meet the Sustainable Development Goals. Becoming certified and undertaking skills upgrading may not only secure a position within a global value chain, but it can also result in improved competition as demonstrated in the International Air Transport Association (IATA) example below.

The IATA example underscores how a detailed understanding of an industry sector can provide an effective solution to the problem of weakening market share. In this example, training forms part of a broader range of strategies to overcome a critical industry issue and reinforces the role of skills in underpinning economic growth.

Table 2: The International Air Transport Association certification program.

The International Air Transport Association determined that while the pharmaceutical logistics market was growing, the air cargo sector was losing market share to other forms of transportation. The IATA undertook a mapping of the supply chain to identify weaknesses and to standardize the handling of pharmaceutical products in the air cargo value chain. Alongside developing a set of temperature-sensitive standards that ultimately led to CEIV Pharma certification for the sector, IATA developed

[12] International Labor Organization. "Meeting report: G20 training strategy knowledge-sharing workshop on skills for employment". Undated. Available at: http://www.ilo.org/wcmsp5/groups/public/@ed_emp/@ifp_skills/documents/meetingdocument/wcms_162423.pdf

training in handling and maintaining temperature control for the value chain. IATA determined that a standardized approach, underpinned by training, would create a competitive advantage for the aviation sector.

The training and certification process ensure that the entire value chain—ranging from trucking and freight forwarding companies to cargo and ground handlers, airlines and airports—complies with handling and storage requirements.

IATA views this as a sectoral value-chain strengthening initiative as it safeguards the airlines existing market and increases its revenue in the fastest-growing segment of air cargo. Transporters experience lower rates of damage and loss caused by temperature lapses while regulators are assured of the safety of pharmaceutical products shipped by air. As IATA is a key stakeholder in the industry sector, it was able to identify current trends and threats, such as the decreasing share of the pharmaceuticals logistics market, and develop a strategy to offset the declining market share. The certification training and up-skilling are provided by the association.

IATA case also presents the power of cluster cooperation among various stakeholders.

Governments in high-income economies secure production and value creation by supporting investment in skills and advanced manufacturing technologies, including in traditional industries, and through policies that strengthen networks and cooperation[13].

According to the OECD, skills development approaches have been classified in some of the literature for different phases of global value chain upgrading[14]. The classification divides the approaches into three groups: early reactive interventions, ongoing proactive interventions, and future-oriented interventions.

The *early reactive interventions*, respond to immediate industry skill needs and are primarily conducted on the job and identify current workers as their target[15]. These skill development strategies support companies to perform ongoing activities and maintain their position in a value chain.

The next phase, *ongoing proactive interventions*, provides training that meets the emerging needs of the industry; the focus here is on technical skills development in emerging areas.

The final phase, *future-oriented interventions*, focuses on skills development strategies that address the future skill needs of companies in a value chain so that they can upgrade and cater to new higher value end-market segments.

◇ Anticipating skill needs

Internationally, attempts to address skills mismatches and to anticipate future skill needs have resulted in a similar set of policy responses. Identifying labor market skills shortages and skills gaps through a Labor Market Information System (LMIS) is a universally recognized approach. Anticipating the skill requirements of industry sectors is a difficult exercise, which usually relies on a mix of qualitative and quantitative data.

LMIS can be expensive systems to implement and maintain and on their own may have little impact on the quality and relevance of VET graduates to industry. However, identifying and anticipating skills needs must precede training decisions (ILO 2011) to ensure that skills are relevant to the labor market. Understanding labor market skills needs is important for all training decisions but is crucial in areas of new technology and emergent processes. Implementation of an LMIS is generally aimed at the following strategic objectives:

[13] OECD (2013), Interconnected Economies: Benefiting From Global Value Chains. Meeting of the OECD Council at the Ministerial Level. Paris 29-30 May 2013 Available at: https://www.oecd.org/mcm/C-MIN(2013)15-ENG.pdf.
[14] Fernandez-Stark, K., Bamber, P. and Gereffi, G. "Upgrading in global value chains: Addressing the skills challenge in developing countries. OECD background paper. Center on Globalization, Governance and Competitiveness, Duke University, 2012. Available at: http://www.cggc.duke.edu/pdfs/2012-09 26 _ Duke _ CGGC _ OECD _ background _ paper _ skills _ upgrading _ in GVCs.pdf.
[15] Ibid.

- Nationwide transparency concerning supply and demand in markets for labor and VET;
- Fast access to job offers and job requests, acceleration of the matching process for both employers and job-searchers;
- Use of all available data sources to support different labor market functions (career advice, program planning, prioritizing resource development);
- Uncomplicated and red-tape-free ways of communicating offers and notices[16].

Another global trend in identifying industry's skill development needs is a complementary policy response to an LMIS and involves the establishment of Labor Market Observatories at local, regional or sectoral levels. Labor Market Observatories (LMO) generally comprise Sector Skills Councils (industry skills advisory bodies), Employment Services, education planners, HE and VET providers, enterprises, employer and employee organizations, and research centers. They tend to collect qualitative information, and they are able to identify information on current and anticipated changes in work organization and technology usage. LMOs try to raise awareness and levels of understanding on the state of the labor market, as well as likely future labor market trends.

A complementary policy response identifying sectoral skill needs is the formation and use of sector advisory bodies, often named Sector Skills Councils. Sector advisory bodies can complement the role of government in skills development by providing recommendations on skill shortages and developing skill standards or information that forms the content of national qualifications. The role of the industry sectors in these organizations varies depending on the country's priorities. Many activities are common across countries and include skill standards development and labor market intelligence.

Formal sector advisory organizations exist in many countries, for example, the United Kingdom, a number European Union states, Australia, Bangladesh, India, Malaysia, New Zealand, Singapore, South Africa, and the United Arab Emirates. Some common activities performed by sector advisory organizations include: identifying sectoral skill needs, developing national skill standards, raising awareness of skill development, promoting skills development in industry, facilitating partnerships between industry stakeholders and the skills development sector, providing teachers and trainer with exposure to industry and industry and developing sectoral qualifications.

◇ Impact of Skills Level on Foreign Direct Investment

Low skill availability can constrain investment opportunities and result in companies not investing for the long-term. Low levels of skill availability are a particularly crucial constraint in the case of mobile, high value-added investments for which cost-competitive skilled labor is a major determinant[17]. As the link between services and high-end manufacturing and skilled labor grow, the correlation between a country's Foreign Direct Investment attractiveness and their available skills is strengthened. An interesting example of a country implementing an inclusive investment growth strategy is Costa Rica. In the example below the Investment Promotion Agency acts as an intermediary between companies and skills development institutions to identify specific skills required by industry.

Box 2 Costa Rica Investment Promotion Agency and Inclusive Growth (UNCTAD 2013)

The Costa Rica Investment Promotion Agency (IPA) plays a central role in facilitating an exchange of information between companies and skills development institutions on specific industry skills. It surveys the skill demands of foreign investors and views skill development as fundamental to maintaining the country's competitiveness. On a regular basis, the Costa Rican IPA asks managers and Human Resource managers what skills are needed to meet their long-term strategic goals. The IPA then facilitates sectoral academic partnerships to design and deliver training programs based on this analysis. The IPA targets the narrowest and most crucial skill-set needs and works directly with the demand drivers and the suppliers of those skills.

[16] GIZ, (2014). Guidelines for the Development of labor market information system. [Online]. Available at: http://www.giz.de/wbf/4tDx9kw63gma/201403_Guidelines_Employment%20Analysis_ELMA_Final_web.pdf

[17] IUNCTAD, (2013). Skills and Foreign Direct Investment Promotion: What can an investment promotion agency Do? The IPA Observer Series. United Nations Conference on Trade and Development.

Part of IPA's credibility is in identifying precise skill gaps and effective partner selection of the skills development institutions and management of the process. To ensure a supply of students into new programs and then into work, the IPA informs students of rewarding career paths in demand and their associated courses.

IPA sees this as part of the success in getting existing companies to reinvest in increasingly high value-added activities. The strategy is also seen as inclusive as it builds the skill base of the country internally rather than relying on attracting high skilled foreign workers and it helps retain highly skilled local workers.

Since 2005, 10,000 workers have been trained in high-value skills, life sciences, advanced manufacturing and clean technology sectors and 80% of those trained have been retained as paid employees.

The Costa Rica example offers lessons for Investment Promotion Agencies, Cluster Development Agencies and others, like, research centers, HE and VET institutions working with sectoral groups.

◇ Closer industry collaboration

There is widespread agreement on the importance of close cooperation with industry on the identification of skill shortages, the development of content for learning programs and the governance of skills development systems. HE and VET systems around the world are working to implement closer partnerships with industry. Besides improving the overall relevance and quality of outcomes in vocational learning programs, the industry can provide a deeper understanding of the specific needs of industry and can work to overcome barriers that the HE and VET sector cannot resolve on their own.

In the Netherlands, sector-wide labor agreements incorporate sector-specific training agreements. The aim of these training agreements is to identify and prioritize sector-specific training needs and to make training available to all the firms in a sector in order to avoid skilled employees being poached by businesses that do not invest in training. Companies are levied according to each sector's ability to pay, and the sector funds provide funding for a range of activities, including training, research and labor market intelligence, supporting new entrants, and setting up a student pool where businesses can hire students per hour. The funds can also provide career development programs for existing workers threatened with redundancy and funding for training where a company is losing revenue. The training funds provide training to meet the short-term, but specific needs of employers. The Netherlands' approach allows industry and employers to determine specific skills and priorities required for new and existing workers and they also provide content for broader skillsets and qualifications developed through HE and VET.

In the Netherlands example, the issue of poaching skilled workers has reduced through a sector-wide approach to skills development and the sector supplements the capacity of the HE and VET system by funding additional skills development and workforce management activities. Reducing poaching of workers and addressing employer reluctance to train individuals could not have been achieved by an isolated HE and VET system.

◇ Formation of clusters

From a firm perspective, the international evidence is now clear: firms that are based in clusters are more competitive than similar firms located outside the cluster and scattered around a country. Secondly, from an economic development perspective, the evidence is clear that with strong clusters comes growth in employment, especially high-value jobs. Research from OECD and others shows that economies with strong clusters have higher levels of innovation, higher productivity, more entrepreneurship, more new business start-ups, higher export and economic growth, higher wages and better productivity. Regions with strong clusters are particularly successful in attracting new investment and talent[18].

[18] Ifor Ffowcs-Williams, Cluster Navigators Limited. Cluster Development in Practice KMBS, Ukraine, October 2015.

A competitive cluster is knowledge–intensive. Academic, research and training institutions have a central role in upgrading a cluster's knowledge base and in enabling the adoption of appropriate knowledge.

Strong clusters, strong knowledge centers: Any internationally competitive cluster has knowledge foundations. Academic institutions underpin strong clusters and have a key role in further extending the cluster's knowledge base.

Porous boundaries: A common success factor is open boundaries between universities and business, enabling tacit information to flow, the clear signaling of training and research needs and for co–development. The development of an open culture with porous boundaries is assisted by co–location and shared physical infrastructure, such as a business incubator and/or specialized testing facilities.

High schools: High schools have an important role to play in building a region's competitiveness. Many schools offer specialized training that relates to the local clusters as this is where the most promising job prospects for school leavers will be and where the more skilled and higher–paying jobs are.

VET: These colleges often have the flexibility to offer long and short–term courses developed in partnership with the cluster's firms. Many also make available laboratories, workshops and testing facilities for local firms.

Public research institutions: "Academia" includes government–funded research institutions generating new knowledge for the cluster's firms. In many countries, such institutions are remote from businesses, at times generating technology solutions that are not absorbable by local firms.

A university's central role: A university can have a broad role within an innovative cluster: as a provider of human capital; as a supplier of technological and managerial expertise; as a generator of new firms and as a coordination mechanism for the cluster. Part of a university's role can be drawing in knowledge from other centers.

Active engagement: Cluster engagement addresses the difficulties that universities and other parts of academia have in detecting individual company needs, especially those of SMEs. University is not a junior partner in the cluster development process. Active participation is a win–win. Academics should engage with the cluster's task forces and development projects. Academic leaders may be based at post–secondary institutions, high schools or testing facilities. Universities also have an important role in linking the cluster into other knowledge centers around the world, drawing in and making accessible knowledge that is relevant to the cluster's firms[19].

NATIONAL CONTEXT

Overall, Ukrainians have a high level of educational attainment with 44.7% of the population aged 15 to 70 having a tertiary qualification. About 49% hold general secondary, vocational or secondary specialized levels of attainment. The level of educational attainment does not equate with the skills held by graduates[20]. The World Bank[21] notes that a "diploma does not guarantee that graduates perform well in the workplace" and University graduates comprise a significant group of the overall unemployed population.

Ukraine's working poverty rate in 2016 was 24%[22] of the working population for people aged 16 and above. These are individuals that are in spite of being employed still live in a household that has income or consumption levels below the poverty line. Youth unemployment fell in all countries in the Eastern European region with the exception

[19] Ibid.
[20] National statistical offices and ILO, as quoted in the European Training Foundation. 2017. Torino Process 2016–17 Eastern Partnership and Russia. European Training Foundation.
[21] Del Carpio, X, Kupets, O, Muller, N, and Olefir, A. 2017. Skills for a Modern Ukraine. Directions in Development. Washington, DC: World Bank. doi:10.1596/978–1–4648–0890–6.
[22] ILO Stat Country Profile: Ukraine (Online Database). Last accessed 12 September 2018: https://www.ilo.org/ilostatcp/CPDesktop/?list=true&lang=en&country=UKR.

of Ukraine, where the rate grew from 17.4% to 22.4% while at the same time, overall employment rates have fallen significantly since 2013[23]. The unemployment rate and high-levels of educational attainment suggest a mismatch in the qualifications attained and the type of work engaged in by workers. According to the G20 Skills Strategy, a good skills development system will anticipate skill needs; engage employers and workers in decisions about training provision, including at the sectoral level; and maintain the quality and relevance of training.

Ukraine's strategic objectives in skills development

MoES has prioritized the following areas:

1. Establishment of a "New Ukrainian School" system;
2. Modernization of VET;
3. Ensuring the quality of HE;
4. New approaches to managing and financing science.

These initiatives aim at closing the gap between market needs and employees' skills by encouraging local cooperation among the industry, local authorities, workforce, and educational institutions. It is supported by decentralization of financing and wider opportunities for the autonomy of VET and HE[24].

Secondary education

Considering the need for formulating also cognitive and socio-emotional skills, some attention needs to be paid to secondary education. This element of the education system is not critical for export-oriented skills in the short-run. However, in the medium and long term, the level of secondary education directly affects human capital, the level of applicants to HE and VET and, in general, the ability to adapt and study throughout life. In addition, the quality of secondary education is critical for developing general skills of future employees.

A transformative reform in secondary education started in Ukraine in 2018. This transformation is associated with the establishment of a "New Ukrainian School". In accordance with this concept, the autonomy of schools is implemented. The schools are given the opportunity to move away from the centralized program and work according to the specific requirements of the territory, which also creates the possibility of close cooperation and preparation of the necessary skills from the school for companies and industries. This concept outlines ten key competencies[25] that need to be developed in the students of a New Ukrainian school. Some of them are extremely important for the export direction:

- Communication in the national language (and mother tongue, if different);
- Communication in foreign languages;
- Mathematical literacy;
- Competencies in Science and Technology;
- ICT and digital competencies;
- Lifelong learning skill;
- Sense of entrepreneurship;
- Social and civic competences;
- Cultural awareness;
- Environmental awareness and healthy lifestyles.

[23] European Training Foundation. 2017. Torino Process 2016–17 Eastern Partnership and Russia. European Training Foundation.
Ibid.
[24] The New Ukrainian School, Conceptual principles of secondary school reform:
https://mon.gov.ua/storage/app/media/zagalna%20serednya/Book-ENG.pdf.
[25] ETF. 2018, Ukraine education, training and employment developments 2017, European Training Foundation.

Vocational Education and Training

There are different types of VET providers in Ukraine with 922 institutions in the MoES network of state-owned VET providers, with the remaining four operating under the mandate of other central authorities. The State Employment Service has 11 vocational training centers in various regions. Additionally, there are 2,000 private VET providers; many of these VET centers are attached to large companies[26].

According to the MoES[27], over the last few decades, society's perception of the VET has suffered due to:

- a lack of investment in the modernization of the VET system;
- gaps between demand and supply, educational quality and the qualification requirements of the labor market;
- deficits in the vocational orientation and career consulting system for young people and adults.

Since 2014, the number of teaching staff has contracted from 47,500 to 37,900 (2016), including 16,900 workshop trainers and 13,600 teachers. The shortage of workshop trainers for some occupations is particularly acute due to lower salaries in VET institutions compared to those in industry. The vocational teaching profession is generally unattractive to young people and results in an ageing teacher workforce and poor motivation to develop innovative teaching methodologies and production technologies[28].

However, the MoES believes that the VET sector is now in a position to reform itself as there is:

- a sufficient legal framework in place: the Laws of Ukraine "On Education" and "On Scientific and Scientific-Technical Activity", the Concept "New Ukrainian School", the draft law "On Vocational Education";
- strong Government commitment to support the modernization of VET, with the creation of 50 modern education and practice centers and a further 50 centers in development in different sectors;
- private sector support for the modernization process;
- support from European partners in the reform of VET;
- a number of VET institutions motivated to transform.

Additionally, in June 2017, the Ministry of Social Policy of Ukraine established a multi-stakeholder Working Group, which will be in charge of skills anticipation/labor market forecasting.

Recently, the MoES has identified three strategic objectives to build an "effective system of vocational education and training as a basis for the economic prosperity of the country and as an element of the sustainable development of the society[29]". The MoES's discussion document identifies three objectives.

The objectives are:

- Objective 1. Decentralization of governance and funding.

  This will involve transferring decision-making powers to regions and employers, providing autonomy to VET institutions, multi-channel funding and the strengthening of VET institutions to respond to local needs.

[26] ETF. 2018, Ukraine education, training and employment developments 2017, European Training Foundation.
[27] Ministry of Education and Science of Ukraine, Modern Vocational Education: Reform concept for the vocational education in Ukraine. Draft Discussion Paper. Ministry of Education and Science of Ukraine. Kyiv 2018 (Unpublished).
[28] ETF. 2018, Ukraine Education, Training and Employment Developments 2017. European Training Foundation available at: https://www.etf.europa.eu/sites/default/files/m/0F98B951900DC7F3C125824A003D05B0_Ukraine%202017.pdf
[29] Ministry of Education and Science of Ukraine. 2018. Modern Vocational Education: Reform concept for vocational education in Ukraine. Draft Discussion Paper. Ministry of Education and Science of Ukraine, Kyiv 2018 (Unpublished).

- Objective 2. Social partnership and the labor market.

  Objective two covers the development of professional standards, a new system of flexible qualifications which meet the needs of the labor market and individual needs, implementation of innovative manufacturing technologies, engagement of employers to implement on–the–job training, on–the–job mentorship, and dual education. A renewed professional orientation, professional development and career planning approach involving social partners to promote VET.

- Objective 3. Quality of vocational education.

  Objective three ensures vocational education content will be based on competencies needed by the economy, professional standards, and a National Qualifications Framework and quality control system. Additionally, the creation of a high–quality multi–level system for the training of teachers, the involvement of professionals from the manufacturing or service sector in the learning process, and implementation of incentives for the professional development of teachers.

◇ Higher education

The higher education system in Ukraine is provided by both public and private institutions and has two types of studies: academic studies carried out at universities, academies and institutes, and applied studies carried out primarily at colleges and occasionally at universities, academies and institutes.

In 2014 the Ukrainian Parliament passed the Law "On Higher Education" that introduces a number of innovations in higher education in Ukraine[30].

The quality of education will be controlled by an independent body – the National Agency for Higher Education Quality Assurance.

HE institutions get academic autonomy. Each higher education institution has the right to implement its own educational and scientific programs. Universities can open their own accounts, receive loans, dispose of property and land. They will be able to set up science parks and enterprises that are engaged in science or innovation.

Strong student self–government is seen as a prerequisite for matching MoES goals and students' needs.

Each higher education institution is obliged to publish on its own website documents on its finances, property, including estimates, reports on their performance, distribution of salaries, etc., bringing transparency into HE.

Rectors, deans, heads of departments will be elected to their positions for five years and will not be able to occupy them more than twice.

These innovations lead to two primary goals:

1. reduce the number of higher educational institutions, and, accordingly, the number of students;
2. and as a result, increase the quality of higher education and, accordingly, better qualification of graduates.

In the context of the skills strategy, it should be noted that more autonomous HE institutions create more opportunities for interaction between companies, clusters and higher education institutions.

Ukraine became a full member of the Bologna Process for Higher Education (HE) in 2005 and the Torino Process for Vocational Education and Training (VET) in 2010. These processes work to align the Ukrainian HE and VET sector with European Frameworks for Education. The alignment and reform processes underway in Ukraine's HE and VET sector reflect a desire for inclusive growth in cities and regions and are intended to support the opportunity for improved trade with the European Union (EU).

[30] The Law of Ukraine "On Higher Education": https://zakon.rada.gov.ua/laws/show/1556-18.

Business education

There are about 20 private business schools in Ukraine. Such five business schools as Lviv Business School (LvBS), Kyiv–Mohyla Business School (kmbs), International Management Institute (MIM–Kyiv), International Institute of Business (IIB), and Kyiv School of Economics are recognized internationally and provide high–quality education for business executives and middle managers. These schools combine both international trends in education and local peculiarities of the Ukrainian market.

Within the framework of the Cross–sector Export Strategy "Skills Development", attention should be paid to business schools in at least three aspects:

1. LvBS has a unique experience in the creation and development of the first large IT cluster in Ukraine. By itself, LvBS case is interesting because the establishment of this school has been driven by local industry to meet their needs in developing managerial skills of their employees. In 2013, LvBS, together with the Lviv IT cluster, opened a unique Master's degree program in Eastern Europe, which provides business education in the field of technology. The MSc in Technology Management program is designed for managers and top managers of technology companies. Its mission is to integrate and strengthen their technical and business competencies, improve understanding of the real needs of the client, develop a visionary approach to doing business, and refine management and leadership skills[31]. This case is a good example for other regions in which the business of five sectors with export potential is seized.

2. kmbs in 2015 launched a unique program for the development of an export strategy for Ukrainian companies. For four years of existence, the program has 120 graduates (owners and top managers) with a proven record in export activities. As an example, a Ukrainian developer of high–tech wireless alarms Ajax Systems, who is one of the graduates at the program, is now on the markets of 65 countries of the world. On March 29, 2019, the company attracted $10 million in funds from the investment fund Horizon Capital to ramp up its global expansion[32]. The experience of working on this program made kmbs the center of concentration of knowledge on building an export strategy, involving more than 20 consultants and experts.

kmbs also cooperates with global cluster development experts – Cluster Navigators[33] and has gotten the right to use their methodology to create clusters in their curriculums. Already kmbs has included in the MBA program a compulsory course on cluster themes. The school also conducts training on this subject in a corporate format.

Business schools play a significant role in developing the managerial skills of Ukrainian companies. In Ukraine, only they, on the one hand, have sufficient modern expertise, and on the other hand, understand the local context.

Private non–formal education

Ukrainian companies resort to non–formal education to overcome the lack of general, managerial and functional skills of their employees. There are two primary types of non–formal education: 1) in–house training centers which, in some cases, become open to the general public; 2) industrial parks and clusters which are established by Ukrainian industries to spur ecosystem effects.

DTEK Academy is an example of in–house training from the largest energy company in Ukraine. DTEK Academy currently targets not only own employees but also caters open programs for the general public. The programs cover such managerial and general skills as market analysis, project management, strategy development, change management, negotiations, public speaking and the like[34].

Unit.City is the first innovation park which aims to become a gate to the Ukrainian tech scene. This park combines companies and R&D laboratories, Unit Factory IT School, and open short–term programs, incubators, and accelerators. Unit.City focuses on attracting

[31] LvBS: https://lvbs.com.ua/education/programs/mstm/.
[32] Kyivpost : https://www.kyivpost.com/technology/wireless-alarm-maker-ajax-gets-10-million-from-horizon-capital.html.
[33] https://www.clusternavigators.com/about-us.
[34] Official web-page of DTEK Academy: https://dtekacademy.com/programs/trenings/.

talents and growing Ukrainian companies both nationally and internationally in such spheres as Fintech, Agritech&Foodtech, Energy&Cleantech, VR/AR, AI/ML/BigData, IoT, Cybersecurity, Digital Health and Healthcare, and blockchain. This park has been established as a private initiative of the Ukrainian business[35].

Another example of non–formal education is the IT Academy "Step" which has become one of the largest IT schools in Ukraine. Since its establishment in 1999, it has 65 chapters across Ukraine and abroad, and over 120 000 graduates from its various programs. This school leads students from no–knowledge in ICT to employment in the industry.

Creative industries have also established a number of private educational institutions to develop skills in design, innovation, marketing and communication etc. Such schools as Projector, Apollo Design Studio, Ryba, KAMA have become the primary source of talent for creative industries.

These schools are mainly operating in such big cities as Kyiv, Kharkiv, Lviv, Odesa and Dnipro, tailoring specific needs of their clusters. They focus on providing the most updated skills and knowledge which the public education system lacks to match.

◇ Skills anticipation and utilization

A 2014 World Bank survey of four key sectors – agribusiness horticulture, agribusiness food processors, information technology and renewable energy – reported that four out of 10 companies identified a considerable gap between the skills their employees have and those needed to achieve business objectives[36]. Additionally, 30% of Ukrainian "workers consider that the level of education necessary for doing their job is lower than the level of education they hold. Perceived over–education relative to job requirements is a much more significant problem than under–education in Ukraine compared to most OECD countries"[37].

Reinforcing the perception of over–education is less than 40 per cent of higher education graduates find jobs in the field of knowledge they have undertaken, while 40 per cent of employees perform predominantly manual work[38]. The divergence between the skills required by Ukrainian firms and the skillsets held by workers compounds the problem of effectively utilizing and mobilizing workers in meeting business objectives and achieving meaningful, relevant work and serves as an example of a skills mismatch and system inefficiencies in meeting labor market needs.

Moreover, the country faces significant demographic challenges because of a rapidly ageing population, migration, and internal displacement necessitating greater efficiency and precision in identifying and subsequently skilling new and existing workers. According to the International Labor Organization (ILO)[39], employers spend more than USD 1 billion on additional training of their workers using providers outside the formal VET system.

[35] Official web-page of Unit.City: https://unit.city/en/home/.
[36] World Bank Group (2014). Ukraine STEP Employer Survey 2014; World Bank report: Skills for Modern Ukraine: Overview, World Bank Group November 2015.
[37] World Bank Group (July 2015). Skills Gaps and the Path to Successful Skills Development Emerging Findings from Skills Measurement Surveys in Armenia, Georgia, FYR Macedonia, and Ukraine. Report No: ACS14318.
[38] ILO. Decent Work Ukraine Country Program 2016 to 2019. International Labour Organisation. https://www.ilo.org/wcmsp5/groups/public/---ed_mas/---program/documents/genericdocument/wcms_562112.pdf.
[39] Ibid.

STRATEGY DIAGNOSTICS

A country's competitiveness depends on a number of factors that impact the capacity of its firms to compete in the marketplace, connect with its customers and adapt to the changing environment. For an export strategy to be effective, it must address a wider set of constraints across all three dimensions of competitiveness. Figure 1 illustrates the integrated approach of SME Competitiveness Grid framework.

Figure 1: The 3C Framework: The SME Competitiveness Grid

Pillars of competitiveness	Compete	Quantity and cost requirements
		Logistics requirements
		Quality requirements
	Connect	Connecting to buyers
		Connecting to suppliers
		Connecting to institutions
	Change	Financial requirements
		Skills requirements
		Innovation and IP requirements

Compete is the static dimension of competitiveness. It assesses whether current production is efficient and meets market requirements. Connect is the connectivity dimension of competitiveness. To be competitive, enterprises must link to customers, businesses, institutions, and be literate in information and communications technology. Change is the dynamic dimension of competitiveness. It assesses whether enterprises have the capacity to make human and financial investments to adapt to fast-changing markets.

Skills development issues are, to a large extent, cross-cutting to the three dimensions of competitiveness but are particularly relevant for the dimension to change. The national stakeholder consultations that led to the elaboration of the strategy identified the issues at the general and sector level:

◇ Cross-sector issues

Public educational institutions lack covering general skills at secondary and high school, VET, and HE.
Foreign languages, business skills, marketing, fundraising, project management, product development, budgeting, planning and customer service, teamwork, ability to work independently, problem-solving, cultural understanding, and legal skills are examples of general skills which have been mentioned by the majority of stakeholders. Schools, VET, and HE do not provide development of these skills at the market-expected level.

Plan of Action reference: Operational objectives 1.2 and 3.1.

Public educational institutions are rigid in adapting to local entrepreneurs and cluster needs, in particular to the needs of SMEs.
There are only limited examples of close cooperation between local enterprises, in particular, SMEs, and local educational institutions. This creates a significant gap between skills which are provided and skills which are required. The new Law "On Higher Education" and VET strategy envision more autonomy for public-funded educational institutions. It should spur cooperation between local entrepreneurs, local authorities, and local educational institutions to align local cluster skills needs better. Lviv IT cluster can be an example of successful cooperation between business, educational institutions and local government. Local ICT community fostered the establishment of a number of local ICT driven educational programs at Ukrainian Catholic University (UCU).

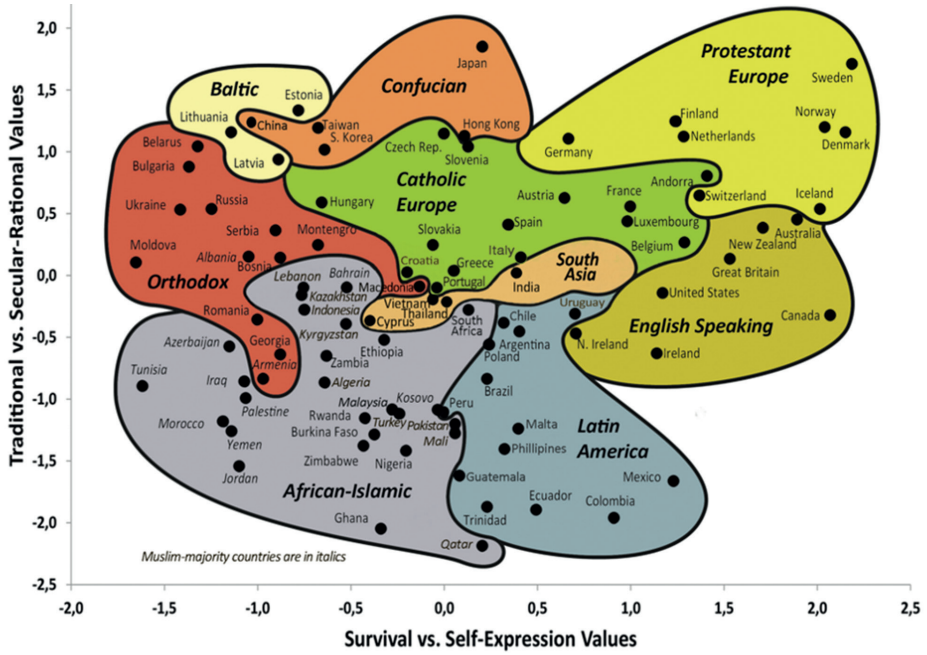
Plan of Action reference: Operational objectives 1.2 and 1.3.

Lack of a cluster approach in fostering cooperation at the local level.
Educational programs at public institutions are a central government-driven. There are only limited links between government financing of public educational institutions and local cluster priorities. Industry or cluster-specific skills significantly vary from one cluster to another. Other countries examples, e.g. India, show that there is also a need for training representatives of various stakeholders on the cluster and network development[40] as such.

Plan of Action reference: Operational objectives 1.2 and 2.6.

The overall development status of entrepreneurial skills is fairly low.
Ukrainians' natural inclination towards risk aversion does not play in favor of the development of entrepreneurship skills. To what extent this can still be explained by the Soviet legacy when private initiatives were discouraged as such remains an open question. Inglehart–Welzel in their worldwide research of people's values, which are grouped into survival vs self-expression values and traditional vs secular-rational values, showed that Ukraine is still very focused on survival values. Survival values place emphasis on economic and physical security. It is linked with a relatively ethnocentric outlook and low levels of trust and tolerance[41]. Hence, some of the attitudes will only change with time of social and economic development. At the same time, some steps toward the development of entrepreneurship skills, e.g. risk-management, uncertainty management and the like, need to be taken in the long-run.

Figure 2: Inglehart–Welzel Cultural Map[42]



All sectoral strategies defined skills development among their strategic objectives. This short overview of strategic issues from the sector export strategies shows the urgent need for much closer cooperation among stakeholders, especially between educational institutions and industry.

◇ Creative industries

There are a number of skills development issues in the creative industries. The key ones include:

Educational programs are not aligned to the industry's needs, which results in limited practical skills which are required for the creative industries business development.

[40] Indian SMEs Clusters: https://www.dcmsme.gov.in/clusters/clus/indsme.htm?fbclid=IwAR3YEcV-SEF6ifXgfSPNqo3LCiTTglA7KPAViYsozqNFxjvY7rEdd6oQMdk (retrieved on May 12, 2019). Strategy and tools for cluster and network development: https://www.dcmsme.gov.in/clusters/stratools.htm?fbclid=IwAR3AZjb15xvAMgRVgTKoi9h1g7acfly9iOLOCh_5vFffZx_aCpR5SHEqves (retrieved on May 12, 2019).
[41] Live Cultural Map. World Values Survey: http://www.worldvaluessurvey.org/WVSContents.jsp?CMSID=Findings.
[42] Ibid.

HE and VET institutions do not prepare students with the practical skills required by the industry. They receive academic knowledge during their years of study, such as the history of art, culture, museology, which are not applicable to their future careers. They have limited practical skills to align with industry needs. For instance, the stakeholders' noted the problem of a limited number of skilled writers with required technical skills such as storytelling, editing or foreign language skills, resulting in some cases, of workers being recruited from abroad.

Only some HE institutions, namely business schools, offer postgraduate programs for art and culture managers and add art and creativity skills to their overall managerial and innovation programs. The role of developing practical skills for creative industries is performed through informal educational initiatives, schools and open platforms, where professionals share their experience by offering mentoring and help to develop practical skills.

The development of business and production skills is an essential element in the creative industries in other countries. Both of the following examples of qualifications containing industry required skills were developed through sectoral advisory bodies that facilitated a process, with practitioners in particular occupations, to identify workplace skills standards and the content of the qualifications.

Identifying the skills needed in qualifications in conjunction with industry practitioners is an important first step in updating the content of Creative Industry (CI) qualifications. For example, qualifications containing contemporary skills present in other countries include:

- An Advanced Diploma of Creative Product Development, with a range of subjects including the following sample, managing copyright arrangements, originating and developing concepts, engaging in the business of creative practice, developing and cultivating collaborative partnerships and relationships, and evaluating international marketing opportunities;

- An Advanced Diploma of Live Production and Management Services, with subjects that cover incorporating creative and technical needs into management processes, developing and managing a budget, developing and maintaining business continuity plans, and managing pre-production for shows and events.

Plan of Action reference: Operational objectives 1.1, 1.3, 2.2 and 3.2.

A lack of managerial and strategic skills among CI professionals limits their business development.
The consultations highlighted that creative industries professionals are lacking business skills to develop their own product and to market it, namely skills in marketing, attracting finance, business development, IP creation, project management, product development skills (how to formulate an idea, how to make project out of it, how to find finance and how to create a business model independently).

Graduates generally have a lack of understanding of the business and product development process at the strategic level, limited internationalization skills, market access and limited knowledge on the promotion of creative industries sector. Nor do they know how to attract foreign audiences for cultural products or to access global value chains. These shortfalls restrain the development of the sector and its advertising and access to new markets.

Plan of Action reference: Operational objectives 2.1, 2.2, 1.1, and 3.1.

A lack of contemporary workplace practices and technology.
There is a lack of graduate skills in the use of current technologies and an absence of knowledge of the latest trends and innovation. Additionally, there is an absence of knowledge or skills development in automation of processes. This is compounded by the demand for specialized information technology skills in the Creative Industries. On top of this, there are no business development skills, or skills to transform ideas into a final product developed during current learning programs.

Plan of Action reference: Operational objectives 1.1, 1.3, 2.1, 3.1.

◇ Information and Communication Technologies (ICT)

The Export Strategy for Information Technologies Sector defines the following major challenges to the sector in Ukraine at the firm-level:

Limited availability of skilled professionals.
There is an acute shortage of highly qualified individuals, as the industry is growing faster than universities can prepare. Suggesting that a range of different skills development providers such as the VET sector, formal online learning and private providers could cater to some of the demand. In many countries, the VET sector provides skills development in areas such as network maintenance, user support, database development, and website development. Many of these learning programs provide the skills for individuals to work as part of a team or in user organizations (like hospitals and banks). As part of a Lifelong Learning approach in some countries VET students who complete these VET courses gain advanced standing of up to two years of a university degree.

Providing greater flexibility in the timing of learning programs will allow individuals already working in ICT to improve and consolidate their skills base. While offering Recognition of Prior Learning will allow individuals who have been developing ICT skills informally to pursue formal skills in ICT.

Plan of Action reference: Operational objectives 1.1, 1.2, 2.1, and 3.4.

Quality of teaching staff.
According to industry feedback, the quality of educational outcomes of graduates is low. Current university programs are out of date, and there is a lack of new programs. Furthermore, current learning programs do not match market needs in terms of current technical skills or understanding of workplace practices. Low wages amongst teaching staff results in teachers with contemporary skills leaving to seek employment in industry where wages are higher. The stakeholder consultation also noted that university management is not flexible enough to identify ways to supplement lecturer incomes.

Recruiting and training new staff is an expensive exercise for the industry to undertake. The cost of replacing a non–management employee has been estimated to be approximately 30 per cent of that employee's annual salary[43]. It may be more economical and lead to greater flexibility for the industry to pool together funds to supplement the incomes of ICT lecturers and teachers.

Plan of Action reference: Operational objectives 2.1, 2.2, 2.3, and 1.1, 1.2.

Limited practical knowledge and skills.
Current graduates from IT universities lack practical knowledge and skills, which are crucial to the industry. The reason for this is that teachers lack practical experience, and there is a need for more IT professionals from outsourcing and IT product (vendor) companies to teach students using real–life case studies and new technologies. In a number of countries, ICT vendors partner with skills development institutions to develop ICT learning labs where technical training is provided that can lead to vendor certification in particular products and technologies. Using a modular approach to qualifications and curriculum design, these technical vender components are inserted into mainstream formal learning programs. Because the programs are modular, these vendor technical components can be updated as new versions or products emerge, this helps to maintain the relevancy of the skills being developed. Students undertaking these programs can elect to sit the vendor certification examinations, or in some cases, they are a compulsory part of the learning program. Graduates from these programs find themselves in high demand as they have a combination of theoretical, soft skills and technical skills required by industry.

Plan of Action reference: Operational objectives 2.1, 2.2 and 2.6.

Limited marketing skills and knowledge and no experience of market access.
Master of Business Administration programs are not targeted at entrepreneurship development. There are engineers, but no business expertise and there are not enough top managers with technical skills and understanding. Technical Delivery Managers for client support, management and liaison do not understand the business challenges of the client. It is necessary to teach engineers to understand the business part. There is a limited understanding of SME business needs about business processes amongst graduates as well.

There is also a limited understanding of the global practice and limited understanding of global markets, its requirements and needs. The same issues were raised concerning design, product development, marketing, and client management, suggesting that there is demand

[43] Schlesinger, Leonard A.; James L. Heskett (1991–04–15). "Breaking the Cycle of Failure in Service". MIT Sloan Management Review 33 (3): 17–28.

for cross-faculty or inter-disciplinary development of programs to meet the particular needs of different occupations within the ICT industry and to cater for new and emerging jobs.

Plan of Action reference: Operational objectives 2.1, 2.2, 1.1, and 3.4.

Lack of gradation of IT specialists and their competencies results in important salary gap.
As the Ukrainian IT market is still in its formation stage, there is no clear gradation of IT specialists and their competencies. This means that the skills of a mid-level specialist in one company may not correspond to that of the same level in another.

Undertaking an occupational map of an industry sector, will help to identify natural career pathways, the different occupations, including pathways into the industry and hybrid occupations. An occupational map of the sector would also define the skills and experience required for various professions. Once an occupational map is complete, it is easier to identify and prioritize occupations that require learning programs and qualifications. Identifying occupational pathways guides in developing qualification pathways that reflect real labor market entry points and professional development stages for different careers. The associated skills identified for each occupation can provide a starting point to develop more detailed learning outcomes or occupational standards.

Plan of Action reference: Operational objective 1.3.

◇ Food & Beverages

The Export Strategy for the Food and Beverages Sector defines the following major challenges to the food and beverages sector in Ukraine at the firm-level:

Labor force is lacking relevant skills: there is a lack of adequate technical training in the food and beverages industry, including for market analysts and agricultural economists and food safety and quality experts.
According to stakeholder feedback, there are a limited number of workers for occupations such as laborer, technician, machine operators, craftsperson, tractor drivers, and maintenance workers. At the same time, there are a limited number of high-skilled technicians such as agro-technicians, mechanical and electrical engineering technicians. The most valued missing skills for the sector remain job-specific technical skills, but also professional behaviors or soft skills, such as teamwork, ability to work independently, problem-solving, cultural understanding, etc. There is a lack of experienced quality and certification professionals in food safety and agriculture.

Plan of Action reference: Operational objectives 1.1, 2.1, 2.2, and 3.1.

Limited work-based learning opportunities. Lack of R&D, innovation and use of technologies to all but largest companies.
Limited work-based learning opportunities for low-skilled workers in the use agricultural machinery "such as tractors, cars, vans, grain processing machines and lift truck drivers appear to be the first priority in terms of needs for skills of agribusiness growers"[44].

"The current skill needs of agribusiness growers for workers trained to use agricultural machinery and manage technological processes reflects the current transition of agribusiness growers (especially large firms) from a labor-intensive towards a machine-based technology-intensive agricultural production, which brings about productivity gains and higher returns on investment. The progressive automation of agricultural production reduces the number of people employed in the sector"[45].

However, this will require remaining operators and maintenance technicians to have the skills to operate and maintain the new equipment and technology. It is necessary to form partnerships between industry and VET institutions and maintenance technicians it is an expensive activity to maintain equipment and provide training within VET and HE institutions. Partnerships can be formed where VET institution's partner with machinery and equipment suppliers to develop the skills to teach VET students and to develop existing workers professionally. In addition to this, food production machinery will, in some cases, need to be updated to reflect European HACCP standards.

Restructuring learning programs so that students can spend some time undertaking formal work-based learning will also provide an opportunity for students to become familiar with new

[44] OECD.
[45] Idem.

technology and equipment. An outcome may involve restructuring existing apprenticeships or developing new apprenticeships in emerging areas.

Plan of Action reference: Operational objectives 2.3, 3.1.

Lack of skills to use market data and a lack of legal skills to comply with foreign requirements.
The industry is experiencing a number of changes related to harmonizing requirements EU laws to become globally competitive. Managers need a greater understanding of managing vertical integration, overseas export requirements and using e-commerce platforms. Research and development are also important in the industry to develop new products and develop new packaging materials and designs.

Plan of Action reference: Operational objectives 1.1, 1.2, 2.1, and 2.2.

◇ Machinery

In the Export Strategy for the Machinery Sector stakeholders also specifically discuss the set of mismatches between skills demand from the industry and skills supply from employees. "Firms lack required management skills in areas such as marketing, budgeting, planning, and customer service qualified technicians and engineers migrate to competing sectors and countries offering better salaries"[46]. This cooperation between industry and educational institutions is a key element for innovations in the long run.

The Export Strategy for the Machinery Sector defines the following major challenges to the sector at the firm-level:

A mismatch exists between the skills that firms require and those that the educational system produces.
According to feedback, HE and VET are underdeveloped to cater the needs of the industry. For example, there is no engineering center for dedicated consultations. Areas such as electronics, automation, robotics, aviation areas are not covered by the skills development system. Qualified workers with managerial competencies are scarce but in demand. When graduates enter the job market, they have little to no practical experience due to very limited opportunities for apprenticeships and work-based learning during their studies. For example, graduates seldom have sufficient knowledge to forecast resource expenditure.

Plan of Action reference: Operational objectives 2.1, 2.2, and 1.2, 1.3.

Firms lack required management skills in areas such as marketing, budgeting, planning, and customer service.
The limited availability of human resources with effective client-oriented managerial skills results in inefficient workflow management. The lack of capacity building initiatives to introduce new methods of production and technology and few on-the-job training opportunities to build skills, hinder human capital expertise and experience. Limited availability of affordable quality training for existing exporters and producers hamper their development competencies.

Plan of Action reference: Operational objectives 2.1, 2.2, and 1.1, 3.1.

Qualified technicians and engineers migrate to competing sectors and countries offering better salaries.
The development of the tourism sector has affected the capacity of the machinery sector to retain qualified workers. Labor has left the industry to work in the tourism and hospitality sectors. In addition, there is a brain drain where qualified individuals migrate, particularly to EU countries. The problem disproportionally affects young people. The gender gap in the sector is also very wide.

Plan of Action reference: Operational objective 1.3.

◇ Aircraft Repair and Maintenance Sector (MRO)

The Export Strategy for Aircraft Repair and Maintenance Sector defines the following major challenges to the sector at the firm-level:

A mismatch exists between the skills that MRO firms require and those that the educational system produces.

[46] Export Strategy for the Machinery Sector.

The local availability of MRO–related skills is a major threat to the sustainability of the MRO sector. Skilled labor finds better–paid opportunities overseas. This is a binding constraint to economic growth and development for the industry. The HE and VET are underdeveloped to cater to the needs of the industry. In addition, when graduates enter the job market, they have little to no practical experience due to very limited opportunities for apprenticeships during their studies. Educational institutions need to adapt much faster to new technologies from simple paper document scanning to predictive maintenance modelling and to the integration of data and information systems that lead to decision making. Such new developments will lead to significant opportunities in MRO IT and Analytics. Fields such as E–enabled or connected aircraft, Artificial Intelligence (AI), Machine Learning (ML), Planning and Optimization modelling, and Cybersecurity represent areas of opportunity. Employing a well–educated and trained Ukrainian workforce can be the cornerstone of such future growth"[47].

Plan of Action reference: Operational objectives 1.2, 2.1, 2.2, and 1.3.

Firms lack required management skills in areas such as marketing, budgeting, planning, and customer service.
The limited availability of human resources with effective client–oriented managerial skills results in inefficient workflow management. The lack of capacity building initiatives to introduce new methods of production and technology and few opportunities for on–the–job training to build skills, hinder graduate expertise and experience. Limited availability of affordable quality training for existing exporters and producers hamper their development of new competencies, and English skills are scarce.

Plan of Action reference: Operational objectives 2.1 and 2.2.

Qualified technicians and engineers migrate to competing countries offering better salaries.
Qualified individuals with outstanding technical skills migrate to EU countries like Poland, resulting in an unfilled shortage in the Ukrainian sector. The problem affects the sectors ability to attract youth. Enterprises hiring young specialists in their first job role, find them leaving once their skills have been developed. The gender gap in the MRO sector is vast. There is a deficit of skilled workers with specializing MRO skills in all areas in the labor market.

Plan of Action reference: Operational objectives 1.2 and 2.2.

[47] Export Strategy for Aircraft Repair and Maintenance Sector.

THE WAY FORWARD

Based on the comprehensive analysis of skills development in Ukraine, the "way forward" lays down the key strategic framework of the sector strategy comprising the vision statement, the strategic and operational objectives, a selection of priority sectors and cross-sector functions, as well as the Plan of Action.

◇ Vision and strategic objectives

To guide the implementation of the cross-sector strategy in the next three to five years, the vision statement set out below has been formulated and agreed upon by stakeholders who participated in the consultations for the design of this strategy[48]. It represents the ambitions of the country as well as a consensus among key stakeholders in Ukraine.

The following is a delineation of the proposed vision and strategic approach in this direction agreed with all national stakeholders.

"The development of a highly-skilled workforce supported by initial and continuous industry-relevant learning programs leading to export competitiveness and growth"

To realize the vision statement, strategic objectives have been formulated which provide orientations that are to guide the implementation of the strategy in three strategic areas where the action is required over the following five years to bring about changes. Three strategic objectives are as follows:

1. **To stimulate entrepreneurship spirit among the youth and to develop the managerial skills in SMEs.**

This objective aims to promote an entrepreneurial mindset in the country. This objective is twofold: on the one hand, it will promote the establishment of innovative companies; on the other hand, it will encourage labor mobility[49]. Achieving this objective will contribute to upgrading the managerial skills within existing enterprises, in particular, SMEs. It aims to improve the managerial skills of managers to help them define their business better and deal with the production, marketing, and finance functions.

At the operational level, the following sub-objectives have been considered:

1.1. Providing high-quality learning opportunities for existing and potential exporters.

Feedback from the priority sectors during the consultations consistently identified skills needs for new and existing businesses, some of these skills included: export business management, technical skills (ranging from quality manufacturing to product design and development), soft skills such as cultural understanding and customer service.

According to the "Export Strategy of Ukraine: Strategic Trade Development Roadmap for 2017-2021 and Action Plan", using the US $15,837 per worker, the country ranked 132nd out of 192 countries, in output per worker in 2015. The ESU notes that supply-side constraints include very low levels of labor productivity, the poor performance of the national innovation system, ageing infrastructure and the reliance on obsolete technologies and unsatisfactory competition in some product market sectors. Each of these constraints can be partly alleviated through a range of sector-specific skills development strategies.

[48] These consultations took place in Kyiv during the June, September and November of 2018. Key stakeholders in the area of skills development discussed aspects related to trade performance, regulations, the innovation and investment framework, the institutional landscape, development plans, and the key competitiveness constraints.
[49] These strategic goals are defined as operational goals in the "Export Strategy of Ukraine: Strategic Trade Development Roadmap for 2017-2021 and Action Plan".

Sector representatives identified that different skills are necessary for new export companies compared to those firms already involved in exporting. For Small and Medium Enterprises (SME) interested in moving into exporting skills and knowledge are required in areas such as getting started in exporting, reaching target markets, market research, agents and distributors, export and import documentation, customs classifications, excise and duty, export licensing and controls, and trade fairs and promotion.

For new and existing exporters' managerial and strategic skills are in demand in areas such as strategic export business planning, export sales planning, and market research skills, international management skills to lead and manage projects/services across countries, and cultivating major global sales accounts and maintaining relationships with customers, partners and suppliers.

Additionally, each of the priority sectors considers mentoring, coaching and independent trainers as important resources to help improve their growth and competitiveness.

1.2. Ingraining training programs into the larger entrepreneurship ecosystem.

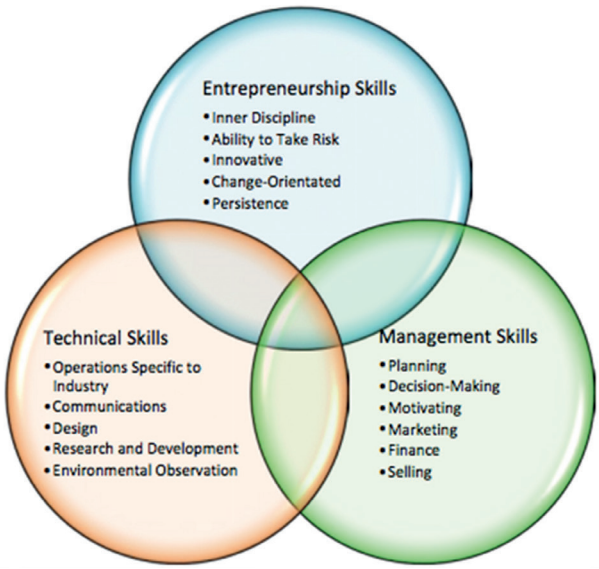
To grow export-oriented ecosystem, it is critical to improve public policy, provide finance access, flourish entrepreneurial culture, provide hard and soft support, get access to markets (Cooney, 2012). Skills development is a crucial part of human capital. In recent years a number of institutions have been established to support investments in Ukraine and develop innovations, e.g. the Fund for Innovation Development, UkraineInvest. To efficiently apply efforts, strategies of governmental agencies, international donors, venture funds, educational institutions, and industry in the part of skills development need to be aligned.

Figure 3: Entrepreneurship Ecosystem (Cooney[50], 2012)

Recognizing that each entrepreneur has his/her individual growth plan and maturity level, the following three main dimensions of skills have been identified by research: 1) Technical; 2) Managerial; 3) Entrepreneurial (Cooney, 2012). Entrepreneurial effectiveness and personal transformation are now critical elements of training programs for entrepreneurs. Entrepreneurship skills are best developed when participants face real cases from existing entrepreneurs. According to a report by Inno-Grips (2011), successfully targeted policies for high-growth SMEs can be found in the Nordic countries of Denmark (the former Gazelle Growth Program and the current Accelerace), Finland (TEKES funding for growth-oriented SMEs, Finnish Growth Company Service, Vigo) and Norway (Incubator Grant, Seed capital scheme, Nyvekst). Other European countries with such policies include Estonia (Estonian Development Fund), France (Gazelles Program, France Gazelles fund), Ireland (High-Tech Start-Up program), Netherlands (Growth Accelerator "Groeiversneller"), and Spain (Neotec Fund). Beyond Europe, relevant policies were identified in Australia and the USA as well as in China, Singapore, South Korea and the Start-Up America initiative by the US government (Cooney 2012). Hence, policies targeted at the development of entrepreneurship skills should be aligned with entrepreneurship ecosystems even in local clusters.

[50] Entrepreneurship Skills for Growth-Orientated Businesses. Report for the Workshop on "Skills Development for SMEs and Entrepreneurship", Copenhagen, 28 November 2012: http://www.oecd.org/cfe/leed/cooney_entrepreneurship_skills_HGF.pdf.

Figure 4: Entrepreneurship Skill-Sets (taken from review of Literature, Cooney 2012)



1.3. Enhancing collaboration among the industry and the HE and VET.

The collaboration aims to deliver a high quality up-to-date entrepreneurially and managerially skilled workforce by offering greater flexible learning arrangements for existing and new workers in the priority sectors and their channels.

The presence of functioning networks and partnerships is not just a crucial factor in the success of clusters and innovation, networks and partnerships are also vital in providing high-quality relevant HE and VET. The public sector cannot tackle the education for the workplace challenge on its own and working with industry on the governance of the system and at the institutional level will strengthen the relevance of the overall HE and the VET sector. While employees learn many skills in the workplace, both informally and through formal learning, the training is very targeted to specific skills. "Companies provide firm-specific training to their employees, but they have little incentive to provide training for general skills. Firms may also face barriers or be too small to provide effective training on their own[51]". However, to ensure an ongoing supply of suitable workers, this type of collaboration is essential.

There is widespread agreement that at a sectoral or regional level, industry collaboration initiatives require long-term strategic processes that provide enough time for collaboration to mature and projects to succeed. It takes time to establish sectoral collaboration and build an in-depth understanding of labor market issues, and policymakers must view sectoral engagement as a long-term investment.

To be successful, sectoral and regional bodies need the authority to decide their priorities and to implement decisions based on the economic and skills priorities of their sector or region. This requires access to adequate funding and reliable data for objective decision-making.

Sectoral and regional partnerships work best when there is: senior-level commitment; collaborative leadership, with individuals acting as intermediaries to facilitate and drive committed involvement; an interdisciplinary approach and greater cross-ministry coordination between skills development and economic development; specialization around a core activity that all organizations are related; geographical concentration of HE and VET facilities to companies or industry clusters; a holistic approach to analyzing skill shortages and identifying solutions; communities of practice and learning; collaboration, with a balance of responsibility and influence between stakeholders; transparency and access to reliable, unbiased data to make informed decisions; a set achievable-focused outcomes, so that sectoral partnerships have the time to establish trust and to understand fully the complexities surrounding skills development; and a regular review of progress and achievements[52].

[51] OECD, Undated. OECD reviews of vocational education and training. Learning for Jobs Pointers for Policy Development:
[52] Smith, B. Undated. What makes a successful skill ecosystem? International Centre for Vocational Educational and Training. NSW TAFE.

Development of some of technical or management skills which are important for overall entrepreneurs' success can be driven by public educational institutions. VET and HE institutions can also become centers of local entrepreneurship ecosystems by providing access of their students to mentorship and acceleration program with entrepreneurs.

2. To align the offering of the education system to the needs of the enterprises, in particular, SMEs.

At the operational level, the following sub-objectives have been considered:

2.1. Collecting consistent, up-to-date labor market information to meet the priority sectors workforce development needs.

2.1.1. Identify labor market skills demand in partnership with the priority sectors to enable trade development.

2.1.2. Analyze workforce dynamics to develop strategies to attract and retain highly skilled workers in the priority sectors.

Internal labor mobility in Ukraine is about half of what is expected when comparing Ukraine with other countries[53] and exacerbates weak workforce allocation and limited productivity growth. Combined with an ageing population and skilled migration, the low levels of internal migration to regions of higher employment impacts on productivity and make it difficult to maintain growth[54]. Determining the current and future skills needs of industry is an essential step in improving the efficiency of Higher Education and VET to meet the needs of industry on an ongoing basis.

In line with industry feedback, identifying the specific needs of industry is a priority to ensure the relevance of HE and VET graduates to the labor market. A public-private partnership and dialogue through a regular national platform to determine current and future skills for each priority sector is one approach that reduces reliance on expensive information technology systems. Sectoral groups can form sector or value chain specific Labor Market Observatories to provide regional skills anticipation information to supplement national statistics and will provide information to develop short- and long-term learning programs that are relevant to the whole sector.

Information from sectoral advisory groups can provide qualitative information to complement the work of the multi-stakeholder Working Group on Skills Anticipation and Labor Market Forecasting of the Ministry of Social Policy of Ukraine. Gaining clear and reliable information on labor market needs is a notoriously difficult pursuit, and having access to qualitative information on trends and investments can add additional clarity to data. Policies to support labor market information and analysis need to facilitate active and regular engagement among industry stakeholders and those collecting, compiling and analyzing information.

Some sectoral groups, such as Sector Skills Councils, use approaches very similar to labor market observatories. They facilitate the convening of stakeholders—including individual employers or their human resources representatives, industry bodies, professional organizations, unions, VET institutions, representatives of the value chain, and research organizations working in the industry sector area. Under this approach, the government usually supplies detailed data collected from a number of sources, including household surveys, department of statistics data, employment services, business registrations, and other relevant data for the sector representatives to analyze in combination with industry intelligence that the Sector Skills Councils or other sector-based group collect.

Analyzing workforce dynamics will assist in identifying possible shortages of skills and the factors other than skills that can impact on the supply of labor such as the lack of aspirational career pathways, labor conditions and employment practices. Skills development strategies can only form part of a solution. Supplying training for new workers to a sector that has skills shortages due to skilled workers leaving owing to other factors will not solve the underlying problem or the ongoing shortage.

[53] World Bank (2012). In Search of Opportunities How a More Mobile Workforce Can Propel Ukraine's Prosperity. Volume II: Technical Report, Report No. 68824-ECA.
[54] Del Carpio, X, Kupets, O, Muller, N, and Olefir, A. 2017. Skills for a Modern Ukraine. Directions in Development. Washington, DC: World Bank. doi:10.1596/978-1-4648-0890-6.

This objective is relevant to each of the priority sectors and compliments objective two of the MoES' draft discussion paper, Modern Vocational Education: Reform concept for the vocational education in Ukraine.

2.1.3. Develop an open-based online platform for a collection of up-to-date labor market information.

2.1.4. Introduce an evidence-based policy setting to determine skills development priorities to underpin export growth.

Key data sources such as labor market information, economic development priorities, regional priorities, stakeholder consultations provide a basis for considering skills development directions. Policy setting provisions for flexibility to support local industry skills development initiatives and encompasses the formal and informal economy will support directions Ukraine has identified under the decentralization of VET.

2.2. Creating a continuous supply of highly skilled talent for competitive export activities.

2.2.1 Develop labor market-oriented careers information to meet the aspirations of young people to choose jobs in high demand export growth areas.

Ukraine is ranked 86th in labor market efficiency (the match of workers with the most suitable jobs for their skillset and the incentives for employees and employers to promote the productivity of human capital). Furthermore, the country ranks 106th in attracting talent and 129th in retaining talent[55], highlighting a need to review processes around attracting skilled employees and ensuring they are retained. Each priority sector identified difficulties in attracting and retaining talent, ensuring that a talent pipeline with relevant skills is in place is important for the long-term viability of each priority sector.

Raising awareness of careers and career pathways among students and parents for hard to fill jobs, as well as new and emerging careers, helps students to make informed choices based on current industry information. This can be done in partnership with industry to identify current and emerging careers in demand, the pathways into these careers and to develop case studies of young people who have taken on these careers. Case studies of young people in different careers have been shown to be particularly effective in gaining student interest.

The European Training Foundation (ETF) note that Higher Education has significant importance in the education system of Ukraine with the vast majority of young people aspiring to obtain a higher education degree. Participation in higher education is now among the highest in Europe, raising concerns about sustainability, the quality of the system and the employability of graduates[56]. Updated careers information will assist students and parents identify meaningful careers in areas not readily thought of or understood.

2.2.2. Increase economic prosperity by developing the skills of new entrants and existing worker skills in export-related activities.

During the priority sector workshops, representatives consistently identified the necessity to increase the relevance and quality of skills held by new entrants joining the priority sectors, the talent pipeline, along with those skills held by existing workers.

Strategies to build skills relevant to the workplace cover a number of areas. Engaging employers and unions in curriculum development, learning content or skills standards development and ensuring that the skills taught are those needed in the modern workplace. Building close links between skills development institutions and companies increase the relevance of graduate skills through interaction between teachers, employers and students. Inviting employers in as guest speakers, taking students on industrial visits and embedding formal on-the-job learning in HE and VET courses all assist students and teachers to gain an understanding of contemporary workplace requirements, conditions, technologies and processes.

[55] WEF.Global Competitive Index 2017-2018. World Economic Forum: http://www3.weforum.org/docs/GCR2017-2018/03CountryProfiles/Standalone2-pagerprofiles/WEF_GCI_2017_2018_Profile_Ukraine.pdf.

[56] ETF 2018. Ukraine Country Strategy Paper 2017-2018. Updates.

Encouraging the interchange and partnership between VET and HE institutions and industry enables vocational teachers and trainers to spend time in the industry to update their knowledge, and trainers or supervisors from firms to spend some time in VET and HE institutions to enhance their pedagogical skills[57]. Close collaboration between teachers and the workplace supports the development of the blended school and workplace learning, which is a powerful and effective method for:

- Developing many soft skills, for example, problem–solving, decision making, teamwork, communications skills, time management skills and flexibility;
- Acquiring workplace process skills such as quality processes, green skills, classifying, predicting, understanding systems, production skills;
- Preparing young people for jobs and introducing workplace communications skills, customer service, professional attitudes;
- Smoothing initial transitions into the labor market. Research suggests exposure to work has a beneficial outcome on the transition from school to work[58].

2.2.3. Review recruitment practices and provide teachers and trainers with ongoing exposure to current industry practices in export–related activities.

Ensuring that sufficient teachers and trainers are recruited with industry experience for VET and HE institutions is important, however, sometimes this is not possible, and it becomes necessary to provide professional development opportunities to ensure teachers and trainers are well–acquainted with the needs of modern industry. Implementing strategies to encourage teachers and trainers in VET and HE institutions to spend set periods working in the industry, or attending regular industrial visits, helps develop teachers and trainers understanding of current work practices and conditions. Introducing flexible recruitment pathways will make it easier for those with industry skills, such as older workers and part–time workers, to become VET and HE teachers after acquiring pedagogical skills. Providing workplace trainers and supervisors basic pedagogical skills will aid in formalizing work–based learning components of learning programs and apprenticeships[59].

This operational objective aligns with the MoES' Modern Vocational Education: Reform concept for vocational education in Ukraine.

2.2.4. Develop a continuous professional development for teachers and instructors, covering initial VET and ongoing professional development.

There is no debate about the importance of continuing professional development for teachers and instructors. Professional development for teachers and trainers is widely recognized as an important educational reform and improves the quality and relevance of teaching and learning. Providing teachers and trainers with access to quality professional development is essential for ensuring that both their technical competences and pedagogical skills of a high standard.

While initial professional development of teachers and trainers is common around the world, there is agreement that rapid changes in technology, new ways of working and greater competition through globalization means a regular skills up–dating is an important requirement for teachers and trainers.

The priority sectors repeatedly raised concerns current teachers' skills and knowledge of contemporary workplaces and view this issue as a key block in improving the relevance of graduate skills.

2.3. Creating a platform for communication between government and industry for collaboration and planning at the national level to develop skills for export growth and competitiveness.

2.3.1. Establish a policy and planning body involving key stakeholders to steer and strengthen the responsiveness of HE and VET for export growth and competitiveness.

[57] ETF, 2018. Ukraine Country Strategy Paper 2017–2018. Updates.
[58] Mann, A. (Undated). It's who you meet: why employer contacts at school make a difference to the employment prospects of young adults. Education and Employers Taskforce. London UK & Fullarton, S. (1999). Work Experience and Work Placements in Secondary School Education, Longitudinal Surveys of Australian Youth (LSAY) Research Report 10, http://research.acer.edu.au/lsay_research/70.
[59] OECD, 2011. OECD Reviews of Vocational Education and Training Learning for Jobs. Pointers for Policy Development.

Introducing a high-level policy and planning body to oversee the implementation of relevant skills development strategies could involve the MoES, the Ministry for Development of Economy, Trade and Agriculture of Ukraine, along with senior representatives of industry and labor representatives. Removing ministerial silos and introducing inter-ministerial coordination improves the responsiveness of skills development by providing a holistic understanding of Ukrainian skills development needs and economic priorities while reducing the possibility of duplication of provision. Inter-ministerial coordination can provide greater agility and responsiveness and contribute to the coherent design of skills development responses. Such coordination also enables the efficient allocation of limited financial and human resources to support the implementation of training programs[60].

2.3.2. Develop clear roles and responsibilities and memoranda of understanding for the inter-Ministerial and stakeholder bodies by defining clear lines of responsibility.

Ministerial coordination can be established through a number of avenues, such as introducing joint ministerial committees, panels of experts, sectoral and regional advisory bodies and identifying clear roles and responsibilities and memoranda of understanding, and by defining clear lines of responsibility. Skills development planning, which considers national economic priorities and labor market trends while working to coordinate ministries, requires:

- Clear, non-bureaucratic governance arrangements to ensure coordination between ministries, agencies and institutes;
- Close coordination between ministries and industry;
- High-level commitment within government;
- Embedded workforce development strategies within the economic planning process;
- Combined consideration of economic development priorities with labor market analysis to identify skill needs;
- Skills development planning processes linked to economic priorities covering all ministries that deliver learning programs[61].

3. To create a national clusters program for collaboration and planning at the national level to develop skills for export growth and competitiveness.

At the operational level, the following sub-objectives have been considered:

3.1. Increasing economic inclusion by fostering innovation, soft skills, management and technical skills through increasing the variety of high-quality learning strategies and learning activities.

Ukraine ranks 43 out of 126 on the Global Innovation Index and 62 on gross expenditure on research and development, while top Ukrainian company expenditure on research and development ranked 40. University and company collaboration was ranked 70, and the state of cluster developed was ranked 98, suggesting more can be done in this area to stimulate innovation[62].

Europe's 2020 strategy emphasized the need to foster skills for innovation. Innovation policies have typically focused on technological research and development and its link to university research. However, "Innovation Union", one of the EU's Europe 2020 flagship initiatives also promoted a strong VET link to develop further skill sets that enable individuals to be more entrepreneurial, creative and innovative. Research shows that a culture of innovation depends on HE and VET fostering transversal competences (cultural awareness, entrepreneurship, citizenship, etc.)[63].

Industry clusters are a concentration of interdependent businesses, institutions and regions "with active channels for business transactions, dialogue, and communications, that

[60] International Labor Organization. "Meeting report: G20 training strategy knowledge-sharing workshop on skills for employment". Undated. Available at: http://www.ilo.org/wcmsp5/groups/public/@ed_emp/@ifp_skills/documents/meetingdocument/wcms_162423.pdf

[61] UNDP (2017). Best Practices Guideline and Toolkit on Engaging the Private Sector in Skills Development. UNDP Bureau for Policy and Program Support, International Center for Private Sector in Development (IICPSD).

[62] Global Innovation Index 2018: https://www.globalinnovationindex.org/analysis-economy.

[63] OECD (2015a), The Innovation Imperative: Contributing to Productivity, Growth and Well-Being, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264239814-en.

collectively shares common opportunities and threats. The presence of clusters generates specialized skills, new knowledge, innovation, competition, opportunities for cooperation, tailored infrastructure, and often attract specialized support and other services and related businesses[64]." Countries such as Australia through the Skills Ecosystem Program and the US through the Workforce Development Program have introduced specific skills development strategies to enhance cluster and regional innovation and competitiveness successfully. More recent research from the OECD Local Economic and Employment Development program identifies a strong link between skills development initiatives within clusters and the presence of innovation.

Optimizing conditions for innovation require, in part, people from different disciplines working together, that provides an opportunity for cross-fertilization of ideas leading to greater opportunities for innovation. Effective innovation strategies in HE and VET must include appropriate governance models: identifying key agents of change and champions both within HE and VET institutions and firms, defining the roles of stakeholders and challenging pockets of resistance. This can result in, developing "Knowledge Alliances" between HE/VET and business, which develop:

- New curricula to diffuse new technology and processes into learning resources;
- Moves towards inter-disciplinary skills development, entrepreneurship and stronger business partnerships.

Each priority sectors articulated demand for hybrid skills and qualifications that cater to new and emerging business opportunities, in areas such as design and manufacturing, design and production, and business and design. Introducing greater flexibility across faculty programming in HE and VET will increase the responsiveness of the skills development system.

The Micro-Technology example above highlights some of the benefits of interdisciplinary partnerships in promoting innovation. Other strategies for fostering innovation can be found in Annex B World Economic Forum: Nine "plays" to spark innovation in education. in a more or less simultaneous manner. Let's review them in more detail below.

Figure 5: Adapted from Strategic Planning Services Innovation Agent Skill Ecosystem Project Final Report December 2004

Innovation Micro-technology Skill-ecosystem Project

The Innovation Agent Skill-ecosystem Project sought to demonstrate various ways the VET sector could work with Co-operative Research Centres (CRCs). The project was managed by the Swinburne University of Technology, Technical and Further Education (TAFE similar to a polytechnic) Division. Swinburne is a dual-sector university with TAFE and Higher Education Divisions. The Higher Education Division is a partner with several CRCs, and the TAFE Division departments have had varying linkages with CRCs over a number of years.

The principal objective was to demonstrate that effective TAFE engagement with CRCs and other research agencies can:

- Catalyze the uptake of new technologies and research findings by business and community organizations;
- Stimulate innovation and economic development.

The project team was made up of members from the TAFE teaching departments of Mechanical and Automotive Technology, Industrial Sciences and Electrical and Electronics; and their specialist centres for new manufacturing and sustainability. The CRC stakeholders were involved in Micro-Technology and Intelligent Manufacturing Systems Technology.

The partnership work was carried out in the MiniFAB, the prototyping plant for the CRC, and covered the following areas:

- Industry release for teachers;
- Student projects;
- Preliminary business training for PhD students working in the MiniFAB and thinking about starting their own business.

TAFE teachers spent a week on industrial release at the MiniFAB to understand new knowledge embedded in micro–technology. The knowledge gained was then diffused into current training. The project provided insights into the two–way nature of the TAFE–CRC interaction, especially in the process of the MiniFAB prototyping its devices. When PhD students moved from producing a single device to producing many, they lacked the industrial skills needed to streamline the production phase procedures. These are skills that TAFE teachers have, allowing them to play an important role in realizing production. TAFE students would utilize some of the PhD student's prototypes and provide feedback to improve usage or other improvements, leading to another avenue of two–way learning, leading to further innovation in the PhD student's work.

3.2. Ensuring that flexible and diverse HE and VET delivery options are widely available to develop a vibrant and responsive HE and VET sector.

Increasing changes in work organization, working hours and skills, means HE and VET systems must respond to these pressures with a flexible and demand–driven approach to meeting the lifelong learning needs of the community and labor market. Building system responsiveness to meet the evolving needs of industry and individuals increases access for equity groups and assists in increasing the participation of existing workers.

3.3. Developing a knowledge base of cluster initiatives.

The author of the modern cluster concept Michael E. Porter shows that clusters play a crucial role in country's export development, investment attraction, R&D, technology transfer, SME development; start–ups, skills, training, and workforce development (Porter 1998)[65]. To move from one–fits–all to cluster–specific skills development strategy needs to work within defined clusters. Cluster creates the best way for skills development due to close cooperation among local authorities, educational institutions, industry practitioners, professionals. But first of all, clusters should be created. And the most efficient way of cluster creation is a natural or cultural precondition. Currently, these steps have not been undertaken in Ukraine. Hence, there is a need to collect information about cluster preconditions and initiatives and define further steps for their formation.

3.4. Launching a cluster development program.

According to clusters development methodology[66], cluster development is not a quick–fix initiative. The time frame for public support needs to be adequate. It takes time to build trust, to open communications across a cluster, to change the internal dynamics and to remove isolation. Some initiatives have funding in place for only 24–36 months. All potential cluster players have to be aware of potential benefits. Another important role in cluster development is the cluster manager. This role requires special knowledge. A mid–term educational program is necessary for at least two reasons: for training cluster managers and for joint work of stakeholders, which will increase their awareness and trust among themselves.

The strategic objectives group into three categories: meeting immediate business export skill development needs; in the mid–term establishing a skills development system of supply that produces graduates and updates existing workers with the skills essential to the exporting activities of the priority sectors; and finally, is ensuring that the skills development system continues to be responsive to the changing and emerging needs of the priority sectors. The following graphic identifies the dynamics between industry drivers if change and a responsive skills development sector. The relationship is a long–term cycle of identification and collaboration. Each of the priority sector activities identified through the consultations relates directly to the operational objectives in the Plan of Action.

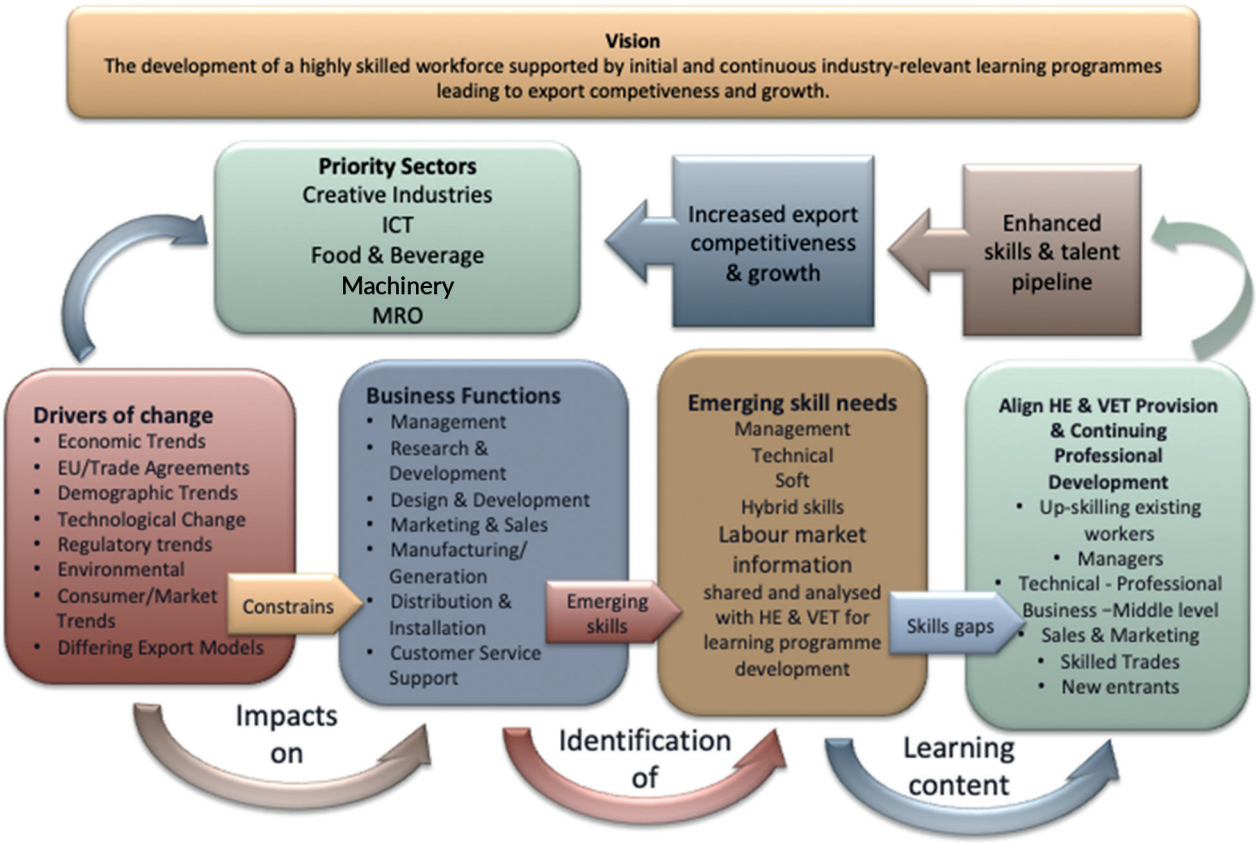
[65] Michael E Porter, Clusters and the New Economics of Competition, HBR.
[66] Ifor Ffowcs–Williams, Cluster Navigators Limited. Cluster Development in Practice KMBS, Ukraine, October 2015.

DEVELOPMENT TRAJECTORY

From a strategic standpoint, the rationale for focusing on a concrete set of objectives over others has a lot to do with the type of development process that the strategy intends to trigger. In a way, the choice of objectives determines the type of developmental process that will follow. This is the reason why the objectives have taken into consideration not only the potential for trade expansion but also seek to have an impact on overall development areas such as stopping "brain drain" and fostering intangible assets like the reputation of the country.

Figure 5 outlines the relation between the strategic and operational objectives. It also provides an overview of the sequencing of strategic actions.

Figure 6: Logical framework of the Strategy



The above skills development objectives and the operational objectives reinforce both national and international directions to strengthen the links between a skilled and flexible workforce and economic development. Jointly developed by the International Trade Centre, the Ministry for Development of Economy, Trade and Agriculture of Ukraine and the Ministry of Education and Science of Ukraine, with inputs from industry stakeholders, unions, and HE and VET institutions.

The strategic objectives have been formulated to guide the implementation of the operational objectives in the three national areas where the action is required over the following five years to bring about changes. The operational objectives serve as a roadmap of actions to strengthen the skills and productivity of the workforce. The operational objectives are listed under each of the three national objectives. Activities for each of the priority sectors have also been agreed for staged implementation over the next five years. The sector activities were developed through a series of consultations with key stakeholders from industry, unions, HE and VET institutions and government.

THE PLAN OF ACTION

Strategic objective 1: To stimulate entrepreneurship spirit among the youth and to develop the managerial skills in SMEs.					
Operational objective	Activity	Implementation			Executing agency
		Short Term	Medium Term	Long Term	
1.1. Provide high-quality learning opportunities for new and existing export businesses	**1.1.1. To develop relevant learning and assessment content for current and potential exporters.**				
	Partner with industry practitioners to develop export specific short courses covering skills required for different models of operation such as, a direct selling approach, companies supplying into the global supply chain of another company (either as a first-tier or sub-tier supplier), or for where there are specific production/service standards to comply with, services utilizing technological platforms for value-added services.	X	X	X	Ministry for Development of Economy, Trade and Agriculture of Ukraine Industry Associations Professional Bodies Industry councils Employers' Association, MoES Associations, Industry Clusters, Chambers of Commerce, Trade Unions, Professional Bodies Council of Rectors of Higher Education Regional Councils for Professional Education Institution for the Modernization of the Content of Education Institutions of Higher Education VET Institutions Private educational and training centers
	For new and existing exporters in each of the priority sectors, develop modular stand-alone learning programs in managerial and strategic skills in areas such as, strategic export business planning, export sales planning, and market research skills, international management skills to lead and manage projects/services across countries, and cultivating major global sales accounts and maintaining relationships with customers, partners and suppliers.	X	X		
	Convene sector working groups to develop modules for SMEs interested in moving into exporting such as getting started in exporting, reaching target markets, market research, agents and distributors, export and import documentation, customs classifications, excise and duty, export licensing and controls, and trade fairs and promotion.	X	X		
	Identify and develop a panel of export professionals who can be coaches or mentors for new or growing export companies similar to the programs offered in Ireland (Enterprise Ireland, First Flight Mentors and Business Accelerator program), France (CNCCEF, CCE trade advisors), UK (Gateway to Global Growth, International trade advisors), Singapore (IE Singapore, Export Development program and International Market Immersion Program, iMIP), Australia (Getting into Export) and Finland (Globaali).	X	X		
	Partner with industry to develop flexible modules in areas for export growth, such as, strategic positioning, sales process, key account management, competitive selling, marketing intelligence, engaging with channel partners, new customer generation, routes to market, cultural understanding and export growth planning.	X	X		
	Develop an accessible list of trainers, coaches and mentors who can provide special customized training for individual export companies.	X			
	Convene industry subgroups to work with the HE and VET sector to develop content for product management skills to manage the process of new product/service innovation and manage different business functional areas for development and distribution, cultural awareness and customer service.	X	X		

Operational objective	Activity	Implementation			Executing agency
		Short Term	Medium Term	Long Term	
	Develop modular stand-alone learning programs in new technologies and processes used in industry such as HACCP, quality, LEAN manufacturing, cost control, sustainability processes, etc. in HE and VET programs for new and existing workers.	X	X		
	Implement an export internship or graduate program with the aim of graduates acquiring international business experience to assist companies in Ukraine. Countries that run these types of programs include Ireland (Enterprise Ireland, Graduates for International Growth, IBEC Export Orientation program and Bord Bia Food Export Graduate program), Canada (Export Development Internship Program), France (V.I.E. program) and Portugal (INOV Contacto). France's V.I.E program and Portugal's (INOV Contacto) are cited as good examples of human development programs by the European Commission. The intern usually receives a monthly allowance, which is either funded by the company or by the organization running the program.		X		
	Develop-industry relevant modules in emerging areas such as robotics, automation, data analytics and cybersecurity and new contemporary delivery methodologies.	X	X		
	This set of activities aims to develop industry relevant learning and assessment content. Links to ICT activities 5, 6, 10; links to F&B activities 2 and 4; links to machinery activity 4; links to MRO activities 1 and 4.				
1.2. Ingraining training programs into the larger entrepreneurship ecosystem.	**1.2.1. To align existing and planned training programs with the overall entrepreneurship ecosystem.**				
	Identify available strategies on the overall entrepreneurship ecosystem development. Align them in the skills development part.	X			Ministry of Finance of Ukraine, Fund for Innovation Development, UkraineInvest, Ministry for Development of Economy, Trade and Agriculture of Ukraine, MoES, Industry clusters, financial institutions, formal and informal educational institutions, Chambers of Commerce, associations of entrepreneurs
	Develop action steps together with stakeholders for the elimination of policy, finance access, culture, hard and soft government support, and markets access that limit the development of entrepreneurship skills.		X		
	In partnership with practitioners from industry, finance institutions, and formal as well as informal educational institutions develop cluster-based coaching programs to bridge the gap between early-stage initiatives and international skills and knowledge.	X	X	X	
	Continue to monitor changes in skill level, so that coaching can be modified accordingly.		X	X	
	Incorporate peer learning and social capital development into training programs for entrepreneurs.		X	X	
	This activity is aimed at incorporating entrepreneurship skills into the overall entrepreneurship ecosystem. Links to CI activity 3; links to ICT activity 8; links to F&B activities 1 and 5; links to machinery activity 3.				

Operational objective	Activity	Implementation			Executing agency
		Short Term	Medium Term	Long Term	
1.3. Enhancing collaboration between the industry and the HE and VET.	**1.3.1. To promote the development and introduction of collaboration in developing learners entrepreneurial and managerial competence in export-related activities.**				
	In partnership with the industry, HE and VET institutions review work-based learning options for the implementation across different industry sectors including earn and learn models, part-time apprenticeships, apprenticeships in emerging areas and internships to ensure a talent pipeline exists for each priority sector.		X	X	MoES Higher Educational and VET institutions, private education and training providers Providers of non-formal education (consulting, coaching, NGOs) In-service training institutions
	In partnership with the industry develop inter-faculty hybrid (business and design, creative and technology skills, manufacturing and design, etc.) qualifications that meet specific needs of the priority sectors. Relates to operational objective 3.4.	X	X		
	Develop formalized work-based learning components for inclusion in formal HE and VET learning programs to expose students to contemporary export activities, workplace practices and technologies.		X	X	
	Encourage HE and VET institutions to offer part-time and out of work hours formal programs, which also incorporate Recognition of Prior Learning/Experience entry options to increase the number of suitable people entering learning programs.		X	X	
	Seek tripartite partnerships between machinery and equipment suppliers, companies and VET institutions to up-skill teacher or trainers in using in maintaining new technology and equipment.	X	X		
	Identify opportunities within the priority sectors for formalized work-based learning, including widening the range of apprenticeships, traineeships and internships.		X	X	
	Review existing learning programs and update content to identify opportunities for work-based learning.	X	X		
	Develop partnerships between the priority sectors, HE and VET providers to offer flexible learning for new and existing workers.	X	X	X	
	Develop industry partnerships with private HE and VET institutions to strengthen institutional capacity to deliver industry-relevant skills.	X	X	X	
	Links to CI activity 5; links to ICT activities 2 and 7; links to F&B activities 3 and 5; links to machinery activities 2, 5 and 6; links to MRO activities 2, 3 and 4.				
Strategic objective 2: To align the offering of the education system to the needs of the enterprises, in particular SMEs.					
2.1. Collecting consistent, up-to-date labor market information to meet the priority sectors workforce development needs.	**2.1.1. Identify labor market skills demand in partnership with the priority sectors to enable trade development.**				
	Identify sources of existing labor market data, including from global value chains that can be used to identify labor trends and skill gaps and skill shortages.	X			Ministry of Social Policy of Ukraine along with the sectoral bodies who develop professional standards, MoES Associations, Industry Clusters, Chambers of Commerce
	Determine which labor market information can be enhanced through qualitative information provided by the different priority sector stakeholder/working groups, including information on forecasting structural changes in the priority sectors and the impact on the future structure of employment.	X			
	In conjunction with the industry practitioners identify skills such as, international business management, international sales and marketing, foreign languages and cultural awareness, and logistics and distribution skills that could be delivered as short courses to strengthen existing skills.	X	X	X	

Operational objective	Activity	Implementation			Executing agency
		Short Term	Medium Term	Long Term	
	In partnership with the industry practitioners identify priority occupations and qualification pathways and identify the skills needed in the qualifications for the priority occupations to meet immediate export needs and to ensure new workers are entering the sector and replacing workers who migrate.	X	X	X	Under the new Educational and VET Law there will be eventually a National Qualifications Agency who along with the Ministry of Social Policy of Ukraine, Ministry of Education and Science of Ukraine and the Ministry for Development of Economy, Trade and Agriculture of Ukraine will be responsible for this area once funding is allocated to the new agency Lead: Ministry of Social Policy of Ukraine Support: Ministry of Education and Science of Ukraine, Ministry for Development of Economy, Trade and Agriculture of Ukraine, Ministry of Infrastructure of Ukraine
	Undertake a systematic labor market analysis involving, managers, HR managers, supervisors, sector associations and professional bodies to identify in detail the skills, both technical, soft and management skills, required by industry.	X	X	X	
	Convene sector-specific working groups to undertake occupational mapping of the industry sector to identify occupations and the required skills so that qualifications can be developed that target all levels of each of the priority sectors.	X	X	X	
	This activity is aimed at developing robust, reliable data on labor market needs to make evidence-based decisions on HE and VET learning programs and the supply of skills development. Links to CI activity 3; links to ICT activity 8; links to F&B activities 1 and 5; links to machinery activity 3.				
	2.1.2. Analyse workforce dynamics to develop strategies to attract and retain highly-skilled workers in the priority sectors				
	Develop a partnership between sector representatives in each priority sector, employment services, HE and VET institutions to analyze workforce dynamics to develop strategies to attract and retain highly-skilled workers in export activities to maintain a talent pipeline to replace those workers leaving Ukraine.	X	X	X	Lead: Ministry of Education and Science of Ukraine Supporting: Employers' Association, MoES Associations, Industry Clusters, Chambers of Commerce, Trade Unions, Professional Bodies Ministry of Social Policy of Ukraine (Employment Office)
	Undertake a nation-wide analysis of occupational mobility and identify opportunities for professional conversion programs to strengthen worker's skill sets and assist workers transition into priority export sectors.		X		
	Government and the priority sectors to develop national workforce development plans on a sector basis, including ongoing professional development for export skills, and develop incentives to attract and retain skilled workers in the priority sectors.		X	X	
	Identify short-term and bridging courses to attract highly-skilled workers and keep employees in the priority sectors.	X	X		
	The aim of these activities is to develop a strategic approach to skills development for each industry sector. Links to F&B activity 6; links to MRO activity 5.				

Operational objective	Activity	Implementation			Executing agency
		Short Term	Medium Term	Long Term	
	2.1.3. Develop an open-based online platform for a collection of up-to-date labor market information.				
	Sign a Memorandum of understanding with goals for the portal among industry, government, NGOs, educational institutions and other labor market stakeholders.	X			Lead: Ministry of Education and Science of Ukraine Supporting: Employers' Association, MoES Associations, Industry Clusters, Chambers of Commerce, Trade Unions, Professional Bodies Ministry of Social Policy of Ukraine (Employment Office)
	Define the project management team for the development and sustainability of the portal.		X		
	Initiate development and pilot of a Minimum Viable Product.		X	X	
	Align long-term strategy for portal development.	X	X		
	Develop a portal in line with the strategy.		X	X	
	Approve the necessary regulatory acts.		X	X	
	Secure long-term sustainability and institutional capacity.			X	
	Communicate the portal among the stakeholders.		X	X	
	These activities aim to establish a single source of information on labor market. Links to F&B activity 6; links to MRO activity 5.				
	2.1.4. Introduce an evidence-based policy setting to determine skills development priorities to underpin export growth.				
	Identify sources of credible evidence for skills development agenda setting and communicate new problems or the build-up of evidence to the magnitude of a problem so that relevant policy actors are aware of the importance of the problem.	X	X	X	Think-tanks, Ministry of Social Policy of Ukraine, Ministry for Development of Economy, Trade and Agriculture of Ukraine, MoES, State Statistics Service, Industry Clusters, Chambers of Commerce
	Determine which evidence sources are reliable and which need to be prioritized to be made more robust across different government and industry sources.	X	X	X	
	Consult with stakeholders to identify indicators for monitoring and evaluation purposes and systematic learning around implementation.		X	X	
	This activity aims to develop a fact-based approach to prioritizing the skill needs of industry and identifying the best effort-wise delivery options. Links to CI activity 3; links to ICT activity 8; links to F&B activities 1 and 5; links to machinery activity 3.				
2.2. Develop labor market-oriented careers information to meet the aspirations of young people and to choose jobs in high demand occupations in export growth areas.	**2.2.1. Develop labor market-oriented careers information to meet the aspirations of young people and to choose jobs in high demand occupations in export growth areas.**				
	Starting with the jobs in demand in the priority sectors analyze student decision making processes and influences when making career choices and enrolling in non-compulsory education.		X	X	Lead: Ministry of Social Policy of Ukraine Supporting: Ministry of Education and Science of Ukraine, Ministry for Development of Economy, Trade and Agriculture of Ukraine
	Convene industry skills advisory groups to undertake sector occupational mappings to identify career pathways and the related skills and experience to be used to inform the development of qualifications and the content of curricula.	X			
	Review the occupational maps to identify occupations that share common skill sets or experience to determine jobs that can be targeted for broader base qualifications and professional transition training.	X			

Operational objective	Activity	Implementation			Executing agency
		Short Term	Medium Term	Long Term	
	Prepare information on career pathways for the general public to create a common careers map for individuals, employers, career advisors and VET providers to refer to and gain a common understanding of the sector's workforce.	X	X		Industry Bodies and Trade Unions Lead: Ministry of Social Policy of Ukraine Supporting: Ministry of Education and Science of Ukraine, Ministry for Development of Economy, Trade and Agriculture of Ukraine
	Prepare information material on occupations, required skills and experience and career pathways within the priority sectors to form the basis of a promotional campaign to attract young people with related interests to the priority sectors.	X	X		
	Develop case studies of existing young workers in different occupations in the industry sector for use by career guidance officers to encourage young people to into the relevant sector.			X	
	This set of activities aims to encourage new entrants into sectors finding it difficult to attract and retain skilled workers. Links to CI activity 2; links to ICT activity 11; links to machinery activity 7 and 8.				
	2.2.2. Increase economic prosperity by developing the skills of new entrants and existing worker skills in export-related activities.				
	Convene industry sub-groups to work with the HE and VET sector to update the content of learning programs, learning materials and assessment resources to make it relevant to the export activities of the priority sectors.		X	X	Industry councils Employers' Association, MoES Associations, Industry Clusters, Chambers of Commerce, Trade Unions, Professional Bodies In-service training institutions Employers and trade unions (subjects of social dialogue) Regional councils for professional education Institution for the Modernization of the Content of Education Institutions of Higher Education VET Institutions Educational and educational centers MoES
	Convene industry sub-groups to work with the HE and VET sector to develop the content of new learning programs, learning materials and assessment resources relevant to the export activities of the priority sectors.		X	X	
	Partner with industry to develop flexible modules in areas for export growth, such as, strategic positioning, sales process, key account management, competitive selling, marketing intelligence, engaging with channel partners, new customer generation, routes to market, cultural understanding and export growth planning.	X	X		
	In partnership with industry, HE and VET providers develop a range of flexibly available management skills and professional conversion programs for new and mid-career managers in export areas. See activity above Links to operational objective 2.6.		X	X	
	Develop formal internship or work-based learning resources where students can undertake set learning activities related to international/export business management with successful exporters.		X	X	
	This set of activities aims to develop industry-relevant learning and assessment content. Links to ICT activity 5 and 6; links to ICT activity 10; links to F&B activities 2 and 4; links to machinery activity 1; links to MRO activity 1.				
	2.2.3. Review recruitment practices and provide teachers and trainers with ongoing exposure to current industry practices for export-related activities.				
	Review teacher and trainer recruitment practices to identify initiatives and avenues for employing individuals with industry experience.		X	X	Ministry of Education and Science of Ukraine

Operational objective	Activity	Implementation			Executing agency
		Short Term	Medium Term	Long Term	
	Analyze the current cohort of teachers and trainers exposure to current practices, technical, process (quality, safety, etc.), soft and management skills used in industry.		X	X	National Institute of Strategic Studies Institute of Adult Education and Professional Education Institute of Economics and Forecasting Institute of Demography Industry councils Supervisory boards Employers' Associations Trade Unions Private Sector Associations
	Identify different types of industry partnerships, such as return to the industry, industry mentors, and industry exposure programs to increase the current cohort of teachers and trainers understanding of current work practices.		X	X	
	Look at options to recruit teachers and trainers with industry experience and those who work part-time in the industry through the use of incentives or agreements with industry to release workers during downtimes, for example.		X	X	
	Explore avenues and incentives for industry to supplement the salaries of teachers and trainers in specialist areas.			X	
	Involve scientific and pedagogical staff of higher educational institutions in business projects, grant projects, tenders in order to gain experience, on the commercialization of innovative developments.			X	
	This set of activities aims to create teachers and trainers who have an understanding of current workplace practices and who can bring this understanding into classroom and workshop learning. Links to CI activity 6; links to ICT activities 3 and 4.				
	2.2.4. Develop continuous professional development for teachers and instructors, covering initial training and ongoing professional development.				
	Analyze planned reforms within the HE and VET sector and identify the new skills and knowledge that teachers, trainers and heads of institutions will need to implement the reform processes successfully.			X	National Academy of Educational Science of Ukraine Industry councils In-service training institutions Employers and trade unions (subjects of social dialogue)
	Identify how these reforms will impact on teaching and learning from developing new curricula, learning resources, assessment, learning management, new modes of learning and managing work-based learning, for example.			X	
	Identify professional development needs in terms of working with industry and managing ongoing relationships with industry.		X	X	
	Determine the best methods of delivering professional development activities, on-line, action learning, communities of practice, classroom-based, mentors, problem-based learning within industry, etc.			X	
	Develop strategies for releasing staff for professional development and communication plan to teachers, trainers and heads of institutions.		X	X	
	This set of activities seeks to promote a professional and skilled teacher and trainer profession. Links to F&B activity 2.				
2.3. Establishing a platform for communication between government and industry for collaboration and planning at the national level to develop skills for export growth and competitiveness.	**2.3.1. Establish a policy and planning body involving key stakeholders to steer and strengthen the responsiveness of HE and VET for export growth and competitiveness.**				
	Identify the role of a high-level inter-ministerial/stakeholder policy and planning body to steer the development of labor market-relevant skills development for export competitiveness.		X	X	Cabinet of Ministers of Ukraine with a Ministry appointed as lead agency from Ministry of Social Policy of Ukraine, Ministry of Education and Science of Ukraine and Ministry for Development of Economy, Trade and Agriculture of Ukraine
	Invite Ministries with involvement in skills development, innovation and those with an economic development role.		X	X	
	Prepare a brief for industry leaders on the importance of participating in steering the development of export relevant skills development.		X	X	

Operational objective	Activity	Implementation			Executing agency
		Short Term	Medium Term	Long Term	
	Invite key industry leaders, including foreign affiliate companies who can champion industry involvement in skills development broadly across the economy.		X	X	High-level industry representatives from the industry associations, High profile export companies, Chambers of Commerce, Industry Associations, Industry Think tanks, Analytical Centers, Institute of Higher Education of National Academy of Educational Sciences, Parliament Committee on Education and Science, National Office of Erasmus+ in Ukraine, Coordination Center Horizon 2020
	Invite recognized community leaders who can promote skills development to parents and young people.		X	X	
	This activity aims to convene a HE and VET system governance structure that combines inter-Ministerial and key stakeholders in the steerage to align HE and VET offerings development offerings.				
	2.3.2. Develop clear roles and responsibilities and memorandum of understanding for the inter-Ministerial and stakeholder bodies by defining clear lines of responsibility.				
	Research the types of roles that stakeholder bodies undertake to strengthen the skills development system.		X	X	Analytical Centers, Institute of Higher Education of National Academy of Educational Science of Ukraine, Parliament Committee on Education and Science Oversight Councils of higher education Association of Ukrainian Students, Unions of educational and scientific institutions
	Determine the best organizational structure for these organizations and their size and scope (multi-sector, singular sector).		X	X	
	Identify different funding models and incentives for industry participation.			X	
	Develop a sectoral advisory body, representative of the sector's sub-sectors, to identify skills development priorities, qualification content and pathways.			X	
	Determine the sectors priorities and the types of activities to be undertaken by the sectoral bodies and their relationship to the national body.			X	
	The aim is of this activity is to foster sector level advisory arrangements to strengthen the relevance of skills development provision. Links to CI activity 1.				

3: To create a national clusters program for collaboration and planning at the national level to develop skills for export growth and competitiveness.					
Operational objective	Activity	Implementation			Executing agency
		Short Term	Medium Term	Long Term	
3.1. Increasing economic inclusion by fostering innovation, soft skills, management and technical skills through increasing the variety of high-quality learning strategies and learning activities.	**3.1.1. To take a strategic partnership approach to align HE and VET offerings with the export development priorities of the country.**				
	Identify the role of a high-level inter-ministerial/stakeholder policy and planning body to steer the development of labor market-relevant skills development for export competitiveness.		X	X	Cabinet of Ministers of Ukraine with a Ministry appointed as lead agency from Ministry of Social Policy of Ukraine, Ministry of Education and Science of Ukraine and Ministry for Development of Economy, Trade and Agriculture of Ukraine High-level industry representatives from the industry associations High profile export companies, Chambers of Commerce, Industry Associations Industry Think tanks Analytical Centers Institute of Higher Education of National Academy of Educational Sciences Parliament Committee on Education and Science National Office of Erasmus+ in Ukraine Coordination Centre Horizon 2020
	Invite Ministries with involvement in skills development, innovation and those with an economic development role.		X	X	
	Prepare a brief for industry leaders on the importance of participating in steering the development of export relevant skills development.		X	X	
	Invite key industry leaders, including foreign affiliate companies who can champion industry involvement in skills development broadly across the economy.		X	X	
	Invite recognized community leaders who can promote skills development to parents and young people.		X	X	
	This activity aims to convene a HE and VET system governance structure that combines inter-Ministerial and key stakeholders in the steerage to align HE and VET offerings development offerings.				
3.2. Ensuring that flexible and diverse HE and VET delivery options are widely available to develop a vibrant and responsive HE and VET sector.	**3.2.1. To develop clear roles and reporting lines from the sectoral bodies to the national policy and planning committee.**				
	Research the types of roles that stakeholder bodies undertake to strengthen the skills development system.		X	X	Analytical Centers Institute of Higher Education of National Academy of Educational Science of Ukraine Parliament Committee on Education and Science
	Determine the best organizational structure for these organizations and their size and scope (multi-sector, single sector).		X	X	
	Identify different funding models and incentives for industry participation.			X	

Operational objective	Activity	Implementation			Executing agency
		Short Term	Medium Term	Long Term	
	Develop a sectoral advisory body, representative of the sector's sub-sectors, to identify skills development priorities, qualification content and pathways.			X	Oversight Councils of higher education Association of Ukrainian Students Unions of educational and scientific institutions
	Determine the sectors priorities and the types of activities to be undertaken by the sectoral bodies and their relationship to the national body.			X	
	The aim is of this activity is to foster sector level advisory arrangements to strengthen the relevance of skills development provision. Links to CI Activity 1.				
3.3. Developing a knowledge base of cluster initiatives.	**3.3.1. To develop a national cluster competition.**				
	Find a partner among business schools who has expertise in cluster development.	X			Statistics department, National Library of Vernandsky Industry Associations Analytical centers, Association of Ukrainian Students, Business schools Business, Ministry of Education and Science of Ukraine
	Develop a national promotional campaign.	X	X	X	
	Involve and coordinate prominent national businesses who are interested in cooperation with clusters (for example, Syngenta is interested in agro-food clusters and ready to involve in cluster competition).		X	X	
	The aim of this activity is to start collecting information about potential clusters and increase awareness about clusters.				
3.4. Launching a cluster development program.	**3.4.1. To start five educational programs in the priority sectors. The focus of the program is on cluster management and development skills.**				
	Design a program for each priority sector.	X			Ministry of Education and Science of Ukraine HE and VET Institutions Private Providers of Education and Training Association of Ukrainian Students
	Promotion of programs.	X	X		
	Engage a list one company as a partner from each priority sector.		X	X	
	Encourage a range of different HE and VET providers to participate in programs.		X	X	
	To transfer knowledge and cluster development methodology to HE institutions for further spreading.		X	X	
	This activity aims to launch educational programs for potential cluster managers and ignition teams. The long-term goal is to incorporate knowledge and methodology into HE institutions for further sustainable learning.				

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ANNEXES

◇ Annex A World Economic Forum: Nine "plays" to spark innovation in education

1. Provide a compelling vision of the future: Educational leaders need to present a persuasive vision of how the future can be better. Systems stay stable because they serve some stakeholders well, but often not students. Leaders need to demonstrate that the current situation cannot endure and provide an alternate vision of the system's purpose is and whom it should serve. A compelling vision can align internal and external stakeholders around the need for change. It can also stimulate public demand for a more effective education system that meets the needs of all.

2. Set ambitious goals that force innovation: Setting ambitious goals, particularly nearly impossible ones, forces the entire system to innovate and drive toward those goals. Ambitious goals should be paired with enough flexibility to create room for innovation. Compelling goals can align internal and external stakeholders around the importance of change, stimulate public demand for innovation and dramatically accelerate system progress.

3. Create choice and competition: Choice and competition can create pressure for schools to perform better. Choice can be created at many levels – students and parents can choose schools, or educators can have a greater choice in where to work. A better choice, however, depends on the availability of quality options and quality information on those options. Creating options can improve outcomes, but, when dealing with markets, special care should be taken to ensure that equity is not sacrificed for the sake of efficiency.

4. Pick many winners: When launching competitions, or new service models, pick more than one winner. Supporting multiple ideas or approaches at once spurs all providers to continue to improve and compete – whether you are testing new technology tools or new school models. Systems that reward a single "winner" discourage further improvement and learning and tend toward stagnation. As seen with challenge prizes, the goal should be to use funding or recognition to stimulate a wave of innovation, generating new ideas, patents and market participation.

5. Benchmark and track progress: High-quality data at the school and district level allows leaders – and everyone – to see progress towards the goals. Leaders can also use it as a discussion point with principals and staff to identify and troubleshoot problems. No matter the quality and clarity of the data, the data only provides an imperfect representation of something even more important: the real-world learning outcomes that matter to citizens.

6. Evaluate and share the performance of innovation: Innovations need actually to work. For education systems to encourage quality, there needs to be transparent information on how effective new innovations and technologies are – do they work, over what time period, and based on what criteria? Schools and education systems should invest in quality performance and impact evaluations of innovations and broadly share the results.

7. Combine greater accountability and autonomy: Devolving authority to the school level can remove barriers to innovation and allow school leaders the flexibility to explore new approaches. Increased autonomy needs to be paired with increased accountability, in which school leaders are accountable for the choices and results they deliver. This accountability requires greater transparency and clear performance metrics. Schools need both data and feedback, ministries need to assess the effectiveness of new approaches, and the general public deserves accurate information on school performance.

8. Invest in and empower agents of change: New agents of change require support to make their ideas real and effective at scale. System leaders need to provide leadership development, coaching and mentorship and other support systems enabling innovators to succeed. These innovators can be both inside or outside the system; teachers and administrators may be sources of innovation inside while new charter school/academy operators or social entrepreneurs may operate outside the system. Talent development needs to be carefully coordinated with policy, programs and local communities' needs.

9. Reward successes (and productive failure): Public and private recognition makes it easier for existing innovators to take risks and encourage the emergence of new actors. Rewards also highlight models of success, giving them greater exposure and increasing the likelihood of expansion. System leaders should reward both successful models and ambitious failures that support their goals and vision.

Source: World Economic Forum (2016), Unleashing Greatness. Nine Plays to Spark Innovation in Education, www3.weforum.org/docs/WEF_WP_GAC_Education_Unleashing_Greatness.pdf.

◇ Annex B Links to the sector strategies

CREATIVE INDUSTRIES:
Based on the sectors feedback, the following activities have been identified:

Creative Industries activity 1.
Develop a sectoral body, representative of Creative Industry sub-sectors, to identify skills development priorities, qualification content and pathways. – Links to operational objective 3.2.

Creative Industries activity 2.
In conjunction with industry practitioners, undertake an occupational map and identify career pathways in the Creative Industries sector. – Links to operational objective 2.2.

Creative Industries activity 3.
In conjunction with industry practitioners identify priority occupations and qualification pathways and identify the skills needed in the qualifications for the priority occupations. – Links to operational objectives 1.1 and 2.2.

Creative Industries activity 4.
Develop modular stand-alone learning programs in managerial, marketing and strategic skills. – Links to operational objectives 2.1 and 2.2.

Developing modular short courses that can be delivered as stand-alone short learning programs or embedded in into longer degree courses would assist in filling an immediate gap in institutional delivery and provide an opportunity for existing Creative Industry professionals to access value professional development in managerial and strategic skills.

Creative Industries activity 5.
Develop formalized work-based learning components for Creative Industry to expose students to contemporary workplace practices and technologies. – Links to operational objectives 2.1 and 2.2.

Creative Industries operational object 6

Review recruitment and professional development practices for teacher's working with Creative Industries subjects. – Links to operational objective 2.2.

Encourage workplace experience for Creative Industries teachers and regulate industry exposure programs so that teachers can discuss the latest technologies and practices with the industry practitioners. Encourage the practice of hiring part-time lecturers, teachers and trainers who also work within the industry. Provide lecturers, teachers and trainers with the practical skills to manage and collaborate with workplaces in the delivery of formal work-based learning.

Creative Industries activity 7.

Increase institutional flexibility to deliver learning programs that meet the Creative Industries needs including, cross-faculty programs (hybrid qualifications covering ICT and Creative Industries), part-time and out of work hour access. – Links to operational objective 2.1.

Develop cross-faculty qualifications that will deliver, either part-time or full-time, the right mix of technical, business and creative skills and knowledge required by the industry sector.

ICT

ICT activity 1.

Encourage a range of different HE and VET providers to provide ICT learning programs to increase the overall capacity of the HE and VET sector to meet labor market demand. – Links to operational objectives 2.1 and 2.2.

ICT activity 2.

Encourage HE and VET institutions to offer part-time and out of work hours formal learning programs, which also incorporate Recognition of Prior Learning/Experience to increase the number of suitable people entering ICT programs. – Links to operational objectives 2.1 and 2.2.

ICT activity 3.

Recruit lecturers with industry experience and those who work part-time in the industry. – Links to operational objective 2.3.

ICT activity 4.

Explore avenues and incentives for the ICT industry to supplement the salaries of ICT lecturers. – Links to operational objective 2.3.

ICT activity 5.

Convene industry sub-groups to work with the skills development sector to up-date the content of learning programs. – Links to operational objectives 2.1, 2.2.

ICT activity 6.

Where relevant, include vendor certified technical training as a formal component of ICT learning programs. – Links to operational objectives 2.1, 2.2, and 2.3.
Different skills (technical, soft and management skills international skills) are developed at the company level, such as:

- Technical skills: through in-house training, conferences, paid certifications, participation in IT communities, etc.;
- Soft and management skills: an extensive training program for newly assigned managers, BizTalks;
- International skills: cross-cultural communication training, foreign language instruction.

Introducing work-based components to all ICT learning programs will allow students to be exposed to contemporary workplace practices to develop the practical skills of operating within a contemporary ICT workplace. In some cases, it's not appropriate to have ICT students closely involved in technical work within the company; however, they can develop an understanding of working with clients, their needs, customer service and business communications through work-based learning.

ICT activity 7

Develop a formal work-based learning component across all ICT learning programs. – Links to operational objective 2.6.

Ukrainian engineers are skilled in most modern languages, frameworks and databases. "Many skills are in demand including, but not limited to, Python, Java, Mobile, .net engineers. What the market is short of a business analyst, data scientists and digital marketing professionals with global market experience". (Source: IT services and software R&D – IT Ukraine). This requires access to training programs that are delivered across different faculties.

ICT activity 8

Undertake a systematic labor market analysis involving, managers, Human Resource managers, supervisors, ICT industry associations and professional bodies to identify in detail the skills, both technical, soft and management skills, required by industry. – Links to operational objective 1.1.

ICT activity 9

Increase inter-faculty cooperation through the development of hybrid ICT, business and design qualifications. – Links to operational objective 3.3.

ICT activity 10

Identify the professional development needs of the existing ICT professionals and ICT teachers and offer flexible delivery of learning programs in business management for IT professionals. – Links to operational objectives 2.1, 2.2, and 2.4.

ICT activity 11

Develop short courses for existing workers in areas of immediate demand. Links to operational objectives 2.1 and 2.2.

ICT activity 12

Convene an ICT industry skills advisory group to undertake an ICT sector occupational mapping to identify career pathways and the related skills and experience to be used to inform the development of qualifications and the content of curricula. – Links to operational objective 3.3.

FOOD AND BEVERAGES

Food and beverage activity 1

Undertake a systematic labor market analysis of the food and beverages sector involving, managers, human resource managers, supervisors, line supervisors and industry associations to identify in detail the skills, both technical and soft skills, required by industry. – Links to operational objective 1.1.

Food and beverage activity 2

The food and beverages industry to liaise with VET institutions to introduce modules on Hazard Analysis and Critical Control Points (HACCP) and food safety and new technologies into learning programs so that new and existing workers are able to conform to these requirements. – Links to operational objectives 2.1, 2.2.

Food and beverages activity 3

Seek tripartite partnerships between machinery and equipment suppliers, food and beverage companies and VET institutions to up-skill teacher or instructors in using in maintaining new technology and equipment. – Links to operational objectives 2.2 and 2.4.

Food and beverages activity 4

Review existing learning programs catering for the food and beverages industry and update content and identify opportunities for work-based learning, including widening the range of apprenticeships and internships. – Links to operational objectives 2.2.

Food and beverages activity 5

Develop a series of short courses for existing workers and managers to develop their export-related skills. Links to operational objectives 2.1 and 2.2.

Food and beverages activity 6

Convene an industry working group to undertake occupational mapping of the industry sector to identify occupations and the required skills so that qualifications can be developed that target all levels of the food and beverages industry. – Links to operational objective 1.1.

Food and beverages activity 7

Undertake an occupational mapping to identify occupations, skills, experience and career pathways to create a common skills language for individuals, employers, career advisors and VET providers. – Links to operational objective 1.2.

MACHINERY

Machinery activity 1

Develop short courses for existing workers in forecasting expenditure. Links to operational objectives 2.1 and 2.2.

Machinery activity 2

The light machinery sector to convene a working group to review existing learning programs catering to the sector to update the content. – Links to operational objectives 2.1 and 2.2.

Machinery activity 3

Identify opportunities for work-based learning, including widening the range of apprenticeships and internships. – Links to operational objective 2.1.

Machinery activity 4

Undertake a systematic labor market analysis involving, managers, human resource managers, supervisors, line supervisors and industry associations to identify the skills, both technical and soft skills, required by industry at all occupation levels. – Links to operational objective 1.1.

Machinery activity 5

Work with managers, Human Resource managers and supervisors to identify the management skills required by the industry. – Links to operational objectives 2.1 and 2.2.

Machinery activity 6

Develop modular programs for inclusion in longer learning programs or offered as stand-alone courses for existing workers. – Links to operational objective 3.1 with relevance to 2.1, 2.2 and 3.1.

Machinery activity 7

Develop partnerships between the sector, HE and VET providers to offer flexible learning for new and existing workers. – Links to operational objective 2.2.

Machinery activity 8

Convene an industry working group to identify occupations, required skills and experience and career pathways within the industry to form the basis of a promotional.

Machinery activity 9

Develop case studies of existing young workers in different occupations in the industry sector for use by career guidance officers to encourage young people to into the industry. – Links to operational objective 1.3.

MRO

MRO activity 1

Identify workforce dynamics to identify the motivations involved in deciding to enter the sector and determine incentives to keep skilled workers in the sector. Links to operational objective 1.2.

MRO activity 2

Develop industry-relevant modules in emerging areas such as robotics, automation, data analytics and cybersecurity. – Links to operational objectives 2.1 and 2.2.

MRO activity 3

Develop industry partnerships with relevant HE and VET providers to strengthen their institutional capacity to deliver industry-relevant skills. – Links to operational objectives 2.1.

MRO activity 4

In partnership with industry, HE and VET providers review work-based learning options including earning and learn models, part-time apprenticeships, apprenticeships in emerging areas and internships. Links to operational objective 2.1.

MRO activity 5

In partnership with industry, HE and VET providers develop a range of flexibly available management skills and professional conversion programs for new and mid-career managers. – Links to operational objectives 2.1 and 2.2.

MRO activity 6

Industry to develop workforce development plans and incentives to retain skilled workers. – Links to operational objective 1.2.

MRO activity 7

Develop mentoring and internship programs for women to enter the industry. – Links to operational objective 2.1.

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www.me.gov.ua
exportstrategy@me.gov.ua